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Diversification Strategies and Firm Value: Causes and Consequences. International Evidence

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To my lovely parents

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CHAPTER I

INTRODUCTION

The arguments presented in this section are constructed, in first place, to show the crucial importance of our subject of study throughout this piece of work, taking into account economic and financial perspectives, to show the repercussions on the causes and consequences of a firm's diversification strategies. Secondly, we describe some arguments on the importance of being diversified and expanding the lines of business in a global perspective, since the current markets are more internationalised. Thirdly, we provide some arguments to understand the diversification decisions and their consequences on the firm's choices to provide premiums to shareholders in terms of dividends. Fourthly, we feel the needs to expand our horizon of study by understanding the differences in institutional factors and country effects on diversified firms and, as a result, we provide some arguments about the legal systems, financial systems, and development of the economy. Finally, we present the objectives to be attained along the present study and, at the same time, the structure of the body document.

I.1. Diversification significance and its real consequences.

Firms are able to choose between having single-segment operations (non diversified firm) or multi-segment operations (diversified firm). When the firm expands its lines of activities across industries by acquiring or establishing other business it is called a diversified company. For instance, firms pursue diversification strategies by

establishing production business units in different industrial sectors. In short, firms diversify strategically looking for the advantages over the costs of being involved in multi-segment activity and prefer to stay focused when it is unworthy. Moreover, the procedure of diversifying entails firm's resources that are required to be exploited exceptionally and consequently time efforts, making it a process that can create or destroy new opportunities for the companies. The main role of diversification is to create new options of value for shareholders in manners that they cannot obtain by reducing their risk on investments by themselves.

When a company's production activities are sufficiently to support core business product line, it is called related diversification. Related activities bring firms several abilities and resources that are easily transferable across the segments, creating a distribution and production chain. Related diversification allows provide firms to enjoy an allocation of the resources throughout its ramifications. Unrelated diversification strategies appear when a firm extends its lines of production business into fields dissimilar to its conventional product line. Unrelated activity carries with it increased business risks and exploitation of complementary processes within the firm, among others.

The puzzle presented in the diversification literature of the last two and a half decades offers conflicting results. This extensive literature documents the motives for diversifying, the fact that diversification can face firm value positively, and the circumstances under which firms experiment with costs of diversification (see Palich, et al., 2000). Earlier studies attempt to explain that the benefits of being a multi-segment corporation overcome its costs, impacting positively on shareholders' wealth (Jensen and Ruback, 1993). Furthermore, recent evidence suggests that diversification is a value creating strategy under some circumstances (Villalonga, 2004). However, the prevailing

perception among financial researchers throughout a large empirical support suggests a value destroying effect for multi-segment firms (Lang and Stulz, 1994; Berger and Ofek, 1995; Servaes, 1996; Rajan et al., 2000) and also that the level of product diversification has been leaning downward. This so called "discount" in the financial literature is attributed when comparing business segments in diversified firms with the medians of industry single-segment firms.

Another perspective argues that diversification has both value enhancing and destroying effects on firm value (Grant, et al., 1988; Palich et al., 2000). Markides (1992) argues that as a firm becomes more diversified it gets away from its principal business and the benefits of being a multi-segment firm at the margin decreases. High levels of diversification increment managerial and organizational complexity, and coordination costs begin to emerge due to the complexity of integration, and so consequently top managers tend to exert incongruity decisions (Grant, et al., 1988). As a result, Markides (1992) infers that beyond a certain point the marginal benefits of diversification are best explained as a decreasing function. In the same vein, the "Intermediate Model" proposed by Palich et al. (2000) suggests that diversification has positive revenues, but the returns fall beyond some point where the optimal level is reached.

Arguments to the option for diversifying rely on three main perspectives according to Montgomery (1994): the agency theory, the resource based view and market power perceptions. Studies on product diversification offer some explanations between agency problems and diversification decisions (see for instance, Denis et al., 1997): i) managers diversify to increase firm size and to obtain benefits from the prestige and power resulting from managing a big company (Jensen, 1986; Stulz 1990), ii) Jensen (1986) and Stulz (1990) argue that firms with large amounts of free cash flow

may invest more than they should. Since diversified firms have different divisions it is more difficult for managers to allocate capital and monitor activities efficiently, so then diversified firms achieve more agency costs because it is relatively easy for the divisional manager to cheat central management since diversified companies are required to report only limited accounting information for their business segments. Shleifer and Vishny (1989) posit that shareholders suffer an escape on their benefits due to the fact that managers use diversification to entrench themselves and invest according to their preferences, iii) Amihud and Lev (1981) argue that to mitigate the risk from the human capital firms might diversify, or as Jensen and Mecking (1976) arguments on the reduction of firm specific risk for managers that affect value in order to influence their future compensation.

According to the resource based view, we can observe that firms with great capacity to achieve resources and capabilities might be attributable to transfer their abilities across business segments and be involved in diversification practices. Then firms look at strategies to expand their activities or utilize their resources to add value in production or improve competitive advantage (Rumelt et al., 1991). In this scheme economies of scope arise and diversification strategy becomes one of the most approachable techniques for the organization of in economic activities and in the exploitation of scale economies (Penrose, 1959). Finally, diversified firms enjoy market power advantages that are to some extent inaccessible to their single-segment equivalents. Owing to internal market efficiencies, multi-segment firms can benefit from the advantage of easy access to external funds and finance growth, and they can also transfer capital across businesses within their pertinent segmentation of operations (Meyer et al., 1992). Moreover, the increment of market power is determined by predatory pricing, future higher prices, and sustained losses that can be founded through

cross-subsidization, whereby the firm uses the profits obtained in one specific segment to support another (Tirole, 1995).

A diversified firm consists of numerous divisions operating across industries. It is well defined that their activities permit the creation of internal capital markets that might provide easier and lower cost financing than the external capital markets. Scharfstein and Stein (2000) show that multi-segment companies can improve the funding of profitable projects throughout internal capital markets. Therefore, the creation of internal capital markets allows firms to reduce asymmetric information problems by mitigating agency costs (Shleifer and Vishny, 1992; Stein 1997)[1]. Therefore, this argument is confirmed since single-segment firms enjoy more transparency and, hence, are subject to less information asymmetry and obtain more benefits from external capital access (Nanda and Narayanan, 1999).

On the one hand, the literature points out that the benefits of diversified companies over non-diversified ones comes from: i) less risk to the firm (Grant, 1998), ii) increment on the debt capacity (Lewellen, 1971), iii) creation of internal capital markets (Rumelt, 1982), iv) Managers have information advantages over external capital markets (Williamson, 1975), v) mitigation of failures in product, labour and financial markets (Khanna and Palepu, 1999). On the other hand, the costs of multi-segment activities are associated mainly with the agent-principal problem described by Jensen (1986), and consequently to the creation of inefficient internal capital markets (Stulz, 1990).

Our interest in diversified companies relies on the fact that the documented discount is mostly attributed to US firm samples (Lang and Stulz, 1994; Berger and Ofek, 1995; Rajan, et al., 2000; Bowen and Wiersema, 2005; 2008), while evidence for

[1] See for instance, Williamson (1975) and Stein (1997) for literature on the benefits of internal capital markets. Recent empirical work focused on the possible negative effects of internal capital markets, see for example, Scharfstein and Stein (2000) and Rajan et al. (2000)

Eurozone countries is not provided as far as we know. In summary, we provide evidence on both the benefits and costs of diversified firms by taking into account the important and moderating role played by the different types of diversification on the premium or discount that diversified firms trade at. The inevitable questions to be answered of all the above arguments should be: Are diversified firms in the Eurozone area discounted? Does an optimum level of diversification exist? What are the influences of the types of diversification on the firm's value?

I.2. Global diversification arguments and perspectives

Firms' operations into other geographic markets have also received attention from researchers. While product diversification strategy is the firm's expansion into new or existing business segments, global diversification confers the firm's expansion into other countries and geographical locations or markets. Hence both diversification strategies represent a growth strategy (Chandler, 1962) and global diversification has also been widely recognized as an important subject of study. As occurs with product diversification, global diversification results are not unanimous since studies do not present unique evidence (Annavarjula and Beldona, 2000). On the one hand, since global diversification represents a growth strategy (Capar and Kotabe, 2003), scholars have found that as firms increase their operations in global markets they regularly confront exclusive challenges, such as initial high costs related to the liability of foreignness (Hymer, 1976; Zaheer, 1995). On the other hand, operating in cross-border markets allows firms to prevail over the costs related to the liability of foreignness and to reap some benefits associated with globalization (Bodnar et al., 1999).

First evidence reports a value creation for global firms (Errunza and Senbet, 1981, 1984; Morck and Yeung, 1991 and Bodnar et al., 1999). Government incentives and the capacity to leverage resources across geographic segments are some of the causes of this premium. However, researchers also find evidence of destruction of value associated with global diversification strategies supporting the discount hypothesis (Fatemi, 1984; Geringer et al., 1989; Hitt et al., 1997), arguing that this relationship could be attributed to the inexperience of having operations in new geographical markets and the complex relations with the new organizational scheme, incrementing the agency costs. In this respect, Denis et al. (2002) find that global diversification is associated with value destruction compared with single-segment domestic firms.

To understand better this strategy better, we must briefly explain the benefits and costs of global diversification. Regarding the advantages, market power gives global firms the opportunity to increase their revenues and reduce costs over their suppliers, distributors and customers (Kogut, 1985). The ability to spread the risk across several country-markets helps to reduce fluctuations in revenues (Hennar, 1982). Internalization theory explains that firms invest in other international markets in order to exploit knowledge capabilities (Williamson, 1975; Hymer, 1976) and to increment learning (Hitt et. al., 1997). Being in international markets also gives the opportunity to enjoy scale and scope economies (Kogut, 1985; Kim et al., 1993). Global firms can take advantage if the environment is not so competitive due to market imperfections (Sundaram and Black, 1992) or by differences in taxation across countries (Errunza and Senbet, 1981). Also as markets fluctuate managers can shift operations from one country to another from less to more beneficial schemes (Thomas and Eden, 2004).

In contrast, costs may also arise in global diversification strategies. In line with transaction cost theory, the governance costs of firms with cross-borders activities are

larger when these firms become more distant from their core business segment[2] (Hitt et al., 1997). Moreover, the costs of global diversification are typified by the problems of the liabilities of newness and foreignness (Hymer, 1976; Hutzschenreuter and Voll, 2008). For this reason, the management of global firms cannot conduct segment business activities as effectively as local firms. As the firm increments its operations, the organizational structure becomes more complex to manage, and when this occurs shareholders are in a difficult position to monitor the activities of the managers (Jensen and Mecking, 1976). Managers are encouraged to pursue different objectives than the shareholders interests as long as they can increment their prestige and obtain personal benefits (Fatemi, 1984; Michel and Shaked, 1986; Denis et al., 2002), exposing the firm to reduce its market value due to the divergence of objectives.

I.3. Determinants of diversification strategies and the impact of shareholders' premiums as dividends

As with the above arguments and consequences of diversification, it is important to explain the most frequent determinants of being involved in multi-segment strategies for a better comprehension.

Firms with a great amount of cash and investments have more propensities to undertake diversification strategies than firms with lower levels (Hyland and Diltz, 2002).The debt ratio plays an important role in diversification strategies since it allows the assessment of how multi-segment firms employ internal capital markets rather than

[2] These governance costs arise because the more distant the operational markets, the more dissimilar the firm's functions. Additionally, information tends to be more asymmetric across segments and borders, so managers will have greater difficulties in administrating the firm and, subsequently, transaction and coordination costs will increase with the degree of global diversification (Jones and Hill, 1988).

access of external finance (Doukas and Pantzalis, 2003). The arguments are based primarily on the coinsurance effect that gives greater capacity to achieve debt for a diversified company than for a non diversified one (Lewellen, 1971), by increasing interest tax shields.

Profitability is associated with firm growth and Hyland and Diltz (2002) highlight that firms with low profitability try to improve it by means of diversification. As the firm is profitable, it has more capital to invest in product and global business units. Berger and Ofek (1995) and Lamont and Polk (2002) contend that firms located in low growth industries will seek to diversify into more rapidly growing industries, and to test this implication we include Tobin's q ratio. A firm's intangible assets are fundamentals on diversification strategies. Cohen and Levinthal (1990) explain that efforts in intangibles give a firm more potential to explore new business segments due to the diversity of knowledge. Finally, size is an important determinant on diversification since firms diversify in order to grow (Penrose, 1959; Chandler, 1962), and larger firms are more prone to diversify.

Moreover, diversification decisions and dividend policies are to some extent related since they are both dependent on the resources available in the firm (Mackey and Barney, 2005). Since payout ratios are mechanisms to reduce the cash flow available to the firm, diversification strategies should suffer an important impact in them because these strategies are investments used by managers relying on the funds available to the firm. Then the extent of diversification strategies will depend on the payout ratios, and additionally shareholders' premiums will be regulated by the extent of firm diversification strategies. What is more, if the firm chooses higher levels of diversification, agency and transaction costs will start to emerge and firm payout policy will alleviate this phenomena. Accordingly, we provide an extensive analysis of the

firm's payout ratios of diversified companies and alternatively the influence of diversification strategy in the firm's payout ratio.

I.4. Institutional factors and country characteristics

The environment within which firm abilities developed are essential for understanding the behaviour of firm diversification strategies. Country settings represent different factors, as do institutions and resources that firms have to face, and a firm's performance will differ across geographical areas according to how it fits in to different circumstances. Early studies in international business attempt to provide diverse factors that concern the position of markets where the firms must operate, whether domestic or global. Researchers on international business strategies, according to the resource based and industrial organization theory, have emphasized the importance of economic, social, cultural, political and institutional differences across countries and establish that markets do matter in the value revenues of firms.

Wan and Hoskisson (2003) find that, even among institutionally more developed countries like the Western European countries, country environmental differences (including institutional settings) still have a significant impact on the relationship between product and global diversification strategies on firm value. Yip (1991) argues that continental businesses in the United States were more profitable than those in Europe, and regional businesses in Europe were more profitable than those in the United States.

A growing developing body of literature began with the discovery that the laws that protect investors differ significantly across countries, due to some extent to differences in the legal origins (see La Porta et al., 1998). Recent literature highlights

that cross-country differences in laws, financial systems and development of the capital markets affect product diversification, global diversification, and payout policies[3].

Arguments about legal systems are provided by La Porta et al. (1997), who explain that there are considerable differences in the levels of investor protection across countries with different legal traditions. Based on this premise, they use the legal tradition as an exogenous variable to explain the legal protection of investors (shareholders and creditors) across countries. Particularly, they separate the legal world into four divisions: common law, French civil law, German civil law, and Scandinavian civil law, which can be joined in two legal traditions: common law (e.g., UK, the US and Canada) and civil law (e.g., Continental European Countries and Japan). They studied the implications of the differences in the investor protection across countries, regardless of their obvious association with a particular corporate governance system. They look at the ability of firms in various countries to raise external financing (either equity or debt). They find that countries with common law legal origins have the best access to equity markets, whereas French legal origin countries have the worst. Relative to debt, common law countries provide better access than civil law countries. They attribute the inferior development of capital markets in civil countries to the relative deficiency of investor protection. The motivation for some arguments is Hayek's (1960) study on the superiority of English to French legal traditions. In Hayek's analysis the spontaneous order represented by the common law is more consistent with individual liberty than the more rationalist and constructivist (and, therefore, more interventionist) tendencies of the civil law, and the common law is associated with fewer government restrictions on economic and other liberties. If common law countries indeed provide greater freedom to their citizens, they should experience more rapid economic growth.

[3] See for instance, Rajan and Zingales (1998b), Levine (1998, 1999), La Porta et al. (2000), Fauver et al. (2003, 2004), Oxelheim and Randøy (2005), Birkinshaw et al. (2006).

An important long-standing issue in corporate finance has been the relative merits of banks and financial markets as providers of capital. The specific question is whether the orientation of the financial system has any impact on firm value. When capital investment or procurements needs are to a greater or lesser extent met directly in the relevant markets or stock markets, there is a capital-market oriented financial system. In this case, the law of supply and demand is the main regulation factor. On the other hand, when banks (financial institutions) deal with the process of capital transfer like financial intermediaries, there is a bank-oriented financial system. In general it is considered that the predominantly bank-oriented financial system is found in continental Europe and Japan and the typical examples of capital-market oriented systems are found in the US and the UK.

Markets and banks offer capital formation, facilitation of risk sharing, information production and monitoring. The case for bank-based or market-oriented systems could be made based on the relative effectiveness with which banks or markets execute these common functions. In the literature, some argue that market-based systems are better (Macey, 1998) and others accentuate the of banks (Gilson and Roe, 1993). Then it seems that adopting the superior financial system would enhance firm value.

Growing theoretical studies examine the great importance of the financial system mechanism in relation to the economic increment. Rajan and Zingales (1998) study the contractual environment of the country arguing that bank-based systems are characterized by low contractibility with deficiencies on the raising of capital to use in investments. On the contrary, environments where the raising of capital is easier, thus implying growth opportunities, characterize market-based systems. Gerner et al. (1994) argue that diversified firms, in order to choose new projects with positive net present

value, are able to exploit their internal capital markets by prevailing over some market imperfections, as the resource allocation in this internal capital market is more efficient when it is more difficult to get access to external capital. It seems that the agency problems are also associated with the success of one system over another (Boot and Thakor, 1997), or also the effect of the technological change in the different environments associated with determined market oriented system can be more complex (Allen and Gale, 1999).

Economies are different across the globe, and nowadays it is important to highlight the performance of firms operating in emerging markets. They are involved in great diversification, growth projection and incomparable revenuepossibilities. In the middle of the 90s, emerging economies were involved in transitional changes like privatizations, more regulation in their currencies and democratic governments.

In emerging markets it is usual that firms suffer from greater levels of asymmetrical information and agency problems and other market imperfections. Lins and Servaes (2002) posit that diversified firms may take advantage of the internal capital markets or, otherwise, be subject to the expropriation of minority shareholders in emerging economies. In this respect, they argue that multi-segment firms in emerging economies trade at a discount. Moreover, Lin and Su (2008) find higher valuation for diversified firms as compared to single-segment firms in less developed contexts. A possible explanation for this value premium is that diversified firms in developing countries are able to emulate the strategies of their counterparts in developed countries and then exploit their current institutions (Khanna and Palepu, 1997). Subsequently, Khana and Palepu (2000), in a diversified group firm study, provide evidence that the behaviour of these multi-segment firms vary from less developed to developed countries due to corporate governance schemes and the level of capital market integration.

Claessens et al. (1999) found premiums for diversified companies in less developed countries and discount on firms in developed ones. According to this reasoning, Fauver et al. (2003) argue that as diversification may have restricted value in developed economies, it will be more efficient for firms in countries where the raising of external capital is more difficult or in some cases unfeasible to get. Additionally, they suggest that diversification may be more valuable in emerging economies than in developed ones and negatively related to the level of capital market development, legal systems, and international integration.

We fully understand that multi-segment activities have been broadly studied in different fields of knowledge. However, the lack of conclusive evidence on the matter has encouraged us to analyse the diversification strategy in greater depth with a stronger methodology and a different sample of study. This piece of work is intended to show if firms involved in diversification strategies located in different country contexts and institutional environments have differences in the premium or discount on their market values and in their determinants. Consequently, we attempt to proportionate fresh results and evidence for the discussion on the diversification literature for several country samples across this study.

To test all the above arguments of the product and global diversification, we propose excess value models because this measure allows us to compare a firm's actual value compared to its imputed value if all of its segments operated as a single segment firm (Berger and Ofek, 1995) –single domestic for global diversification, respectively-. A positive excess value implies that the firm trades at a premium in comparison to single-segments companies –single domestic for global, respectively- while negative excess values evidence a discount. Moreover, the same pattern is studied for related and unrelated diversified firms including the possible alternative of a quadratic relationship.

In addition to verifying the determinants of such diversification decision we proceed to construct censored models for a better interpretation of the results. In summary, we seek to fill in the gaps in the diversification literature by accounting for the financial decisions and other control variables on both the causes and effects of diversified firms in several countries with current data by taking advantage of he panel data methodology.

I.5. Objectives and document structure.

The present document is intended to provide evidence on the importance of the diversification strategy on a firm's value from an international perspective dealing with panel data methodology. In this sense, our document is the first, as far as we know, to provide an understanding of the impact of product and global diversification on firms, and the determinants of the product diversification strategy. Additionally, we include the behaviour of the shareholders' premiums in terms of dividends in different institutional settings, focussing on the discount hypothesis characterized by multi-segment operations.

Our general objective can be split into the three following purposes:

1. Provide new evidence of the relationship between the product diversification strategy and a firm's value, getting inside the level and types of diversification to understand the real benefits and costs that this strategy conveys. To be precise, this objective intends to complement the existing literature through the study of this relationship, taking into account the related and unrelated diversification from a

quadratic relation in institutional environments different to the US (upon which more of the empirical studies are based) particularly in the Eurozone area.

2. Expand the evidence of global diversification strategy on firm value by testing the moderating effect of the degree of product diversification and institutional contexts, more specifically the legal and financial system of the firm's home countries. In this scheme, we intend to discover whether differences in the degree of product diversification followed by global firms impact on firm value according to the legal and financial home country tradition and consequently observe if the multi-segment activity in global markets is a value creating or destroying strategy.

3. Obtain evidence on the relationship between the level of diversification and the payout ratios and vice versa by studying the most common determinants of both choices. The analysis of this relationship will define the extent of the premium that managers provide to shareholders in terms of dividends or if they use the available funds within the company to finance diversification strategies. Moreover, we attempt to provide empirical results for several countries where controlling its respective effects on the legal, financial and level of the economy factors.

The aim of this thesis is to study the impact on firm value because of the corporate diversification strategies and in the same way to find out if the resources available to a company are used to multi-segment activities or to shareholders' premiums. The former purpose is intended to be realized in international contexts taking into account possible institutional differences.

As we demarcated clearly in our principal objectives, the present piece of work is organized as follows:

In Chapter II, we offer an actual framework on the benefits and costs of the diversification strategy and summarize the empirical evidence in this respect. Additionally, we formulate our hypothesis and the description of the models and finally we explain our results. Chapter III reviews the recent evidence on the implications of being a global firm in different environments, the potential advantages and disadvantages, and we then pose our main hypothesis and present the models to go through our results. In Chapter IV, we discuss the determinants of both product diversification and payout ratios that lead us to formulate our hypotheses and propose our models. We also provide the results of the estimation of these models. Finally, Chapter V presents our main conclusions relating them to the attainment of our objectives.

The present research ends with a presentation of the conclusions that will permit us to defend our thesis: "The diversification strategy can be value-creating or value-destroying depending on the type and level of product diversification and the institutional characteristics of the firm's home country, and it competes with dividends for the firm's resources."

CHAPTER II

DIVERSIFICATION: VALUE-CREATING OR VALUE-DESTROYING STRATEGY? EVIDENCE FROM EUROZONE COUNTRIES

II.1. Introduction

The diversification strategy is a considerable and interesting topic of study in the literature of firm valuation, but there is significant disagreement on whether or not diversification helps firms to leverage resources and improve their performance, and whether or not this strategy creates long-run competitive advantage (Markides and Williamson, 1994). Nowadays, there is a debate in the strategic management and financial literature about the role played by corporate diversification as a value maximization strategy for shareholders. The premise on the decision of being involved in expanding into industry segments is simple; basically a firm diversifies when the benefits of diversification overcome its costs, and it is supposed to remain focused when the opposite occurs (Campa and Kedia, 2002). On the one hand, some theoretical arguments point to diversification as a value-increasing strategy for the firm. For instance, Fluck and Lynch (1999) argue that diversification permits the financing of marginally profitable projects that cannot get financed as stand-alone units. Matsusaka (2001) reports that firm's election to be involved in multi-segment activity is in line to efficiencies in organizational schemes. On the other hand, there is also evidence in the

literature pointing out that multi-segment firms trade at a discount, in relation to a portfolio of single-segment firms, which has led researches to believe that diversification destroys value (Lang and Stulz, 1994; Berger and Ofek, 1995; Rajan et al., 2000; Whited, 2001; Lamont and Polk, 2001, 2002). As such, findings are not conclusive; there is an open door to the investigation about the diversification strategy. Furthermore, recent research on the effects of different levels of diversification on firm value has driven to a curvilinear relation. The curvilinear model posits that some diversification is better than none (Palich et al., 2000), but high levels of diversification might well be value destroying.

The economic literature has focused on the impact of different levels and types of diversification on firm value. To examine this impact it is fundamental to distinguish between related and unrelated diversification. Firms that follow related diversification try to exploit economies of scope through the sharing of physical and human resources across similar lines of business segments. In contrast, unrelated diversification pursues the search for and achievement of economic advantages by being able to distribute capital and other financial resources in an internal market more efficiently (Helfat and Eisenhard, 2004). As a result, the evidence regarding which type of diversification is better is not unanimous, although diversification into related businesses is frequently argued to provide better value and thus should be preferred by the firm (Bettis, 1981; Markides and Williamson, 1994), at least in the first stage.

In this setting, the aim of this chapter is to learn how diversification activity impacts on firm valuation, and how this impact is moderated by relatedness in the Eurozone countries. Our interest in studying this setting stems from the fact that prior literature on diversification is mainly US based (see, for instance, Nayyar, 1992; Rajan et al., 2000; Bowen and Wiersema, 2005; 2008). Thus, despite the vast research on the

topic, we provide new evidence on diversification for the Eurozone case which, as far as we know, has not been previously documented. To achieve this aim, we estimate an excess value model by using the Generalized Method of Moments in a sample of Eurozone companies. We provide the following evidence. First, we offer evidence on the impact of the diversification strategy on firm value by regressing excess value over two different measures of diversification (Total Entropy and Revenue-based in the Herfindahl index) and a set of control variables that have traditionally been considered as value determinants (i.e. the investment level, debt ratio, profitability, intangible assets and firm size). Second, we take into account the possible non-linear relationship between the diversification strategy and firm value. Our findings show that there is an optimal level of diversification; that is, diversification strategy first creates value and then, after a certain breakpoint, destroys value. Third, to investigate how relatedness moderates the impact of diversification on firm value, we have interacted diversification with a dummy variable that captures the relatedness nature of the diversification. Regarding the type of diversification, our main results support that related diversification is more value-creating than non-related diversification, and that non-related diversification is more likely to turn into a value-destroying strategy at lower levels than related diversification.

The remainder of the chapter is organised as follows. The second Sub-section presents the theoretical framework, the hypothesis of our study and the models to test them. Sub-section three describes the data and estimation method used in our analysis. The results are discussed in Sub-section four and the last Sub-section highlights our conclusions.

II.2. Theory, Hypotheses and Empirical Models

In this subsection, we first summarize the main arguments and contributions of previous research to the debate about the benefits and costs of diversification, which are the foundation of our hypotheses concerning the effect of diversification on firm value. We then specify the models that allow us to test the existence of the premium or discount hypotheses. Second, we discuss the arguments behind the diversification discount hypothesis to propose additional hypotheses about corporate diversification and the value discount.

II.2.1. Corporate Diversification and Firm Value

There are many and somewhat contradictory theoretical arguments in the literature to explain the relationship between the diversification strategy and firm performance, suggesting that diversification may have both value enhancing and value reducing effects. The key question is whether the act of corporate diversification destroys value or, on the contrary, it creates value.

In the past, the industrial organization economics employed years of research relying on the conjecture that diversification and performance are linearly and positively related (see, for instance, Gort, 1962). This assumption mainly derives from market power theory and internal market efficiency arguments (Scherer, 1980; Grant, 1998). In the very early stage, the literature on diversification was based on the premise that diversified firms are able to make a better use of the market power advantages than those single-segments firms can face due the benefits that being multi-segment conveys and the ability to increment the market power easily (Scherer, 1980). Additionally,

owing to internal market efficiencies, multi-segment firms can benefit from the advantage to access without difficulty to external funds to finance growth, and they can also transfer capital across businesses within its pertinent segmentation of operations (Meyer et al., 1992). As a result, diversification is a source of different efficiencies that are difficult to achieve by non diversified firms (Scharfstein and Stein, 2000). Overall, these arguments indicate that diversification is positively associated with performance.

To go further on the question as to why a firm diversifies, we should take into account the benefits that the diversification strategy conveys. In fact, gains from this strategy may come from managerial economies of scale, as proposed by Chandler (1977). Additionally, favour the conditions in the extent of an optimal firm expansion (Shyam, 2009). Moreover, the increment of the market power is determined by the predatory pricing, future higher prices, and cross-subsidization whereby companies use the benefits from one product to alleviate the suffering of other damaged line of production (Tirole, 1995). Some arguments posit that one of the positive effects of diversification is the reduction of the firm's risk in the way to be involved in more businesses in its portfolio (Sobel, 1984; Grant, 1998). This risk reduction is also helpful for debt capacity and cost of capital (Lewellen, 1971), this increment on debt exert a trade-off effect where diversified firms employ the tax advantages to their benefits (Sheifler and Vishny, 1992). For instance, the coinsurance effect confers on multi-segment firms greater debt capacity than single-line business of similar size (Lewellen, 1971). One way in which increased debt capacity creates value is by incrementing interest tax shields; thus multi-segment firms are expected to have higher leverage and lower tax payments than their business if operated separately.

However, multi-segment firms enjoy of better capital formation, since they can obtain easily to external sources as the internally generated assets through their business

units. Then, the diversification itself creates internal capital markets that permit more efficiently allocation of resources across businesses, and multi-segments firms gain considerable financial interests from the use of this internal market and resources (Rumelt, 1982). Moreover, in terms of managerial use of resources, Weston (1970) and Williamson (1975) argue that managers have in their hands monitoring and information advantages over external capital markets. Additionally, a multi-segment firm can exploit the advantages of both, internal and external capital markets. Hence, multi-segment firms can generate efficiencies that are unavailable to the single-business firm. In short, all the above mentioned arguments support diversification as a value-creating strategy.

There are also many arguments that have led scholars to assume that diversification destroys value. A frequent and well accepted argument is the one used by agency theory, which points out that managers can pursue their own interests at expense of shareholders by means of the diversification strategy (Jensen, 1986). At this respect, diversification allows managers to reduce their personal risk (Amihud and Lev, 1981), as well as increase their compensation, power and prestige (Jensen and Murphy, 1990). Moreover, managers of divisions that have a future perspective in the firm are encouraged to persuade the top management of the firm to conduct resources in their direction (Meyer et al., 1992). Jensen (1986) argues that managers of a multi-segment firm may be prone to invest any free cash flow to support organizational inefficiencies; in other words, they are encouraged to allocate the gains from profitable segments to outweigh the losses of non-profitable ones. Control and effort losses (increment of shirking) are commonly costs attributable to diversification; since the more complex become the segments operations the more difficult to manage the organization of all the resources, and consequently the differences of ideas between business appear more attenuated (Markides, 1992). The decision to incorporate efficient compensation for

multi-segment firms managers produce problems translated into cost for these firms because of incentives (Rotenberg and Saloner, 1994). As central management are quite far from segments managers depending on the organizational scheme, asymmetries of information start to emerge causing in some extent several costs of operating in different industries (Harris, et al. 1982). Finally, although diversification translates into lower financial risk, it may increase business risk given the different nature and characteristics of the businesses to be managed.

What is unquestionable is that managers of the multi-segment firm enjoy greater opportunities to undertake projects and greater resources to do so whenever diversification relaxes the constraints imposed by imperfect external capital markets. Also during the course of overinvestment in low performing-business, multi-segment firms create inefficient internal capital markets (Stulz, 1990); or due to internal power efforts that generate influence costs (Meyer et al., 1992; Rajan et al., 2000). This might lead them to overinvest resources (Stulz, 1990; Matsusaka and Nanda, 2002).

The debate about diversification being a value-creating or a value-destroying strategy has given rise to a closely related line of research based on the existence of a premium or a discount of the diversification strategy. In this context, the evidence is also mixed. For instance, Campa and Kedia (2002) and Villalonga (2004) show that, controlling for a firm propensity to diversify, there is a diversification premium but small. Theoretically, Maksimovic and Phillips (2002) show that, diversification may be a value creating strategy even if, overall, multi-segment firms have a lower value than single-segment firms. More specifically, they show that conglomerates are more valuated than small specialized firms, but when those firms are compared with their relative large specialized firms a discount emerge. Contrary to these arguments, there is also evidence that indicates that multi-segment firms trade at a discount relative to a

portfolio of single-segment firms (Berger and Ofek, 1995; Lamont, 1997; Shin and Stulz, 1998; Scharfstein, 1997; Rajan et al., 2000). Specifically, Berger and Ofek (1995) and Shin and Stulz (1998) provide empirical evidence supporting that multi-segment firms invest inefficiently and, consequently, trade at a discount in relation to similar constructed portfolios of single-segment firms. Particularly, Berger and Ofek (1995) explain the value destruction by means of overinvestment and cross-subsidization of multi-segment firms. Shin and Stulz (1998) find that divisional resources do not appear to be directed to segments with the most favourable investment opportunities. From another perspective, Ferris and Sarin (1997) argue that investors prefer focused firms since it is more convenient for them to achieve the desired level of risk diversification with pure-play firms. Consequently, diversified firms would trade at a discount because of lower transparency and lower liquidity. These studies provide empirical evidence on the value destroying effect of corporate diversification and, consequently, on the existence of a diversification discount.

Taking all this into account, we propose an analysis of the effect of diversification on market valuation, by focusing on the premium or discount that diversified firm's trade at. Consequently, we pose the two following alternative hypotheses:

Hypothesis 1a: Consistent with the diversification premium, diversified firms are more valuable than non-diversified firms.

Hypothesis 1b: Consistent with the diversification discount, diversified firms are less valuable than non-diversified firms.

To test this hypothesis, we propose the following basic model:

$$EV_{it} = \alpha_0 + \alpha_1 DIVER_{it} + \alpha_2 INV_{it} + \alpha_3 D_{it} + \alpha_4 IA_{it} + \alpha_5 CF_{it} + \alpha_6 SI_{it} + \varepsilon_{it} \qquad (1)$$

where EV_{it}, $DIVER_{it}$, INV_{it}, D_{it}, IA_{it}, CF_{it} and SI_{it} denote excess value, diversification, investment, debt, intangible assets, cash flow and size, respectively[4]. The dependent variable (EV_{it}) is intended to capture the comparison between the market value of diversified firm *i* and the market value of a portfolio of focused firms operating in a similar industry. We follow Berger and Ofek (1995) in computing the excess value as the logarithm of the market to imputed value ratio, in which imputed value is calculated as follows[5]:

$$IV = \sum_{i=1}^{n} SS_i \times \left[IND_i \left(V / SS \right)_{med} \right]$$

where SS_i are the sales for segment *i,* V is the actual firm value, and IND_i $(V/SS)_{med}$ is the multiple of firm value sales for the median single segment firm in the segment *i's* industry, and *n* is the total number of segments for the firm.

According to the construction of this variable, a positive coefficient of the diversification variable would support Hypothesis 1.a. Similarly, Hypothesis 1.b would hold under a negative coefficient of the diversification variable.

We propose two alternative measures of diversification ($DIVER_{it}$) that have been traditionally used in closely related research. The first one is a measure of Total

[4] The subscript *i* refers to the company and *t* refers to the time period. ε_{it} is the random disturbance.
[5] See Berger and Ofek (1995) for more details in the construction of this variable.

Entropy[6], calculated as $TE = \sum_{i=1}^{N} S_i \ln(1/S_i)$. The second one is a modified version of the Revenue-based in the Herfindahl index[7], calculated as $RH = 1 - \sum_{i=1}^{N} (Si)^2 \Big/ \left[\sum_{i=1}^{N} (Si)\right]^2$.

The investment variable (INV_{it}) and the replacement value of total assets are calculated as in Miguel and Pindado (2001). The replacement value of total assets is computed, $K_{it} = RF_{it} + (TA_{it} - BF_{it})$ where RF_{it} is the replacement value of tangible fixed assets, TA_{it} is the book value of total assets, and BF_{it} is the book value of tangible fixed assets. The latter two have been obtained from the firm's balance sheet and the first one has been calculated according to the proposals by Perfect and Wiles (1994). The net fixed assets are represented as NF_{it}, and BD_{it} is the book depreciation expense corresponding to year t, then we can obtain the value of investment: $I_{it}=NF_{it}-NF_{it-1}+BD_{it.}$ The debt ratio (D_{it}) is defined as the market value of long term debt to the market value of equity plus the market value of long term debt plus the book value of short term debt. The intangible assets variable (IA_{it}) is computed as the firm's intangible assets scaled by the replacement value of total assets. The cash flow variable (CF_{it}) is measured as earnings before interests and taxes plus the book depreciation expense plus provisions, scaled by the replacement value of total assets. Size (SI_{it}) is measured as the logarithm of the replacement value of total assets.

The basic model in (1) controls for other firm characteristics besides diversification that have been considered as determinants of excess value in the

[6] S_i is the share of a firm's total sales in 4- digit SIC industry i and N is the number of 4-digit SIC industries in which the firm operates. Total Entropy equals zero for a single business firm and it rises with the extent of diversity (see Jacquemine and Berry, 1979, and Palepu, 1985 for more details).

[7] The Revenue-based in the Herfindahl index (RH), is calculated across n business segments as the sum of the squares of each segment i's sales, (S_i), as a proportion of total sales. Thus, the closer RH is to zero, the more the firm's sales are concentrated within a few of its segments (see Berger and Ofek, 1995 for more details).

literature[8]. Let us know briefly explain the expected relationships between these variables and excess value.

The investment level is supposed to be higher for the segments of diversified companies, because diversification can create internal capital markets, which may increase investment efficiency (Stein, 1997). This argument would be supported by a positive effect of investment on the excess value of diversified firms. On the contrary, agency costs may be a source a potential investment distortions in diversified firms. Top management in a diversified firm enjoys greater opportunities to undertake projects, and also more resources to do so if diversification relaxes constrains imposed by imperfect external capital markets so that overinvestment may arise (Stulz, 1990; Matsusaka and Nanda, 2002). This argument would hold if a negative effect of investment on excess value is found.

Prior research suggests that firm diversification may be financed through increased leverage (Kochhar and Hitt, 1998). Thus, we include the debt variable in the excess value model because one of the benefits that multi-segment firms enjoy is the greater debt capacity as a result of the coinsurance effect. Weston (1970) and Chandler (1977) suggest that multi-segment firms have the ability to leverage economies of scale because they provide more efficient operations and more profitable lines of business than single-segment firms. These arguments and prior empirical results lead us to expect a positive effect of leverage on the excess value of diversified firms.

Previous studies reveal a positive relationship between intangible assets on various measures of firm value. This argument is consistent with the notion that the market positively assesses a firm's intangible assets (Lev and Sougiannis, 1996; Chan et

[8] As usual in the diversification literature, we use the same set of variables as Campa and Kedia (2002) to control for other firms' characteristics that help us understand the performance of multi-segment corporations.

al., 2001). Therefore, a positive effect of the variable of intangible assets on excess value is expected.

Servaes (1996) uses a firm's profitability as a factor to explain the value-destruction in multi-segment firms. He argues that firms with low profitability are likely to trade at a discount as compared to firms with higher levels of profitability. This leads us to expect a positive effect of cash flow on a firm's excess value.

Finally, most of the empirical studies of firm value use size variable since large companies contain different resources to use them in case of adverse environmental incontinences (Lee and Makhija, 2009). Moreover, a positive coefficient for size would support well-know arguments pointing to size as a value-creating factor via, for instance, scale economies and market power, or also that big companies are more prone to be diversified.

II.2.2. The Inverted U-Model of Diversification

Based upon the existence of both costs and benefits of diversification, the notion of an optimal level of diversification emerges. In fact, the transaction cost theory on multi-segment activity suggests that firm's must commit into bureaucratic costs to get economic attributions to increase in product segments (or expand its internalization); then, an optimal level of diversification emerges to balance these activities (Jones and Hill, 1988).

Consistent with the existence of an optimal level of diversification, Markides (1992) argues that as a firm becomes more diversified, it gets away from its principal business and the benefits of being a multi-segment firm at the margin decreases. As a result, Markides (1992) infers that beyond a certain point the marginal benefits from

diversification are best explained as a decreasing function. According to this argument, Grant et al. (1988) show that profitability increases with product diversity up to a certain point, and that it begins to decrease beyond such a point. In the same vein, the "Intermediate Model" proposed by Palich et al. (2000) suggests that diversification has positive revenues, but the returns fall beyond some point where the optimal level is reached. As the markets turn out to be more distant to the firm's core competences, the firm bit by bit losses its ability to leverage and, consequently, its competitive advantage and the benefits of the coinsurance effect begin to reduce.

According to these arguments about the existence of an optimal level of diversification, our second hypothesis predicts an inverted U model to describe the relationship between diversification and firm valuation:

Hypothesis 2: Diversification strategy first creates value and then, after a certain breakpoint, destroys value.

To test this hypothesis about the quadratic relationship between the diversification level and excess value, we extend the basic model in (1) by adding the square of the diversification measure:

$$EV_{it} = \alpha_0 + \alpha_1 DIVER_{it} + \alpha_2 DIVER^2_{it} + \alpha_3 INV_{it} + \alpha_4 D_{it} + \alpha_5 IA_{it} + \alpha_6 CF_{it} + \alpha_7 SI_{it} + \varepsilon_{it} \qquad (2)$$

II.2.3. The Effect of Relatedness on Firm Value

Using the resource-based theory arguments we know that economies of scope are emerging in firms with diversified activities since the business operations are exploited with commonly resources and capabilities easy to transfer across industries due the similitude or production excess. Under these circumstances firm's

diversification strategy turns out to be an excellent strategy to allocate resources and manage the organization scheme to leverage the firm's economic activities (Panzar and Willing, 1981). In fact, Panzar and Willing (1981) suggest that when the costs of producing separate outputs exceed the costs of joint production, firms can achieve economies of scope. In contrast, expansion into new business, which is non-related with its core business, could be inefficient if the skills and resources used by the firm are useless to leverage their existing capabilities (Rumelt, 1974).

Relatedness might mitigate the value loss from diversification. Related diversifiers account for economies of scope as one of the most several advantages (Seth, 1990) since the more related the business of the segments the most approachable the common resources to be exploited. Nayyar (1992) argues that firms that diversify and are able to do it in a related industry activity enjoy of greater success when their common resources are approachable and the firm use the benefits that being related conveys. For instance, Markides and Williamson (1994) analyze the labours across businesses units and obtain evidence of enough efficiency as asset amortization in that the firm is able to use economies of scope across business segments that can bring into play the same asset. Moreover, Barney (1997) emphasized the potential gains of relatedness due to learning curves, easy processes transmission via internal segments, and the facility to produce and distribute resources within the diversified firm. Additionally, relatedness reduces business risk in that businesses in the portfolio are of similar nature and share common characteristics, which make them easier to be managed. Lubatkin and O'Neill (1987) posit that related business acquisitions reduce the systematic risk despite the markets activities conditions.

However, unrelated strategies are characterized by business segments when they are diversified where no common resources (physical or knowledge) are combined and

the advantages are not more than financial (Rumelt, 1974). This financial economies gains surge when investments of the firm produce cost cuttings executed through the improved allocations of financial resources by taking advantages of the internal capital markets and the restructuration of their firm's specific assets. In fact, even in the absence of operational synergies, diversified firms may enjoy other benefits such as tax shields, given that interest expenses are tax deductible (Amit and Livnat, 1988). On the other hand, there are many ways in which unrelatedness might reduce value. It could be that managers have limited expertise and cannot effectively manage diverse businesses, or that unrelated segments have conflicting operational styles or corporate cultures. These explanations predict that unrelated diversity is negatively correlated with value.

The evidence from a substantial body of empirical research does not conclusively find the related strategy superior to the unrelated one, and it remains an unexplained enigma. On the one hand, there are numerous studies that find support for the superiority of related over unrelated diversification (Rumelt, 1974, 1982; Bettis, 1981; Markides and Williamson, 1994). On the other hand, there are many studies finding no significant relationship between diversification strategy and performance after controlling for relatedness (Christensen and Montgomery, 1981; Hill, 1983; Montgomery, 1985; Grant et al., 1988; Hill et al., 1992). In a recent study, Lim et al. (2009) argue that related and unrelated diversification do not differ systematically in the capital structure decisions of the multi-segment companies.

Berger and Ofek (1995) argue that industry diversification, on average, reduces value, and Comment and Jarrell (1995) provide evidence documenting the gains achieved by the refocusing firms. However, synergies can potentially arise when a firm shares input factors of production across multiple products or lines of business, giving rise to the hypothesis that product related diversification generates greater economic

value than a single-business focus and unrelated diversification (Rumelt, 1974, 1982; Bettis, 1981). That is, relatedness may contribute to mitigate the value loss from diversification, as extensive empirical evidence indicates (see, for instance, Lubatkin and O´Neill, 1987; Seth, 1990; Nayyar, 1992; Markides and Williamson, 1994; Barney, 1997).

These arguments and previous findings lead us to question the role played by relatedness in the premium or discount multi-segment firms trade at. In effect, if diversification is a value-creating strategy and, consequently, diversified firms trade at a premium, the choice of relatedness would translate into a higher market valuation; i.e., into a higher excess value. Note that this kind of result would be consistent with Hypothesis 1.a. In contrast, consistent with Hypothesis 1.b, diversification will destroy value and diversified firms will trade at a discount. Within this context, relatedness would mitigate this value destruction and the diversification discount would be lower.

Relying on these expectations, we pose our last hypothesis about the moderating role of relatedness on the relationship between diversification and excess value:

Hypothesis 3: Related diversification affects excess value more positively (or less negatively) than unrelated diversification.

To test Hypothesis 3 and capture the effect of relatedness on firm excess value, we extend the model in (2) by interacting diversification measures with a dummy variable that allows us to control for related and unrelated diversification. The resultant model would be as follows:

$$EV_{it} = \alpha_0 + (\alpha_1 + \theta_1 UD_{it})DIVER_{it} + (\alpha_2 + \theta_2 UD_{it})DIVER^2{}_{it} + \alpha_3 INV_{it} + \alpha_4 D_{it} + \alpha_5 IA_{it} + \alpha_6 CF_{it} + \alpha_7 SI_{it} + \varepsilon_{it} \qquad (3)$$

where UD_{it} is a dummy variable that takes the value of 1 for unrelated diversification, and 0 for related diversification. Relatedness is defined on the basis that industries *i* and *j* are classified into the same two-digit SIC code. This way, the coefficient of the diversification variable ($DIVER_{it}$) is α_1 under relatedness, since UD_{it} takes value zero, and it is $(\alpha_1 + \theta_1)$ under unrelatedness, since UD_{it} takes value one. Similarly, the coefficient of the square of the diversification variable ($DIVER^2_{it}$) is α_2 under relatedness, and it is $(\alpha_2 + \theta_2)$ under unrelatedness. In these cases, whenever the dummy variable takes value one, the statistical significance of the coefficient must be checked by performing a linear restriction test.

II.3. Data and Estimation Method

II.3.1 Data

To test the hypotheses posed in the previous sub-section, we use data from Eurozone countries. We have thus used an international database, Worldscope, as our source of information. Moreover, some additional data such as the growth of capital goods prices, the rate of interest of short term debt, and the rate of interest of long term debt, have been extracted from the Main Economic Indicators published by the Organization for Economic Cooperation and Development (OECD).

Our sample comprises data from all Eurozone firms reported on the Worldscope data base. For the construction of the diversification indicators we use firms with reported industry segment data. Like Berger and Ofek (1995) and Campa and Kedia (2002), we exclude firm-years when firms report segments in the financial sector (SIC 6000-6999),

firm-years with a missing value of total assets, and firm-years in which the total sales are smaller than the sum of their segments by more than one percent. We also eliminate years in which the firm did not report four-digit SIC codes for all its segments[9].

For each country we constructed an unbalanced panel of non-financial companies[10] whose information was available for a least six consecutive years from 1990 to 2003. This strong requirement is a necessary condition since we lost one-year data in the construction of some variables (the investment variable, for instance), we lost another year-data because of the estimation of the model in first differences, and four consecutive year information is required in order to test for second-order serial correlation, as Arellano and Bond (1991) point out. We need to test for the second-order serial correlation because our estimation method, the Generalized Method of Moments (GMM) is based on this assumption.

Two of the twelve Eurozone countries[11] have been excluded from our analysis for different reasons. As occurs in La Porta et al. (2000), Luxembourg has been removed from our sample because there are just a few firms listed in Luxembourg's stock exchange, and The Netherlands because we have no data enough to the construction of some variables in this country. The structure of the samples by number of companies and number of observations per country is provided in Table II.1. The resultant unbalanced panel comprises 609 companies and 5,004 observations. Using an unbalanced panel for a long period (13 years) is the best way to solve the survival bias caused because some firms could be delisted and, consequently, be dropped from database. Finally, Table II.2 provides summary statistics (mean, standard deviation, minimum and maximum) of the variables used in the study. Moreover, in Table II.2, we

[9] This restriction is necessary since we are trying to capture the relation between segment business units.
[10] We restrict our analysis to non-financial companies because financial companies have their own specificity.
[11] The eurozone currently comprises twelve countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, and Spain.

use the excess value measure and find preliminary results on value destruction in multi-segment firms, as compared to single-ones.

Table II.1.

Structure of the Sample by Countries

Country	Number of companies	Percentage of companies	Number of observations	Percentage of observations
Germany	185	30.38	1,538	30.74
France	166	27.26	1,325	26.48
Italy	54	8.87	467	9.33
Spain	44	7.22	359	7,17
Belgium	32	5.25	295	5.90
Finland	31	5.09	260	5.20
Ireland	26	4.27	228	4.56
Austria	27	4.43	222	4.44
Portugal	22	3.61	160	3.20
Greece	22	3.61	150	3.00
Total	609	100.00	5,004	100.00

Data of companies for which the information is available for at least five consecutive years between 1990 and 2003 were extracted. After removing the first-year data, only used to construct several variables, the resultant samples comprise 185 companies (1,538 observations) for Germany, 166 companies (1,325 observations) for France, 54 companies (467 observations) for the Italy, 44 companies (359 observations) for Spain, 32 companies (295 observations) for Belgium, 31 companies (260 observations) for Finland, 26 companies (228 observations) for Ireland, 27 companies (222 observations) for Austria, 22 companies (160 observations) for Portugal, and 22 companies (150 observations) for Greece.

Table II.2.

Summary Statistics

	SINGLE-SEGMENT 1691 OBS					MULTI-SEGMENT 3313 OBS					TOTAL FIRMS 5004 OBS				
	MEAN	MEDIAN	SD	MIN	MAX	MEAN	MEDIAN	SD	MIN	MAX	MEAN	MEDIAN	SD	MIN	MAX
EV_{it}	-0.0045	0.0044	0.6787	-1.366	1.360	-0.0922	-0.1003	0.6257	-1.364	1.364	-0.0625	-0.0748	0.6454	-1.366	1.364
TE_{it}	0.0000	0	0.0000	0	0.0001	0.8759	0.8998	0.3993	0.0007	1.604	0.5799	0.5842	0.5265	0	1.604
RH_{it}	0	0	0	0	0	0.4877	0.5147	0.2088	0.0001	0.7997	0.3229	0.3483	0.2865	0	0.7997
INV_{it}	0.0607	0.0465	0.0753	-0.7920	0.5658	0.0598	0.0511	0.0610	-0.612	0.6983	0.0601	0.0498	0.0661	-0.7920	0.6983
D_{it}	0.0707	0.0407	0.0821	0	0.5728	0.0985	0.0691	0.0962	0	0.5301	0.0891	0.0605	0.0926	0	0.5728
IA_{it}	0.0385	0.0089	0.0673	0	0.4888	0.0703	0.0343	0.0890	0	0.5863	0.0596	0.0234	0.0833	0	0.5863
CF_{it}	0.0423	0.0454	0.0636	-0.6992	0.2877	0.0411	0.0439	0.0495	-0.4333	0.5170	0.0415	0.0443	0.0544	-0.6992	0.5169
SI_{it}	11.79	11.65	1.558	7.343	17.68	13.19	13.013	1.859	7.536	19.14	12.71	12.52	1.881	7.343	19.13

EV_{it} denotes a firm's excess value, TE_{it} is the Total Entropy index of diversification, RH_{it} is the Revenue based in the Herfindahl index of diversification, INV_{it} denotes investment, D_{it} stands for the debt ratio, IA_{it} denotes the intangible assets, CF_{it} is the cash flow and SI_{it} is the firm's size.

II.3.2. Estimation method

Our models have been estimated by using the panel data methodology on the multi-segment sample described in Table II.2. Two issues were considered in making this choice. First, unlike cross-sectional analysis, panel data allow us to control for individual heterogeneity. This point is crucial in our study because the decision of undertaking diversification strategies in a firm is very closely related to the specificity of each company. Therefore, to eliminate the risk of obtaining biased results, we have controlled for such heterogeneity by modelling it as an individual effect, η_i, which is then eliminated by taking first differences of the variables. Consequently, the error term in our models, ε_{it}, has been split into four components. First, the above mentioned individual or firm-specific effect, η_i. Second, d_t measures the time-specific effect by the corresponding time dummy variables, so that we can control for the effects of macroeconomic variables on the diversification decision. Third, since our models are estimated using data of several countries, we have also included country dummy variables (c_i). Finally, v_{it} is the random disturbance.

The second issue we can deal with by using the panel data methodology is the endogeneity problem. Particularly, the literature concerning the diversification discount examines whether such a discount is the result of endogenous choices of the firm. Lang and Stulz (1994), for example, find that diversified firms trade at a discount even before diversifying. Focusing on firms that diversify through acquisitions, Graham et al. (2002) find that the diversification discount can be explained by the lower values of the firms that are acquired. Campa and Kedia (2002) suggest that the discount is considerably reduced with proper controls for the endogeneity of the diversification decision.

Consequently, to solve the endogeneity problem, our models have been estimated by using instruments. To be exact, we have used all the right-hand-side variables in the models lagged from t-1to t-4 as instruments for the equations in differences, and t-1 for the equations in levels as Blundell and Bond (1998) suggest when derive the system estimator used in our analysis.

Finally, we have checked for the potential misspecification of the models. First, we use the Hansen J statistic of over-identifying restrictions in order to test the absence of correlation between the instruments and the error term. Tables II.3 and II.4 show that the instruments used are valid. Second, we use the m_2 statistic, developed by Arellano and Bond (1991), in order to test for lack of second-order serial correlation in the first-difference residual. Tables II.3 and II.4 show that there is no a problem of second-order serial correlation in our models (see m_2). Note that although there is first-order serial correlation (see m_1), this is caused by the first-difference transformation of the model and, consequently, it does not represent a specification problem of the models. Third, our results in Tables II.3 and II.4 provide good results for the following three Wald tests: z_1 is a test of the joint significance of the reported coefficients; z_2 is a test of the joint significance of the time dummies; and z_3 is a test of the joint significance of the country dummies.

II.4. Results

In this sub-section we present the analysis results of the diversification effect on market valuation by focusing on the premium or discount that diversified firms trade at. We first present the results of our basic model, which includes besides diversification a set of control variables that have been traditionally used in diversification literature. We

then comment on the evidence obtained from the estimation of the value model extended by incorporating the square of the diversification variable. This extended model allows us to test the existence of potential non-linearities in the relationship between diversification and firm excess value. Third, we test the implications of relatedness for the effect of diversification on firm excess value.

II.4.1. Diversification and excess value

The results of the GMM estimation of our basic excess value model in (1) are provided in Columns I and II of Table II.3 for the total entropy measure (TE) and the Revenue-based in the Herfindahl index (RH), respectively. The estimated coefficient of diversification is negative using both measures, which supports Hypothesis 1.b about the negative effect of a firm's level of diversification on market valuation. That is, a firm's diversification strategy destroys value, which is consistent with arguments pointing out that diversification: i) creates inefficient internal capital markets during the course of overinvestment in low performing-business (Stulz, 1990); ii) generates influence costs (Rajan et al., 2000); iii) encourages managers to invest free cash flows to support organizational inefficiencies (Jensen, 1986); iv) generates control and effort losses, coordination costs and other diseconomies related to organization, and discrepancy for ideas between businesses (Markides, 1992), among others. That is, consistent with Lang and Stulz (1994), Berger and Ofek (1995), Ferris and Sarin (1997), Shin and Stulz (1998) and Lamont and Polk (2001), multi-segment firms are less valuable than single-segment firms, which leads diversified firms to trade at a discount. Let us now comment on the results obtained for the control variables, which remain identical when using the two alternative measures of diversification.

Table II.3.

Estimation results of the Excess Value Model

	I (Total Entropy)	II (Revenue-based Herfindahl index)	III (Total Entropy)	IV (Revenue based Herfindahl index)
$(DIVER)_{it}$	-0.2001* (0.0248)	-0.3205* (0.0531)	0.1858* (0.0514)	0.5041* (0.0970)
$(DIVER)^2_{it}$			-0.2252* (0.0306)	-0.9760* (0.1168)
$(INV)_{it}$	0.7579* (0.0444)	0.7407* (0.0438)	0.7630* (0.0260)	0.7089* (0.0248)
$(D)_{it}$	-2.5597* (0.0832)	-2.5803* (0.0816)	-2.4212* (0.0489)	-2.4363* (0.04873)
$(IA)_{it}$	0.4097 (0.1078)	0.4247* (0.1103)	0.3015* (0.0716)	0.3995* (0.0747)
$(CF)_{it}$	0.9391* (0.0901)	0.9674* (0.0914)	1.0521* (0.0644)	1.1284* (0.0639)
$(SI)_{it}$	0.1270* (0.0099)	0.1243* (0.0096)	0.1251* (0.0058)	0.1170* (0.0057)
z_1	307.58 (6)	302.92 (6)	833.97 (7)	879.09(7)
z_2	67.87 (12)	65.58 (12)	175.11 (12)	169.15(12)
z_3	69.81 (9)	62.75 (9)	73.68 (9)	70.65(9)
m_1	-10.48	-10.53	-10.44	-10.47
m_2	-0.34	-0.39	-0.37	-0.41
Hansen	338.73 (324)	331.12 (324)	379.93 (376)	375.51 (376)

The regressions are performed by using the panel described in Table II.1. The remainder of the variables is defined in Table II.2. The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) *,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; iv) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation; v) Hansen is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null of no correlation between the instruments and the error term, degrees of freedom in parentheses.

The positive coefficient of investment indicates that internal capital markets may increase investment efficiency in segments of diversified companies (Stein, 1997). The negative coefficient of the debt variable does not corroborate the coinsurance effect (Weston, 1970; Chandler, 1977), which suggests that diversified firms benefit from greater advantages associated with debt financing and this translates into a higher excess value. Consistent with Denis et al. (2002), this result confirms that the costs of debt financing (mainly agency and financial distress costs) more than offset its potential benefits. Also as expected, a firm's intangible assets and cash flow positively affect excess value, pointing to the positive assessment of the market on both characteristics. Finally, size shows a positive coefficient, which supports that size translates into higher excess value of diversified firms via economies of scale and market power.

II.4.2. The inverted U-Model

Despite finding evidence on diversification being a value-destroying strategy, there is previous evidence that casts doubts on the existence of a linear relationship between diversification and value. As we discussed in Sub-section II.2.1.1, according to Markides (1992) and the Intermediate Model proposed by Palich et al. (2000), a quadratic specification better describes the functional form of this relation[12]. The results of the estimation of the quadratic model in (2) are presented in Columns III and IV of Table II.3 for TE and RH measures of diversification, respectively. The coefficient of the diversification variable is positive and the coefficient of its square is negative when using both alternatives. Moreover, both coefficients are statistically significant, which indicates that the relationship between diversification and excess value is quadratic

[12] Note that despite obtaining a significant coefficient on the diversification measure for the linear specification, we attempt for a non-linear model in order to improve the Wald test on the right-hand-side variables and get a better explanation power.

rather than linear. Like in Rumelt (1982), who found a pattern of declining profitability with the increment of diversity, we find a non-linear relationship between diversification and firm valuation. This result corroborates previous evidence provide by, for instance, Grant et al. (1988), Markides (1992).

The finding of a quadratic functional form for the relationship between diversification and value implies that there is a breakpoint which can be optimally derived by differentiating value in (2) with respect to diversification. Letting this partial derivative equal zero, this breakpoint is DIV* $=-(\alpha_1/2\alpha_2)$. Since α_1 and α_2 present opposite signs, then DIV* is a maximum; that is, an optimal level of diversification. This finding strongly supports Hypothesis 2. Specifically, we find that the optimal level of diversification is 0.4127 in the model with the Total Entropy measure, which implies that, all other things being equal, increases in a firm's diversification level create value until this optimum is reached, and then diversification turns into a value-destroying strategy. The optimal level of diversification found in the model with the Revenue-based in the Herfindahl index is 0.2583. This result supports the same trend in the relationship. Note that the difference between these two optimal levels of diversification stems from the differences between the two measures of diversification used: Total Entropy and the Revenue-based in the Herfindahl index. The important point is that in both cases the tendency of value to first increase and beyond a certain point decrease with diversification is supported. In short, our results are consistent with the existence of an optimal level of diversification and, consequently, with the inverted U model that stems from the Intermediate Model proposed by Palich et al. (2000). Our evidence is also in accordance with diversification having both value-enhancing and value-reducing effects (Berger and Ofek, 1995). Our results are also in line with the recent finding of Pierce

(2009) who posits that firms have limits in expansion that should be recognized through diversification strategies.

As can be seen in Columns III and IV of Table II.3, the estimated coefficients of the control variables remain identical in sign as in the basic model, thus corroborating the above commented relations.

II.4.3. The effect of Relatedness

Finally, we propose a third extension of the excess value model that is intended to control for the moderating role of relatedness in the relationship between diversification and excess value. With this purpose, we estimated the model in (3) in which diversification variables are interacted with a dummy variable that allows us to control for related and unrelated diversification. The estimated results of this extended model are presented in Columns I and II of Table II.4 for TE and RH measures of diversification, respectively. Let us comment on the results obtained for the TE measure first. As shown in Column I, the coefficient of related diversification is positive (α_1= 0.3063) and its square is negative (α_2= –0.3093). These results corroborate our previous finding of the existence of a quadratic relationship between diversification and value, and supporting that an optimal level of diversification exists. The optimally derived breakpoint is 0.4951, suggesting that related diversification creates value until reaching this level, being value-destroying beyond it.

We find the same pattern regarding non-related diversification, which totally confirms the non-linearity of the relationship between diversity and value. Additionally, two interesting results are found. First, the coefficient of non-related diversification is

positive ($\alpha_1 + \theta_1 = 0.2218$, which is statistically significant, see t_1 in Table II.4) but smaller than the one obtained for related diversification. This result suggests that related diversification is more value-creating than non-related diversification supporting Hypothesis 3. This evidence is consistent with previous research pointing to the potential benefits of relatedness (Reed and Luffman, 1986; Nayyar, 1992). Second, the breakpoint derived for the relationship between non-related diversification and value is 0.4139, which compared to the one obtained for related diversification (0.4951) suggests that non-related diversification turns into a value-destroying strategy at lower levels than related diversification. In other words, the value destruction associated with multiple segment firms may be counterbalanced with gains that can be achieved by refocusing firms (Comment and Jarrell, 1995; John and Ofek, 1995).

As can be seen in Column II of Table II.4, the results obtained for the model with the RH measure of diversification totally confirm the above commented findings.

All the other variables in the model show significant coefficients, and the same sign as in previous estimations.

Table II.4.

Estimation results of the Extended Excess Value Model

	I (Total entropy)	II (Revenue based Herfindahl index)
$(DIVER)_{it}$	0.3063*	1.1120*
	(0.0352)	(0.0626)
$(DIVER\_REL)_{it}$	-0.0844*	-0.5022*
	(0.0120)	(0.0365)
$(DIVER)^2_{it}$	-0.3093*	-1.8353
	(0.0203)	(0.0779)
$(DIVER^2\_REL)_{it}$	0.0414*	0.7188*
	(0.0090)	(0.0535)
$(INV)_{it}$	0.7839*	0.7605*
	(0.0178)	(0.0175)
$(D)_{it}$	-2.4494*	-2.4310*
	(0.0302)	(0.0209)
$(IA)_{it}$	0.5982*	0.6048*
	(0.0483)	(0.0295)
$(CF)_{it}$	1.0981*	1.1565*
	(0.0606)	(0.0348)
$(SI)_{it}$	0.0969*	0.0870*
	(0.0029)	(0.0021)
t_1	6.9824	11.9205
t_2	-15.2921	-19.9764
z_1	2521.58(9)	5731.27(9)
z_2	1124.09(12)	1633.34(12)
z_3	271.64(9)	462.70(9)
m_1	-10.47	-10.47
m_2	-0.36	-0.44
Hansen	427.03	421.43
	(480)	(480)

The regressions are performed by using the panel described in Table II.1. The remainder of the variables is defined in Table II.2. The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) *,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) t is the t-statistic for the linear restriction test under the null hypothesis of no significance; iv) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; v) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation; vi) Hansen is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null of no correlation between the instruments and the error term, degrees of freedom in parentheses.

II.5. Conclusions

This chapter provides a test for the effect of the diversification strategy on a firm's valuation taking into account the type and levels of diversification in the multi-segment firms in the Eurozone countries. To achieve this aim, we first propose a basic model in which a firm's excess value is explained, besides diversification, by a set of control variables commonly used in previous diversification research. This model is then extended to test the curvilinear relationship between diversification and excess value. Finally, we incorporate relatedness into the model to check the effect of this type of diversification on firm value as compared to that of unrelatedness.

Our results show that the diversification strategy does have an impact on the value of firms in Eurozone countries, after controlling for traditional determinants of value such as investment, debt, cash flow, intangible assets and size. Our study contributes to understanding the implications of the diversification discount by focusing on the premium or discount that diversified firms trade at. Preliminary results seem to indicate that the diversification strategy leads to a reduction of firm value and that multi-segment firms are less valuable than single-segment firms. Moreover, a more accurate analysis shows evidence of a curvilinear relation between diversification and excess value. Hence, there is an optimal level of diversification so that the diversification strategy first creates value and then, after a certain breakpoint, destroys value. Additionally, our evidence provides empirical support for the idea that related diversification is more value-creating than non-related diversification. This result is consistent with the potential benefits of relatedness, suggesting that non-related diversification turns into a value-destroying strategy at lower levels than related diversification. Relatedness thus moderates the discount value of multi-segment firms,

when accounting for the moderating effect of the type of diversification in its relationship with excess value.

CHAPTER III

GLOBAL DIVERSIFICATION AND FIRM VALUE: THE EFFECT OF PRODUCT DIVERSIFICATION, LEGAL SYSTEMS AND FINANCIAL SYSTEMS.

III.I. Introduction

The purpose of this chapter is to analyse the effects of product diversification, legal systems and financial systems on the relationship between global diversification and firm value. While global diversification and its relationship with firm value has been a topic of interest in the international business and management literatures (Brock and Yaffe, 2008), the results are far from unanimous. On the one hand, operating in new geographic areas allows firms to gain the benefits of operating in new markets (Bodnar, et al., 1999, Hagendorff et al., 2008). On the other hand, scholars have found that as firms increase their operations in global markets they regularly confront challenges such as the initial costs related to the 'liability of foreignness' (Hymer, 1976; Zaheer, 1995). In addition to these two opposing views of globalization, recent research has increasingly emphasised potentially moderating effects such as the effect of product diversification (Geringer et. al., 1989; Hitt et al., 1997; Kim et al., 1989, 1993; Wan and Hoskisson, 2003) and the effects of the institutional environment (Thomas, 2005).

This study contributes to the global diversification literature by being the first to analyse comprehensively, via the panel data methodology on a large sample of firms

across many countries for the period 1990 to 2003, the separate and joint influence of product diversification, legal systems and financial systems on the relationship between global diversification and firm value.

The major results of the investigation are as follows. First, we document the impact of the globalization strategy on firm value by regressing excess value on global diversification and, find that global firms trade at a discount. Second, we study the potential moderating role played by product diversification on such a discount. The results show that the level of product diversification exerts a strong influence on the market valuation of global firms with higher levels of product diversification being more destructive of value. Third, we investigate how global diversification impacts on firm value after accounting for the legal environment. The results show that globally diversified firms operating in a common law legal environment trade at a premium, whereas their civil law counterparts trade at a discount Fourth, we examine the impact of the financial environment and we find that global diversification is a value creating strategy for firms involved in market-oriented systems but it is a value destroying strategy for firms in bank-oriented systems. Finally, we analyze how the premium or discount of global firms operating in different legal and financial systems is influenced by the degree of product diversification. The results show that lower levels of product diversification reduce the discount of global firms in civil law and bank oriented systems and increase the premium traded by global firms in common law and market-oriented systems.

The structure of the chapter is organised as follows. The second Sub-section develops the underlying hypotheses, while Sub-section three presents the empirical models. Sub-section four describes the data and estimation methods and Sub-section five presents the results. The last Sub-section offers conclusions.

III.2. Theoretical framework and hypotheses

III.2.1. Is Global Diversification Good?

Global diversification confers on firms different advantages in that firms operating in more than one country are able to exploit certain benefits that domestic firms cannot access. In essence, having operations spread among different markets and environments permits firms to leverage the positional differences that exist separately in each of them.

Internationalization theory explains the existence of global firms on the basis that they are able to benefit from internalizing activities across international markets (Hymer, 1976). Moreover, operating in multiple locations also offers increased opportunities for learning and knowledge acquisition that engenders innovation; in other words, experience gained from adapting to global activities translates into better skills and cost reduction (Kogut, 1985; Hitt et al., 1997). In fact, since firms use better their resources and are more expertise in knowledge the circumstances to be involved in global markets are more favourable (Tuppura et al., 2008).

Furthermore, global diversification allows firms to enjoy greater economies of scale and scope (Kogut, 1985; Grant et al., 1988; Kim et al., 1989, 1993)[13]. This integration of activities across borders permits global firms to make use of product standardization, rationalizing production and/or effectively allocating resources (Kobrin, 1991). The capacity to use these advantages to gain benefits from the correct

[13] The multinational firm creates an additional string of options that it can exercise upon occurrence of particular outcomes - such as the location to declare profits, the appropriate market to concentrate market power and the low-cost location to raise capital.

exploitation of the resources acquired[14] across global segments might result in higher market value (Delios and Beamish, 1999).

Global diversification also provides firms with the ability to grow when prospective market opportunities arise (Buhner, 1987). Associated increments in market power allow firms that have operations and sales in more than one country to shift them from less-profitable segments to more profitable ones as markets move naturally (Thomas and Eden, 2004) – more specifically, increments in market power help to diminish costs and enhance income (Kogut, 1985). In addition, spreading across global markets helps to reduce fluctuations in revenue (Kim et al., 1993) and source lower cost factor inputs by enabling arbitrage of differences in input and output markets (Hennart, 1982). In general, the literature argues that global firms might be able to exploit a variety of market conditions via their production networks and the flexibility of their cost structures (Kogut and Kulatilaka, 1994).

Finally, the governance costs of having cross-border business segments under common administrative control is likely to be less than the cost of having business segments under separate administrative regimes (Caves, 1996) because the experience and skills of the central managers are to a large extent reusable in the different geographic segments.

All the above arguments suggest a higher valuation of multinational firms over domestic firms, showing that increasing levels of global diversification result in higher market value.

Contrary to the above arguments, some scholars suggest that global diversification does not always create value for the firm (e.g., Zaheer, 1995) because of the costs associated with working with cross border business units (Hymer, 1976).

[14] These types of resources are known in the literature as "proprietary assets" (see, Hennart, 1982; Caves, 1996).

Specifically, the costs of global diversification are typified by the problems of the liabilities of newness and foreignness (Hymer, 1976;Cheng and Yung, 2008), so that the management of global firms cannot conduct segment business activities as effectively as local firms. Firms have to face higher or lower liabilities of foreignness depending on the structural dimensions of the markets represented by their global diversification, such as operating in markets with different cultural values, levels of development or institutions, and their skills and experience in managing entry into and operating in foreign markets. Managers in multinationals also have to confront challenges when developing and organizing a new business in a different geography because of the need to understand the norms of local management and the difficulties of engaging effectively in local business networks. These challenges can put a new business unit in a 'weakened' position, as compared to an established firm in the target market, and can reduce its competitiveness. These liabilities, however, tend to decrease as a firm's subsidiaries build and improve reputations and legitimacy in the host countries in which they operate (Barkema et al., 1996).

These arguments are added to by transaction cost theory and managerial theory. Using transaction cost theory to explain the relationship between global diversification and firm value leads us to expect that the governance costs rise as the firm becomes more 'distant' from its core business segment (Hitt et al., 1997) because the more distant the operational markets, the more dissimilar the firm's functions. Additionally, information tends to be more asymmetric across segments and borders, so managers will have greater difficulties in administrating the firm and, subsequently, transaction and coordination costs will increase with the degree of global diversification (Jones and Hill, 1988).

In the same vein, managerial theory highlights that global diversification has a negative effect on firm value. The difficulties associated with running a global firm gives managers more opportunities to pursue their own interests and makes it harder for shareholders to monitor management decisions because of complex corporate structures (Jensen, 1986). Therefore, the divergence of interests between managers and shareholders is likely to reduce the market value of global firms. In addition, global diversification will have negative effects on market value because it is more beneficial for managers to look for personal prestige than for shareholder value (Denis et al., 2002). For instance, Denis et al. (2002) use an excess value framework to examine the implications of global business operations and find that global diversification is associated with an average value discount of 18%. They explain the global diversification discount on the basis of the agency perspective. Since more diversified firms are less transparent than single domestic firms, diversification makes it harder for boards and other internal control systems to prevent managers from taking sub-optimal decisions. Doukas and Kan (2006) also use an excess value approach and find that global diversification has a negative impact on shareholder value. They attribute the result to the reason that the more globally diversified the firm, the more complex its operations, the more severe their asymmetric information problems and, consequently, the more pronounced their discount as compared to single segment domestic firms.

From the discussion above, it should be clear that there is some controversy in the literature about global diversification being a value-creating strategy or, on the contrary, a value-destroying strategy. Overall, this leads us to pose the following two hypotheses about the effect of globalization:

Hypothesis 1a: According to internationalization theory and the advantages of being in international markets, globally diversified firms trade at a premium.

Hypothesis 1b: Because of agency, transaction and coordination costs, globally diversified firms trade at a discount.

III.2.2. Do Firms Benefit from Diversifying in Both Business and Global Segments?

Global and product diversification play an important role in a firm's strategies (Hitt et al., 1994). Firms can grow in new product segments and/or by also having new business units in other geographic markets and this differentiates between product and global diversification. In other words, product diversification works in different industries or business segments, whereas global diversification works in different countries or global markets (Grant et al., 1988).

There are arguments supporting the benefits of being diversified in business and international segments at the same time. Product diversified firms may create the operational structures, capabilities and abilities in their existing operations so as to diminish the transaction costs of cross-border growth, with the knowledge and experience obtained from administrating product diversification helping to construct capabilities in managing global diversification activities[15] (Hitt et al., 1997). Furthermore, product diversified firms frequently use specific policies and mechanisms to stimulate support or generate strategic competition amongst business units to achieve a higher market value (Hill et al., 1992) and obtain superior market values than non diversified companies (Lin and Su, 2008). Time spent working in different host product

[15] It is important to highlight these mechanisms since global firms present differences in the capabilities and resources that they have Huang, et al. (2008).

markets gives firm skills, experience and knowledge which it can leverage to reduce transaction costs across global markets (Hitt, et al., 1997). In addition, the market opportunities offered by foreign operations provide multi-segment firms economies of scale and scope arising from the interdependencies across business units and gives firms greater opportunities to achieve synergies from product diversity as they expand into global markets (Buhner, 1987). Accordingly, economies of scale and scope may work better for multi-segment firms in global markets. Moreover, the sharing of the core competences among different business segments and international segments gives multinationals the opportunity to benefit overall from the situation (Hamel, 1991).

On the other hand, there are also arguments that point to the higher costs born by globally diversified firms that operate in different business segments. For instance, as firms increase their level of global diversification, it may be problematic for top managers to evaluate the information provided by business units given their varied markets. The asymmetric information problem might also be higher if those global firms which are also involved in product diversification strategies; managers in these situations will have greater latitude to pursue their own interests given the difficulties of precisely defining correct optimisation strategies (Hitt et al., 1992). Another stream of literature points to the difficulties of adjusting a business to different external environments. Ruigrok and Wagner (2003) argue that diversified firms have their specific structures, systems, and internal operations, and that due to this specificity they sometimes are not successful in fitting into new competitive environments.

Prior empirical evidence on the joint effects of product and global diversification is also mixed. For example, Denis et al. (2002) find that the value discount of firms that are both industrially and globally diversified is significantly larger than the discount associated with being either industrially or globally diversified. This result is supported

by Moeller and Schlingemann (2005). In contrast, Hitt et al. (1997) find that product diversification enhances the performance of global diversified firms; and Kim et al. (1989) find that product diversification is more beneficial in global firms. Similarly, Doukas and Lang (2003) argue that the gains of expanding the core business overseas are considerably larger in multi-segment firms than in single-segment firms.

Despite the lack of unanimous evidence, the above arguments and empirical evidence agree on the existence of an interaction effect between global and product diversification. Accordingly our second hypothesis is as follows:

Hypothesis 2: The effect of global diversification on firm value is moderated by the degree of product diversification.

III.2.3. Does the Institutional Environment Matter?

Early studies (Hymer, 1976; Leftwich, 1974) on international business offer explanations as to why firms might operate in domestic and global markets. Research on international business strategies, according to the resource based and industrial organization theories, has emphasized that institutional differences (such as economic, social, cultural, legal and political) across countries affect the revenues of global firms. Globally diversified firms have to face different institutional factors that contribute to the complexity of their operations – for example, government regulations, trade laws and currency fluctuations (Sundaram and Black, 1992).

Institutional factors may exert a degree of control over global firms. Since institutions are considered as regulators of the social environment and cooperation among social entities, formal and informal behavioral rules exist (North, 1990). The

market value of firms across global markets will, therefore, be dissimilar because institutions are developed and sustained through highly localized and path dependent processes in any given country (Makino et al., 2004). Hence, since the stability and efficiency of the particular institutions define the costs of working in different markets, then firm value will vary according to the specific country (North, 1990; Henisz, 2000).

Organizational evolution theory explains that as firms grow, differences in institutional conditions create managerial difficulties that might be represented as new managerial inconveniences (Mintzberg and Waters, 1982). In short, the firm which expands globally has to align its operations with changing conditions in different markets across the globe. The ease with which it achieves this alignment will, of course, affect its market value (Ruigrok and Wagner, 2003). For example, Wan and Hoskisson (2003) found that even among institutionally more developed countries, such as those in Western Europe, environmental differences, including institutional factors, still have a significant impact on the relationships between product and global diversification strategies and firm value.

III.2.3.1. Legal systems.

Although the linkages between legal and market systems have been explored (Shleifer and Vishny, 1997; La Porta et al., 1997, 1998, 2000, 2002; Stulz, 1999) the literature on the legal dimensions of globalization is relatively scarce (Oxelheim and Randøy, 2005; Birkinshaw et al., 2006).

The motivation for some of the arguments is Hayek's (1960) study on the superiority of English to French legal traditions. In Hayek's analysis the spontaneous order represented by the *common law* is more consistent with individual liberty than the

more rationalist and constructivist (and, therefore, more interventionist) tendencies of the *civil law*. The common law is associated with fewer government restrictions on economic and other liberties. If common law countries indeed provide greater freedom to their citizens, they should experience more rapid economic growth.

Arguments about legal systems are provided by La Porta et al. (1997) who explain that there are considerable differences between the levels of investor protection in countries with different legal traditions. With this aim, they use the legal tradition as an exogenous variable to explain the differences in the legal protection for investors (shareholders and creditors) across countries. In their research they separate the legal world into two legal traditions: common law (e.g., the UK, the US, Canada and Ireland) and civil law (e.g., Continental European Countries and Japan). They studied the implications of the differences of investor protection across countries, regardless of their obvious association with particular modes of corporate governance, and found the raising of external finance easier in common law countries than civil law countries. More specifically, they found that countries with common law legal origins have the best access to equity markets, whereas French legal origin countries have the worst. They attribute the inferior development of capital markets in civil countries to the relative deficiency of investor protection.

In the field of global diversification research there is little empirical research on the impact of the legal system on diversification strategies. For example, Moeller and Schlingemann (2005) attempt to study whether global diversification varies across different institutional environments but find no support. Ferris et al. (2007) find a reduction in the discount for industrially and globally diversified firms and better excess values in civil law countries. In this vein, Fauver et al. (2003) find that the discount of diversified firms is less pronounced in countries where the legal system is civil law in

origin. They also find that product diversified firms operating in countries with English legal system origins trade at a substantial discount. In a subsequent study about global diversification, Fauver et al. (2004) find that the market value of U.S. global firms is discounted, while this is not the case for UK and German global firms. The argument behind these results relies on the fact that the benefits of global diversification (in terms of internal markets) are more valuable for firms in civil law countries where it is more difficult to raise of external finance.

Overall, there is not a definitive answer to the question as to how the legal system influences the relationship between market value and global diversification. On the one hand, a better valuation of global firms in common law environments may be due to the easier access to debt and equity markets, or to stronger investor protection. On the other hand, a superior market valuation for global firms in civil law countries may be explained by their ability to better exploit the characteristics of internal markets created during globally diversification. Accordingly, the reported evidence leads to the following hypothesis:

Hypothesis 3: The effect of global diversification on firm value depends on the legal tradition (common versus civil) of the home country.

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III.2.3.2. Financial systems.

An important long-standing issue in corporate finance has been the relative benefits of banks and financial markets as providers of capital. The key question is whether the orientation of a country's financial system (bank or market-based) has any impact on firm value, and if this impact is important for global firms. In general, it is

considered that bank-oriented financial systems are predominantly found in continental Europe and Japan, and the typical examples of capital-market oriented systems are the US and UK.

It is widely recognized that markets as well as banks are important for the firm's goals consecutions due that these systems perform crucial functions in the economy as: i) to provide a better risk sharing, ii) exert a monitoring effect, iii) facilitation in capital formation, and iv) information advantages on the production. Banks and markets have been explained from diverse backgrounds. Comments are selected from the notion that the orientation of the financial system has no real implications to arguments on the superiority of the one system over another. A mediated opinion is the one positing that the effectiveness of a particular financial system depends on the operational environment in a country, which may include the contractual setting (Rajan and Zingales 1998). Bank-based systems on their own fit situations with low contractibility combined with high capital scarcity relative to investment opportunity. Market based systems offer better yields in environments characterized by high contractibility and high capital availability relative to investment opportunities (entailing growth opportunities).

An increasing number of theoretical studies examine the importance of the financial system mechanism to economic growth[16]. The predominance of one system over the other could be based on the relative effectiveness with which banks or markets execute the above mentioned functions. In the literature, some authors argue that market-based systems are intrinsically superior (Macey, 1998), and others stress the vital function of banks systems (Gilson and Roe, 1993). It seems that agency problems are also associated with the success of one system over another; more specifically, firms in industries with consistent state verification make use of the financial markets, and firms

[16] Levine and Zervos (1998), and Demirguc-Kunt and Maksimovic (1998) explore the impact of financial development on economic growth at country, industry and firm levels.

that require high levels of monitoring tend to be in bank systems (Boot and Thakor, 1997). The effect of the technological change in the different environments is somewhat more complex (Allen and Gale 1999).

Evidence on the impact of capital market development on firm value is found in Fauver et al. (2003). They investigate the development of capital markets across several countries and its effect on multi-segment firm value, and find that the discount of diversified firms is less pronounced in countries where capital markets are less developed, while it is higher in countries with well established capital markets and better structural conditions. They argue that diversified firms obtain benefits from internal capital markets especially in countries with costly and less developed external capital markets. Furthermore, La Porta et al. (1997, 1998) and Levine (1998, 1999) find that markets develop better in countries where the rights of the minority shareholders are well protected (e.g., common law countries) and they argue for the superiority of markets in common law countries. Similarly, Levine (1999) finds that banks develop better in countries where the rights of the secured creditors are well protected[17].

Hence, we expect global diversification strategies to perform better in countries with market-based systems and propose the following hypothesis:

Hypothesis 4: The effect of global diversification on firm value depends on the orientation of the financial system (market- versus bank-oriented) of the home country.

[17] Demirguc-Kunt and Levine (1999) provide evidence of relations between the legal environment and financial systems.

III.2.3.3. The impact of product diversification on global firms involved in different legal and financial systems.

Previous sub-sections provide arguments about the key factors that may influence the valuation of global firms and the final hypothesis to be tested here involves the interaction between the factors. More specifically, we consider the joint effect of both product and global diversification strategies given the legal and financial systems of the country in which the firm has its core business. Therefore, our last hypothesis is as follows:

Hypothesis 5: The impact of product diversification on a global firm's value depends on the legal tradition and the orientation of the financial system of the country in which the firm has its core operations.

III.3 Empirical models

To analyze the relationship between global diversification and the market value of firms, we follow the excess value approach used by Berger and Ofek (1995), Denis, et al. (2002) and Doukas and Kan (2006). Consequently, the general specification of our model is as follows:

$$EV_{it} = \alpha_0 + \alpha_1 GD_{it} + \alpha_2 INV_{it} + \alpha_3 DEBT_{it} + \alpha_4 CF_{it} + \alpha_5 INT_{it} + \alpha_6 SI_{it} + \varepsilon_{it} \quad (1)$$

The dependent variable, EV_{it}, is the excess value and it is intended to capture the comparison between the market value of globally diversified firm *i* and the market

value of a portfolio of focused firms operating in a similar industry[18],[19]. In Table III.1 all the variables used in our models have been specified.

The key explanatory variable, GD_{it}, is a variable that accounts for the level of global diversification as measured by the Global Entropy[20] index (GE), that considers both the number of geographic segments in which a firm operates and the relative importance in sales contributed by each geographic segment. We have performed a robustness check by constructing two alternative measures for global diversification. The first one is the Global Herfindahl[21] index (GH). The second one is the ratio of Foreign Sales to Total Sales (FSTS), used as an indicator of the intensity of global diversification in previous studies (see, for instance, Geringer et al., 1989; Sullivan, 1994; Denis et al., 2002; Fauver et al., 2004; Doukas and Kan, 2006). Given the construction of the excess value variable, a positive coefficient for the diversification variable would support Hypothesis 1.a, while a negative coefficient would offer support to hypothesis 1.b.

The control variables employed in this analysis have been commonly used in the global diversification literature. To capture that global diversification is likely to be part of a more general growth strategy, we incorporate the investment variable (INV_{it}). A firm's debt ratio has been argued to affect firm value (Buhner, 1987; Hitt and Smart, 1994) because on the one hand, high-leveraged firms are expected to be less valuable due to high debt levels preventing a firm from raising funds to finance value creating projects (Lang et al., 1996). Contrary arguments point out that, corporate debt can act as

[18] See Table 1 for the exact definition/measure of all the variables used in the paper.

[19] See Berger and Ofek (1995), Denis, et al., (2002), and Doukas and Kan (2006) for further details in the construction of this measure.

[20] Previous studies which have used this measure are Kim et al. (1989), Hitt et al. (1997) and Delios et al. (2008).

[21] The Global Herfindahl index is computed as the sum of the squares of each geographic segment's sales as a proportion of total sales. This index becomes 0 if the firm is only present in one global market, and the index becomes closer to 1 as the firm becomes more globally diversified (See Amit and Livnat, 1988).

a monitoring mechanism of managerial behaviour and value is thus enhanced (Jensen, 1986). Moreover, Doukas and Pantzalis (2003) find empirical results for globally firms suggesting that debt ratios differ systematically from those of domestic companies. Consequently, we include corporate debt ($DEBT_{it}$) in the model. Prior research indicates that the relationship between firm value and global diversification might rely on the ability of firms to cover the costs of doing business globally (Geringer et al., 1989); we, therefore, include a firm's cash flow (CF_{it}). Companies with higher intangible assets may achieve higher returns by innovating in product design in the global markets and lower production costs by improving manufacturing processes (Hitt et al., 1997; Kotabe et al., 2002). Moreover, to operate abroad offer firms the opportunity of perform process of innovation in other countries (Tsang et al., 2008). Accordingly we incorporate the intangible assets variable (INT_{it}). Finally, global diversification has been associated with firm size. Tallman and Li (1996) argue that large firms access more easily the resources needed to operate successfully in foreign markets. Hence we control for firm size (SI_{it}) by including the logarithm of the replacement value of total assets. All explanatory variables, except the debt ratio, are scaled by the replacement value of assets (K_{it})[22],

[22] The replacement value is measured following the procedure of Miguel and Pindado (2001). See Table III.1.

Table III.1.

Variables Definition.

VARIABLE	NAME	MEASURE	DATA SOURCE
EV_{it}	Excess Value	The natural logarithm of the ratio of the firm's total market value to its imputed value. The Imputed Value is the sum of the imputed stand alone values for each individual business segment. $IV = \sum_{i=1}^{n} SS_i \times \left[IND_i \left(V/SS \right)_{med} \right]$ where SS_i are the sales for segment *i,* V is the actual firm value, and IND_i $(V/SS)_{med}$ is the multiple of firm value sales for the median single segment firm in the segment *i's* industry, and *n* is the total number of segments for the firm. The imputed value is constructed following the procedures of Doukas and Kan (2006); and similar to Denis et al. (2002) and Bodnar et al. (1999), it is derived by multiplying the segment sales with the median sales multiplier (ratio of total capital to sales) of the entire sample of domestic single-segment firms in the same industry and in the same year. The industry median ratios are based on the closest SIC groups that yields five single-segment domestic firms	Worldscope
GE_{it}	Global Entropy	$GE = \sum W_i \ln(1/W_i)$, where W_i is the percentage of sales in geographic segment *i* and $\ln(1/W_i)$ is the weight of each geographic segment.	Worldscope
GH_{it}	Global Herfindahl	$GH = 1 - \sum (Hi)^2 \Big/ \left[\sum (Hi) \right]^2$ where H_i represents the sales of the firm in the *ith* global segment	Worldscope
FS_{it}	Foreing Sales Ratio	The ratio of Foreign Sales to Total Sales	Worldscope
TE_{it}	Total entropy	$TE = \sum_{i=1}^{N} S_i \ln(1/S_i)$, where S_i is the share of a firm's total sales in 4- digit SIC industry i and N is the number of 4-digit SIC industries in which the firm operates. Total Entropy equals zero for a single business firm and it rises with the extent of diversity	Worldscope
RH_{it}	Revenue Based in the Herfindalh Index	$RH = 1 - \sum_{i=1}^{N} (Si)^2 \Big/ \left[\sum_{i=1}^{N} (Si) \right]^2$ is calculated across n business segments as the sum of the squares of each segment i's sales, (S_i), as a proportion of total sales. Thus, the closer RH is to zero, the more the firm's sales are concentrated within a few of its segments	Worldscope
INV_{it}	Investment	$I_{it}=NF_{it}-NF_{it-1}+BD_{it}$, where NF_{it}, represents the net fixed assets and BD_{it} is the book depreciation expense corresponding to year *t*, scaled by the replacement value of assets	Worldscope and OECD indicators
D_{it}	Debt	The market value of long term debt to the market value of equity plus the market value of long term debt plus the book value of short term debt	Worldscope and OECD indicators
CF_{it}	Profitability	Firm's cash flow as measured by earnings before interests and taxes plus the book depreciation expense plus provisions, scaled by the replacement value of assets	Worldscope and OECD indicators
IA_{it}	Intangible Assets	Computed as the firm's intangible assets scaled by the replacement value of total assets.	Worldscope and OECD indicators
SI_{it}	Size	The logarithm of the replacement value of total assets	Worldscope and OECD indicators
LS_{it}	Legal System	Dummy variable, 1 is applied if is a common law country is involved and 0 if it is a civil law country	La Porta et al. (1998) Beck et al. (2001) and Demirgüç-Kunt and Maksimovic (2002)
FS_{it}	Financial System	Dummy variable, value 1 is applied if country is involved in a market-oriented system and 0 if it is classified as being bank-oriented	
K_{it}	Replacement Value	$K_{it} = RF_{it} + \left(TA_{it} - BF_{it} \right)$ where RF_{it} is the replacement value of tangible fixed assets, TA_{it} is the book value of total assets, and BF_{it} is the book value of tangible fixed assets. The latter two have been obtained from the firm's balance sheet and the first one has been calculated according to the proposals by Perfect and Wiles (1994).	Worldscope and OECD indicators

To investigate whether the degree of product diversification moderates the relationship between firm value and global diversification, we extend the basic model in (1) by including the interaction of a dummy variable, PD_{it}, (that takes the value of 1 for firms with a high degree of product diversification and 0 firms with a low degree of product diversification[23]) with GD_{it}. The resultant model is as follows:

$$EV_{it} = \alpha_0 + (\alpha_1 + \lambda_1 PD_{it})GD_{it} + \alpha_2 INV_{it} + \alpha_3 DEBT_{it} + \alpha_4 CF_{it} + \alpha_5 INT_{it} + \alpha_6 SI_{it} + \varepsilon_{it} \quad (2)$$

With this formulation, the coefficient of the global diversification variable (GD_{it}) is α_1 for globally diversified firms with a low degree of product diversification (since PD_{it} takes the value 0), and it is ($\alpha_1 + \lambda_1$) for global firms operating with high levels of product diversification (since PD_{it} takes the value 1).

We also investigate whether the characteristics of legal and financial systems moderate the relationship between firm excess value and global diversification by estimating the following model:

$$EV_{it} = \alpha_0 + (\alpha_1 + \gamma_1 LS_{it})GD_{it} + \alpha_3 INV_{it} + \alpha_4 DEBT_{it} + \alpha_5 CF_{it} + \alpha_6 INT_{it} + \alpha_7 SI_{it} + \varepsilon_{it} \quad (3)$$

where LS_{it} is a dummy variable constructed to capture the nature of legal system, where the value 1 is applied for firms operating in a common law country and 0 for firms operating in a civil law country. We follow La Porta et al. (1998) in the construction of

[23] For the construction of this variable we build a Total Entropy measure following Jacquemine and Berry (1979) and Palepu (1985). We also build a Revenue-based Herfindahl index as in Berger and Ofek (1995). These measures permit us to control for the extent of product diversification strategies on the firm. According to its construction, DIV_{it} takes the value of 1 if the index of Total Entropy or Revenue Based Herfindahl index is above the sample mean, and 0 otherwise.

this index. We then replace LS_{it} for FS_{it} to account for the moderating role played by the financial system. The construction of the index of financial systems is based on Beck et al. (2001) and Demirgüç-Kunt and Maksimovic (2002). Hence LS_{it} takes a value 1 for firms involved in market-oriented system and a value of 0 for firms involved in a bank-oriented system[24]. Using this approach, the coefficient of the global diversification variable (GD_{it}) is α_1 for globally diversified firms operating in civil law countries or in bank-oriented financial systems (since LS_{it} and FS_{it} take value 0, respectively); and it is ($\alpha_1 + \gamma_1$) for global firms involved in common law countries or in market-oriented financial systems (since LS_{it} and FS_{it} takes value 1, respectively).

Finally, we investigate whether the joint effect of global and product diversification on excess value is moderated by the legal and financial systems and we estimate the following model:

$$EV_{it} = \alpha_0 + (\alpha_1 + \lambda_1 PD_{it} + \gamma_1 LS_{it})GD_{it} + \alpha_3 INV_{it} + \alpha_4 DEBT_{it} + \alpha_5 CF_{it} + \alpha_6 INT_{it} + \alpha_7 SI_{it} + \varepsilon_{it} \quad (4)$$

In this respect, the coefficient of GD_{it} for globally diversified firms operating in civil law countries or in bank-oriented systems is α_1 if the firm's level of product diversification is low (since PD_{it} , LS_{it} and FS_{it} take the value 0); and it is ($\alpha_1 + \lambda_1$) if the firm's level of product diversification is high (since PD_{it} takes value 1 and LS_{it} and FS_{it} take the value 0). Similarly, the coefficient of GD_{it} for global firms operating in common law countries or market-oriented systems is ($\alpha_1 + \gamma_1$) when the firm's level of product diversification is low (since PD_{it} takes value 0 and LS_{it} and FS_{it} take value 1); and it is

[24] The exact calculation of the index is based on the ratio of banking sector development and stock market development of each country, so with these two measures they classify with respect to their median value, then values above the median are considered as countries with market-based systems and bank-based below the median of both indexes.

($\alpha_1 + \lambda_1 + \gamma_1$) when the firm's level of product diversification is high (since PD_{it}, LS_{it} and FS_{it} take value 1)[25].

III.4. Sample, data, variables and estimation method

To test the hypotheses posed in the previous sub-section we use data from Eurozone countries, the United States, the United Kingdom, Canada and Japan. These countries represent a great diversity of institutional environments. The selection of sample countries is motivated by the existence of distinct financial and institutional settings prevailing all over the world. For each country we construct an unbalanced panel of non-financial companies from 1990 to 2003. Three of the sixteen countries[26] have been excluded from our analysis for different reasons. As occurs in La Porta et al. (2000), Luxembourg has been removed from our sample because there are just a few firms listed in Luxembourg's stock exchange. The Netherlands and Italy have also been omitted because we do not have sufficient data to construct a number of the variables. The structure of the samples by number of companies and number of observations per country is provided in Table III.2. As shown in Table III.2, the resultant unbalanced panel comprises 1744 companies and 8965 observations. Using an unbalanced panel for a long period (13 years) is the best way to resolve the issue of survival bias because some firms will be delisted and, consequently, dropped from the database.

[25] It is worth noting that in all cases whenever the dummy variable (PD_{it}, LS_{it} or FS_{it}) equals one, the statistical significance of the coefficient must be checked by performing a linear restriction test. The null hypotheses to be tested in these cases are the hypothesis of no significance, H_0: $\alpha_1 + \lambda_1 = 0$, H_0: $\alpha_1 + \gamma_1 = 0$ and H_0: $\alpha_1 + \lambda_1 + \gamma_1 = 0$.

[26] The Eurozone currently comprises twelve countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal and Spain.

Table III.2.

Structure of the Sample by Countries.

Country	Number of companies	Percentage of companies	Number of observations	Percentage of observations
Germany	215	12.33	1536	17.13
France	193	11.07	1390	15.50
Spain	52	2.98	374	4.17
Finland	41	2.35	274	3.06
Greece	48	2.75	241	2.69
Belgium	32	1.83	245	2.73
Portugal	31	1.78	204	2.28
Ireland	28	1.61	214	2.39
Austria	25	1.43	171	1.91
US	442	25.34	1768	19.72
UK	167	9.58	668	7.45
Canada	53	3.04	212	2.36
Japan	417	23.91	1668	18.61
Total	1744	100	8965	100

.

We use Worldscope as the principal source of data, with variables such as the growth of capital goods' prices, the rate of interest of short term debt and the rate of interest of long term debt being extracted from the Organization for Economic Cooperation and Development's (OECD) Main Economic Indicators. For the construction of the global and product diversification indicators we use firms with reported industry and geographic segment data. Following Berger and Ofek (1995), Campa and Kedia (2002) and Denis et al. (2002) we exclude firm-year observations with a missing value of total assets, observations of financial companies (SIC 6000-6999) and firm-year observations with reported sales in either product or global segments higher than the total sales reported . Finally, following Berger and Ofek (1995), Fauver et al. (2003) and Doukas and Kan (2006) we eliminate excess values higher or lower than four times the imputed value from the benchmark firms. Table III.3 reports the descriptive statistics of the variables used in this study and previously defined in Table III.1.

Table III.3.

Summary Statistics, Mean and Median Values for Different Samples

	Total firms (n=8965)		Global firms (n= 4721)		Domestic firms (n= 4244)	
	Mean	Median	Mean	Median	Mean	Median
PANEL A						
• EV_{it}	-0.11	-0.00	-0.16	-0.20	-0.06	0.00
PANEL B						
Global diversification						
• GE_{it}	0.44	0.23	0.83	0.81	0.00	0.00
• GH_{it}	0.24	0.10	0.46	0.49	0.00	0.00
• $FSTS_{it}$	0.22	0.04	0.40	0.37	0.01	0.00
Product diversification						
• TE_{it}	0.70	0.69	0.89	0.89	0.49	0.46
• RH_{it}	0.36	0.45	0.50	0.52	0.28	0.26
PANEL C						
Firms characteristics						
• INV_{it}	0.06	0.05	0.05	0.05	0.06	0.05
• D_{it}	0.10	0.07	0.11	0.08	0.10	0.06
• CF_{it}	0.04	0.05	0.04	0.04	0.04	0.05
• IA_{it}	0.08	0.03	0.10	0.05	0.07	0.01
• SI_{it}	13.19	13.09	13.83	13.72	12.48	12.41

EV_{it} denotes a firm's excess value, GE_{it} is the Total Entropy index of Global Diversification , GH_{it} is the Revenue based in the Herfindahl index of Global Diversification, $FSTS_{it}$ is the ratio of Foreign Sales to Total Sales, TE_{it} is the Total Entropy of product diversification index, RH_{it} is the Revenue-Based Herfindahl index of product diversification, INV_{it} denotes investment, D_{it} stands for the debt ratio, CF_{it} is the cash flow, IA_{it} denotes the intangible assets, and SI_{it} is the firm's size.

Our models have been estimated by using the panel data methodology on the sample described in Table III.1. Two issues have been considered in making this choice. First, unlike cross-sectional analysis, panel data allow us to control for individual heterogeneity and to eliminate the risk of obtaining biased results because of such heterogeneity (Moulton, 1986, 1987). This point is crucial in our study because the decision of undertaking global diversification strategies in a firm is very closely related to the specificity of each company. Therefore, to eliminate the risk of obtaining biased results, we have controlled for such heterogeneity by modelling it as an individual effect, $\eta_{i,}$ which is then eliminated by taking first differences of the variables. Consequently, the error term in our models, ε_{it}, has been split into four components. First, the above mentioned individual or firm-specific effect, η_I; second, d_t measures the time-specific effect by the corresponding time dummy variables, so that we can control for the effects of macroeconomic variables on the global diversification decision; third, since our models are estimated using data from several countries, we have also included country dummy variables (c_i) and finally, v_{it} is the random disturbance.

The second issue we can deal with by using the panel data methodology is the endogeneity problem. Particularly, the literature concerning the diversification discount examines whether such a discount is the result of endogenous choices of the firm. Lang and Stulz (1994), for example, find that diversified firms trade at a discount even before diversifying. Focusing on firms that diversify through acquisitions, Graham et al. (2002) find that the diversification discount can be explained by the lower values of the firms that are acquired. Campa and Kedia (2002) suggest that the discount is considerably reduced with proper controls for the endogeneity of the diversification decision. As a consequence, endogeneity may be a problem in our models that needs to be controlled for. That is why our models have been estimated by using instruments. To be exact, we

have used all the right-hand-side variables in the models lagged from t-2 to t-6 as instruments for the equations in differences, and t-1 for the equations in levels as Blundell and Bond (1998) suggest when they derive the system estimator used in this study.

Finally, we have checked for the potential misspecification of the models. First, we use the Hansen J statistic of over-identifying restrictions in order to test the absence of correlation between the instruments and the error term. Second, we use the m_2 statistic, developed by Arellano and Bond (1991), to test for a lack of second-order serial correlation in the first-difference residual. Tables III.4, III.6 and III.7 shows that there is not a problem of second-order serial correlation in our models (see m_2)[27]. Third, the results presented in Tables III.4, III.6 and III.7 provide significant results for the following three Wald tests: z_1 is a test of the joint significance of the reported coefficients; z_2 is a test of the joint significance of the time dummies; and z_3 is a test of the joint significance of the country dummies.

III.5. RESULTS

We present descriptive statistics in Sub-section III.5.1 and the results of our basic model are commented on in Sub-section III.5.2. We then study in Sub-section III.5.3 the implications of product diversification for firms involved with global diversification strategies. In Sub-section III.5.4 we analyse the impact of legal and financial systems on the relationship between global diversification and excess value. Finally, in Sub-section

[27] Note that although there is first-order serial correlation (see m_1), this is caused by the first-difference transformation of the model and, consequently, it does not represent a specification problem of the models.

III.5.5 we investigate the interaction effect of institutional factors and product diversification on the relationship between global diversification and excess value.

III.5.1. Descriptive Statistics

Table III.3 provides summary statistics (mean, median) of the variables used in our analysis. As can be seen in Panel A, the mean value of the excess value measure is negative and larger in absolute value for global firms than for domestic firms. This behaviour points out that the costs of being global goes beyond the benefits discussed in Sub-section III.2.1. In Panel B we report three different indices to capture global diversification (Global Entropy, Global Herfindahl and Ratio of Foreign Sales to Total Sales), and two measures for product diversification (Total Entropy, and Revenue Based in Herfindahl Index). Both the mean values of global diversification (0.83) and product diversification (0.89) are higher in the sub-sample of global firms as compared to domestic firms (0.00 and 0.49, respectively) which suggests that product diversification is a widespread strategy in global firms probably because they want to achieve the advantages of being involved in both strategies. Panel C reports statistics of the firms' characteristics commonly used to explain the value implications of being global.

III.5.2. Results of the Basic Excess Value Model

The results of the GMM estimation of our basic model in equation 1 are provided in Column I of Table III.4. The negative coefficient for the global diversification variable (GD_{it}= -0.122) suggests that having operations in global markets destroys value. This evidence supports the results reported by Denis et al. (2002) and it is also consistent with the arguments of Hymer (1976) about the trade-off cost suffered when working on

global segment business, Hitt et al. (1997) about the transaction cost theory of governance costs, and Berger and Ofek (1995) and Shin and Kim (2002) on the inefficient investment of multi-segment firms. Accordingly, global diversification is value-destructive, which means that global firms trade at a discount.

Table III.4.

Estimation Results for Excess Value and Global Diversification and the Interaction with Product Diversification Model.

	I	II
Constant	-0.494*	-0.400**
	(0.1778)	(0.1584)
GD_{it}	-0.122*	-0.0732***
	(0.0462)	(0.0406)
$GD_{it}\_PD_{it}$		-0.0780**
		(0.0328)
INV_{it}	0.483*	0.545*
	(0.1550)	(0.1375)
D_{it}	-2.377*	-2.481*
	(0.1714)	(0.1501)
CF_{it}	0.895*	0.952*
	(0.1967)	(0.1802)
IA_{it}	0.422*	0.473*
	(0.1532)	(0.1337)
SI_{it}	0.0293**	0.0213
	(0.0148)	(0.0131)
t		-3.9411
z_1	45.57	54.99
	(6)	(7)
z_2	23.38	31.51
	(11)	(11)
z_3	3.03(8)	6.26
		(8)
m_1	-14.95	-15.06
m_2	-1.09	-1.04
Hansen	408.35	463.25
	(301)	(350)

The regressions are performed by using the panel described in Table III.1. The variables are defined in Table III.2. PD_{it} is a dummy variable that takes the following values: a) 1 for the companies with high degree of product diversification strategies and 0 for the companies with low degree of product diversification, this index was constructed using the Total Entropy measure of product diversification. The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) *,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; iv) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation.

In terms of the results for the control variables, we find evidence that excess value is positively and significantly associated with investment, profitability, intangible assets and firm size. Similar results are found by Berger and Ofek, (1995), Campa and

Kedia (2002), Denis et al. (2002) and Fauver et al. (2003). As in Denis et al. (2002) the debt variable has a negative coefficient, which suggests that the cost of debt financing (mainly agency costs) more than offsets its potential benefits (particularly aligning the interests of owners and managers and signalling to the market).

These results remain identical when we estimate the model using the two alternative measures of global diversification[28]. In summary, the results of this subsection confirm Hypothesis 1.b for the destruction of value associated with global diversification, after controlling for other firm characteristics (investment, debt, profitability, intangible assets and firm size) that are important in explaining the value of firms operating in foreign markets.

III.5.3. The Impact of Product Diversification on the Relationship between Global Diversification and Excess Value

Table III.5 presents a preliminary analysis of the differences in the value of global firms depending on their levels of product diversification.

We check the differences in mean excess values of global firms between firms with high levels of product diversification and firms with low levels of product diversification. As shown in Panel A, these differences are statistically significant (see t values) and, more importantly, the excess value measure is negative for both sub-samples but it is greater for firms with high levels of product diversification.

Panel B reports the mean values of the global diversification variables. Confirming the results in Sub-section III.5.1, higher levels of global diversification are found in firms with a high degree of product diversification.

[28]To save space these results have not been reported in the paper. They are available upon request from the author.

Table III.5.

Differences between Low and High Degree of Product Diversified Firms

PANEL A. Excess Value

Degree of Product Diversification	*Obs*	Means (SD)	T-value
Low	3880	-0.03 (0.51)	
High	5085	-0. 17 (0.62)	11.08

PANEL B. Global Diversification (Global Entropy)

Degree of Product Diversification	*Obs*	Means (SD)	T-value
Low	3880	0.24 (0.39)	
High	5085	0.59 (0.50)	-36.06

Table III.4 reports the results on the impact of product diversification on the relationship between excess value and global diversification. As shown in Column II of Table III.4, the negative impact of global diversification on excess value is larger for firms with a high degree of product diversification [(-0.0732) + (-0.0780) = -0.1512, which is significantly different from zero, see the t statistic] than for globally diversified firms with a low degree of product diversification (-0.0732). In essence, the difficulties globally diversified firms face in terms of coordination, information asymmetry, and the misalignment of ideas between managers and shareholders seem to be accentuated when the firm simultaneously opts for a strategy of product diversification.

We, therefore, find support for Hypothesis 2 about the moderating role played by the level of product diversification on the effect and value implications of global diversification. Specifically, we find that global firms with high levels of product diversification are more value-discounted than those with low levels of product diversification. This result is in agreement with Harris et al. (1982) and Denis et al. (2002), who argue that the costs of coordination difficulties, information asymmetry and lack of understanding between headquarters and divisional managers translates into value destruction for globally diversified firms. More importantly, when companies over-operate jointly in product and global segments, their market value is negatively affected. The robustness check performed by using alternative measures of global diversification confirms the finding that firms involved in both global and product diversification strategies will be less valuable than those which are only globally diversified. In other words, the strategy of being diversified in different business and geographic segments at the same time is more destructive of value.

III.5.4. The Impact of Institutional Factors Effect on the Relationship between Global Diversification and Excess Value

Table III.6 presents preliminary results on the impact of institutional factors on the global diversification strategy. This table reports a mean comparison analysis of excess value and the degree of global diversification across legal and financial systems. As shown in Panel A, the mean excess value is positive for global firms operating in countries characterized by having their core business in common law countries (0.01), whereas it is negative for global firms having their core operations in civil law countries (-0.24). The difference in mean excess values between these two groups is statistically significant, as reported by the mean difference test. Moreover, the figures in Panel A show significantly higher levels of global diversification of firms operating in civil law countries than of their common law counterparts; this might suggest that civil law firms use a global diversification strategy more in order to exploit the different markets (bearing in mind the close proximity and variety of their cross-borders countries) as compared to our sample of common law home firms.

The analysis in panel B also shows significant differences in mean excess values across different financial systems. Particularly, mean excess value of global firms having their core business in countries with market-oriented systems is positive (0.03), while that of firms operating in bank-oriented environments is negative (-0.23). Additionally, mean values of entropy shows higher levels of product diversification in bank-oriented financial systems than in market-oriented-ones. Although preliminary, these results are in line with our Hypothesis 3, according to which the relationship between global diversification and firm value depends on: i) the legal system and ii) the financial system. Specifically, it seems that the benefits of being globally diversified outweigh the

costs of this strategy for firms in countries characterized by a common law tradition and market-oriented financial systems; and the contrary occurs in their civil law and bank-oriented counterparts.

Table III.6.

Differences between Civil Law and Common Law Global Firms and between Bank-Oriented and Market-Oriented Global Firms

PANEL A. Excess Value			
Legal system	*Obs*	*Means (SD)*	*T-value*
Civil law	3214	-0.24 (0.61)	
Common Law	1507	0.01 (0.62)	-12.62
Global Diversification (Global Entropy)			
Legal system	*Obs*	*Means (SD)*	*T-value*
Civil law	3214	0.85 (0.38)	
Common Law	1507	0.77 (0.36)	6.31
PANEL B. Excess Value			
Financial system	*Obs*	*Means (SD)*	*T-value*
Bank-oriented	3358	-0.23 (0.61)	
Market-oriented	1363	0.03 (0.62)	-13.21
Global Diversification (Global Entropy)			
Financial system	*Obs*	*Means (SD)*	*T-value*
Bank-oriented	3358	-0.85 (0.38)	
Market-oriented	1363	0.77 (0.37)	6.35

Table III.7 presents the GMM results of Equation (3) where the moderating roles of legal and financial systems are analysed. As shown in Column I, we find a positive effect of global diversification on excess value for global firms operating in common law countries [(-0.331)+(0.622)= 0.291], which is statistically different from zero (see the *t* statistic), while this effect is negative for firms in civil law countries (-0.331). The results align with those of La Porta et al. (1997) and suggest that, since common law facilitates access to equity markets, then globally diversified firms are more valuable in common law countries than in civil law ones. In short, these findings suggest that firms operating in countries characterized by stronger investor protection are able to exploit better the benefits of having operations in foreign markets because they expand their market opportunities, diversify risks and increment market power. This explains why global firms in common law countries trade at a premium (Hypothesis 1.a) whereas their civil law counterparts trade at a discount (Hypothesis 1.b).

Table III.7.

Estimation Results of the Moderating Role of Legal and Financial Systems on the Value of Global Diversification.

	I *(LEGAL SYSTEM)*	II *(FINANCIAL SYSTEM)*
Constant	-1.433*	-1.385*
	(0.1738)	(0.2115)
GD_{it}	-0.331*	-0.320*
	(0.0484)	(0.0503)
$GP_{it}\_LS_{it}$	0.622*	
	(0.0918)	
$GP_{it}\_FS_{it}$		0.642*
		(0.1042)
INV_{it}	0.484*	0.578*
	(0.1471)	(0.1577)
D_{it}	-2.431*	-2.395*
	(0.1546)	(0.1728)
CF_{it}	0.644*	0.665*
	(0.1493)	(0.1920)
IA_{it}	-0.409**	-0.441**
	(0.1602)	(0.1820)
SI_{it}	0.116*	0.110*
	(0.0144)	(0.0177)
T	3.4636	3.4113
z_1	51.19	45.16
	(7)	(7)
z_2	28.55	22.85
	(11)	(11)
z_3	6.13	4.57
	(8)	(8)
m_1	-14.64	-14.63
m_2	-1.05	-1.02
Hansen	410.41	392.80
	(349)	(305)

The regressions are performed by using the panel described in Table III.1. LS_{it} is a dummy variable that takes the following values: a) 1 for common law countries and 0 for civil law countries reported in column I; b) FS_{it} 1 if the country is classified as a Market-oriented System and 0 if it is considered a Bank-oriented System in columns II. The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) *,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; iv) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation

Column II of Table III.7 reports a negative coefficient for globally diversified firms in bank-oriented systems (-0.320) and a positive coefficient for global firms operating in market-oriented systems [(-0.320) + (0.642) = 0.322, statistically different from zero, see the *t* statistic]. These findings reveal that global diversification creates value when firms operate in countries characterized by market-oriented financial systems, while a destruction of value exists in global firms operating under bank-oriented financial systems.

Overall, our findings provide support to Hypothesis 3 about the moderating effect of the legal and financial systems on the valuation of global firms. Specifically, we find a premium in the valuation of globally diversified firms having their core business in countries with a common law tradition and market-oriented financial systems, and a discount in the valuation of their civil law and bank-oriented counterparts.

III.5.5. The Impact of Institutional Factors and Product Diversification on the Relationship between Global Diversification and Excess Value

Finally, we examine how the legal and financial systems affect the interaction between the product and global diversification strategies examined in Sub-section III.5.3. To test this last hypothesis we have used Equation (4) and the results of the GMM estimation of this model are reported in Table III.8.

Table III.8.

Estimation Results of the Moderating Role of Product Diversification, and Legal and Financial Systems on the Value of Global Diversification.

	I *(LEGAL SYSTEM)*	II *(FINANCIAL SYSTEM)*
Constant	-1.260*	-1.316*
	(0.1407)	(0.1826)
GD_{it}	-0.249*	-0.276*
	(0.0452)	(0.0431)
$GD_{it}\_PD_{it}$	-0.139*	-0.0888*
	(0.0303)	(0.0344)
$GD_{it}\_LS_{it}$	0.634*	
	(0.0776)	
$GD_{it}\_FS_{it}$		0.691*
		(0.0937)
INV_{it}	0.526*	0.652*
	(0.1284)	(0.1394)
D_{it}	-2.392*	-2.468*
	(0.1346)	(0.1509)
CF_{it}	0.791*	0.715*
	(0.1243)	(0.1741)
IA_{it}	-0.271*	-0.365*
	(0.1323)	(0.1580)
SI_{it}	0.101*	0.104*
	(0.0115)	(0.0152)
t_1	-10.1256	-9.0005
t_2	5.4773	4.5863
t_3	3.4845	3.7319
z_1	61.71	57.09
	(8)	(8)
z_2	36.20	29.95
	(11)	(11)
z_3	9.49	7.13
	(8)	(8)
m_1	-14.74	-14.71
m_2	-1.06	-1.02
Hansen	464.71	443.98
	(398)	(354)

The regressions are performed by using the panel described in Table III.1. PD_{it} is a dummy variable that takes the following values: a)1 for the companies with high degree of product diversification strategies and 0 for the companies with low degree of product diversification, this index was constructed using the Total Entropy measure of product diversification. LS_{it} is a dummy variable that takes the following values: a) 1 for common law countries and 0 for civil law countries reported in column I; b) $FS_{it}1$ if the country is classified as a Market-oriented System and 0 if it is considered a Bank-oriented System in columns II. The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) *,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; iv) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation.

The results in Column I provide evidence on the joint impact of product diversification and legal origin on the value of global diversification. As explained in Sub-section III.3, we have tested this joint impact by interacting global diversification simultaneously with two dummies variables (PD_{it} and LS_{it}) accounting for the degree of product diversification and the legal system, respectively. The reported coefficient of global diversification in firms working with low levels of product diversification in civil law countries (-0.249,) is negative. These firms seem to trade at discount. However, their common law counterparts seem to be well valued by their markets, since the coefficient is positive and significant in this case [(-0.249) + (-0.139) + (0.634) = 0.385, significantly different from zero, see the t statistic]. With respect to the globally diversified firms with a high degree of product diversification, the results show a discount for firms in civil law countries [(-0.249) + (-0.139) = -0.388, significantly different from zero, see t_2], and a premium for firms in common law countries [(-0.249)+(-0.139) + (0.634) = 0.246, significantly different from zero, see t_3]. The results for the alternative global diversification measures corroborate this evidence. It is worth noting that these results are in line with our previous findings on the moderating effect of the level of product diversification, as well as of the legal and financial systems on the valuation of globally diversified firms. And, more importantly, the joint interaction test performed here goes further by showing that firms that diversify into different business and geographic segments at the same time trade at a premium if their home country is common law in origin, and trade at a discount if they operate their core business in a civil law country. This evidence suggests that diversification strategies (both global and product) are more costly for firms in civil law countries.

An additional implication of our findings is that global firms having operations in common law countries will be more highly valued than those operating in civil law

countries, which corroborates the results reported in the previous sub-section. But, more importantly, the premium or discount of global firms given their home legal system is moderated by the extent of product diversification. Particularly, the value premium of global firms head-quartered in common law countries is larger when lower levels of product diversification are chosen. And similarly, the value discount of global firms head-quartered in civil law countries is smaller if these firms opt for low levels of product diversification. This evidence is in line with that provided in Sub-section III.5.3 about the higher costs of simultaneously diversifying into different business and global segments, because operations in new product and global markets will be more difficult to manage.

The joint impact of product diversification and the orientation of the financial system on the valuation of global firms is tested by replacing the LS_{it} dummy variable with FS_{it} in Equation (4). The estimation results are presented in Column II of Table III.8. The effect of global diversification on excess value in firms with low levels of product diversification is negative under bank-oriented systems (-0.276), whereas it is positive under market-oriented systems [(-0.276) + (0.691) = 0.415, significantly different from zero, see the t statistic]. Similar results are obtained for globally diversified firms with a high level of product diversification. Particularly, the excess value of firms with a high degree of multi-segment activity and global diversification are negatively related for firms operating in bank-oriented systems [(-0.276) + (-0.0888) = -0.364, significantly different from zero, see t_2], and positively related for firms operating in market-oriented systems [(-0.276) + (-0.088) + (0.691) = 0.326, significantly different from zero, see t_3]. The results of the robustness tests performed by using the alternative measures for global diversification confirm these findings. As with the legal tradition, this evidence supports the previously reported results on the relevance of the level of

product diversification and the orientation of the financial system to the valuation of global firms. More interestingly, we find here that there is a joint impact of these two factors. First, firms involved in both product and global diversification trade at a premium when operating under market-oriented financial systems, and trade at a discount if they operate under bank-oriented financial systems. A potential explanation may be that firms in bank oriented systems are more prone to agency problems. Second, a high level of product diversification harms the valuation of global firms, since it leads to lower premiums in market-oriented systems and to higher discounts in bank-oriented ones.

In summary, the evidence presented in this sub-section supports the results reported in previous sections on the moderating role played by the level of product diversification as well as the impact of legal and financial systems on the relationship between global diversification and firm value. And, more importantly, this evidence supports Hypothesis 5 about the joint impact of firm and institutional characteristics on the valuation of global firms.

III.6. Conclusions

This chapter investigates how product diversification, legal systems and financial systems affect the relationship between global diversification and the market valuation of firms. While global diversification and its relationship with firm value has been a topic of interest in the international business and management literatures, the results are far from unanimous. By using a panel data methodology on a large data set of firms across many developed countries for the period 1990 to 2003, the results of this

investigation give further strong support to the discount hypothesis of global diversification; namely, that global diversification on its own destroys value.

More importantly, however, the results of this analysis show that the relationship between global diversification and firm value is affected by the firm's level of product diversification and the legal and financial systems of the firm's home country. First, high levels of product diversification increase the value-discount of global firms. Second globally diversified companies operating in common law countries and market oriented systems trade at a premium, whereas their civil law and bank oriented counter-parts trade at a discount. Third, there is a joint impact between product diversification and legal/financial systems with firms involved in both product and global diversification trading at a premium when operating under common law and market-oriented financial systems, and trading at a discount if they operate under civil law and bank-oriented financial systems.

CHAPTER IV

PRODUCT DIVERSIFICATION STRATEGIES AND DIVIDEND PAYOUT RATIOS: A CROSS-COUNTRY ANALYSIS

IV.1. Introduction

This chapter investigates how product diversification strategies and dividend payout ratios influence each other. Our approach is based on the idea of diversification and dividends being competitors for a firm's resources (Mackey and Barney, 2005). Since a payout ratio is a mechanism which reduces the cash flow available in the firm, its diversification strategies should suffer an important impact in them because multi-segment activities are investments used by managers relying on the funds available into the firm, then the extent of diversification strategies will depend on the payout ratios, and additionally, shareholders' premiums will be regulated by the extent of firm diversification strategies. Moreover, if the firm experiment high levels of diversification then agency and transaction costs will start to emerge and firm payout policy will alleviate this phenomena.

Specifically, this study contributes to the literature in the understanding of how the product diversification strategy is influenced by firm's payout ratio and vice versa besides to underlie their most common determinants (with censored models). Moreover, as there is not a conclusive answer as to why firms distribute a substantial portion of

their funds as dividends or why they prefer to invest it in diversification strategies, we attempt to provide evidence on this matter by analyzing the effect of the payout ratios on a firm's level of product diversification as well as the effect of product diversification on a firm's payout ratio. Furthermore we offer additional evidence of the determinants of dividends and product diversification in an international context.

To achieve our aim, we propose two separate models; the first one examines the determinants of product diversification strategies, including a firm's payout ratio, and the second one accounts for the determinants of a firm's payout ratio adding a measure of product diversification. Both models have censored dependent variables[29] and estimations are carried out by the Generalized Method of Moments[30] on data from Worldscope for several countries (Austria, Belgium, Canada, Chile, Denmark, Finland, France, Germany, Hong Kong, India, Ireland, Japan, Korea, Malaysia, Mexico, Netherlands, New Zealand, Norway, Pakistan, Philippines, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, The UK and The USA).

The major results of the investigation are as follows. First, we provide evidence that the payout ratios of diversified companies are negatively related to the level of product diversification. The result confirms the role played by diversification and dividends as being competitors for a firm's resources. Second, the diversification index appears to be negatively related to a firm's payout ratio confirming our previous result and giving strong support to the view of a substitution effect between diversification and payout ratios. Third, country environmental differences, including institutional settings, such as the legal tradition or the financial system of the firm's country, as well as the level of the development of the economy, are key factors that underlie the effects of

[29] The models are used with censored variables since some firms are diversified or pay dividends whereas others do not.
[30] Hence we use the panel data methodology that eliminates the individual heterogeneity and controls for endogeneity problems.

product diversification and dividends policies. More specifically, we document a substitution effect between product diversification and dividends in common law and civil law firms, but this relation appears to be more attenuated for firms operating in countries with common law origins. Moreover, the same relationship is noted for market-oriented systems and developed economies. In contrast, we find a complementary effect in bank-oriented systems and emerging economies

Our study proceeds as follows. In Sub-section two we describe our theoretical framework, while in Sub-section three we explain our empirical approach, variables and hypothesis. In Sub-section four we describe our data and methodology, and the results are discussed in Sub-section five. In Sub-section six we present our conclusions.

IV.2. Background

In this sub-section, we describe the product diversification strategies and dividend policies as well as their main determinants.

IV.2.1. Why do firms diversify?

We first turn our attention to the vast and diverse literature on the firm value impact of diversification strategies and then we move on to consider the determinants of diversification.

The value discount associated with product diversification has been recognized primarily since Lang and Stulz (1994) and Berger and Ofek (1995) found a destruction of value in multi-segment firms as compared with their single-segment counterparts. A great amount of empirical research has attempted to understand this discount (Servaes,

1996; Rajan, et al., 2000; Whited, 2001; Lamont and Polk, 2001, 2002). Berger and Ofek (1995) associated the destruction of value with the fact that multi-segment firms invest inefficiently, in that investments are not directed to the segments with better investment opportunities (Shin and Stulz, 1998). Also during the course of overinvestment in low performing-businesses, multi-segment firms create inefficient internal capital markets (Stulz, 1990) and/or generate political, influence costs (Meyer et al., 1992; Rajan et al., 2000) - both of which might accentuate the overinvestment of resources (Stulz, 1990; Matsusaka and Nanda, 2002). A recognized reason for this state of affairs is that managers gain private benefits from acquisitions (Amihud and Lev, 1981; Mork et al., 1990); for example, they can reduce their personal risk or increment their power, prestige and compensation (Jensen, 1986). In addition, a firm may suffer control and effort losses (increments of shirking) and management incentive compensation costs (Rotenberg and Saloner, 1994) when diversifying as it becomes more difficult to manage the organization (Harris, et al., 1982; Markides, 1992). Finally, although diversification translates into lower financial risk, it may increase business risk given the different nature and characteristics of the business to be managed.

A firm value premium has also been recently documented in the literature. In this respect, Campa and Kedia (2002) and Villalonga (2004) criticize the discount hypothesis by arguing that previous findings do not control for the endogeneity problem on the decision to diversify, and explain that a diversification premium exists after controlling for a firm's propensity to diversify. However, this increment in value appears to be small. The benefits of a multi-segment firm could arise from different sources; for instance, the coinsurance effect gives multi-segment firms greater debt capacity than single-segment firms (Lewellen, 1971). By creating internal capital markets, diversified

firms can access and use more efficiently produced and acquired resources[31] (Lang and Stulz, 1994). Diversified firms can employ market power advantages (Scherer, 1980) that might derive from predatory pricing, future higher prices and cross-subsidization (whereby companies use the benefits from one product to alleviate the suffering of other production units (Tirole, 1995)). The resource-based view of organisations explains that when economies of scope arise, a firm's diversification strategy becomes one of the most appropriate techniques to exploit such economies (Penrose, 1959; Chandler, 1977; Panzar and Willing, 1981).

IV.2.1.1. The determinants of diversification strategy

Firms with greater amounts of cash and investments have a higher propensity to undertake diversification strategies than firms with lower levels (Hyland and Diltz, 2002), but excess available cash can result in an over-investment in diversifying projects. In this respect Jensen (1986) supports the view that strategies performed to obtain high levels of cash flow will be translated into more diversification. In general, from an agency perspective, free cash flow is a significant positive determinant of firm diversification strategies. A firm's leverage is commonly used as a factor to explain diversification on the basis that the coinsurance effect gives greater debt carrying capacity (Lewellen, 1971), as do increasing interest tax shields. As a result, diversified firms might pay lower taxes and have higher leverage than single-segment firms (Berger and Ofek, 1995). Moreover, debt is also considered as a factor which reduces the free cash flow problem in that it helps to constrain existing cash flows that otherwise could

[31] Efficient internal capital models are based on the premise that directors have the opportunity to invest in the most favorable business segments; by doing this, they have to know the potential allocation of the cash flows (Stein, 1997; Morck et al., 1990).

be used by managers in negative net present value projects (Jensen, 1986). In support of this argument, Berger et al. (1997) show that managers make efforts to evade debt.

In addition, profitability is associated with firm growth and Hyland and Diltz (2002) highlight firms with low profitability try to improve it by means of diversification. As the firm is profitable it would have more capital to invest in product and global business units. Berger and Ofek (1995) and Lamont and Polk (2002) contend that firms located in low growth industries will seek to diversify into more rapidly growing industries. To test this implication we include Tobin's q ratio in our regressions.

A firm's intangible assets are fundamental to its diversification strategies. In an early study, Chandler (1962) provides evidence where firms with more investment in intangibles were frequently the first to go from single to multi-segment operations. This is supported by the idea that firms diversify in order to fit and leverage technological change. Cohen and Levinthal (1990) explain that investment in intangibles gives a firm a greater potential to explore new business segments due to its diversity of knowledge. Moreover, one means by which firms can develop intangibles characteristics is by taking advantage of scope and scale economies through diversification strategies (Baysinger and Hoskisson, 1989). It is also well known, however, that intangibles are investments and firms probably have to choose between them and diversification.

Finally, size is an important determinant of diversification since large firms can better exploit the resources provided by scale and scope advantages through their business units. In addition, larger firms have better access to capital markets and are more prone to be diversified (Berger and Ofek, 1995). Moreover, given incentives and benefits, managers often have every encouragement to expand their businesses via diversification.

IV.2.2. Why do firms pay dividends?

Corporate dividend policy has been a long standing issue in the corporate finance literature. For example, in their seminal paper of Miller and Modigliani (1961) posit the irrelevance hypothesis where dividend policy neither creates nor destroys firm value under well defined circumstances. More recently, Fama and French (2001) address the decline in cash dividend in US firms across the period from 1978 to 1998. This decrease on approximately 53%[32] in the Compustat sample is attributed to the firm's characteristics that are publicly traded. Nonetheless, DeAngelo et al. (2004) in a similar study report that the amount of real dividends present an increment in time, additionally they argue that in the mean time an increment in aggregate dividends and a decrement in the dividends payers appears, this behavior is attributed to the rising concentration in the dividends payers.

The declining in dividends is also reported in the UK, but some differences on the US policies regard. The magnitude in the decline is reported by Ferris et al. (2006) who argue that this relation is lower than the observed on the US firms. Benito and Young (2001) and Renneboog and Trojanowski (2005) also find this pattern on the little evidence for the reduction propensity of UK dividends payers.

The European Union also have been studied, for example Von Eije and Megginson (2006) find a diminution on the proportion of dividend payers among firms for a 15 countries sample, they also control for profitability, size and growth opportunities like previous studies. However Von Eije and Megginson (2006) report no evidence for this propensity in their study due the inclusion of new firms over the time.

[32] Fama and French (2002) report that the number of dividends payers declines from 1,988 in 1978 to 1,045 in 1998. The results show that only 21% of US firms paid dividends in 1998.

Arguments for a reaction of the capital market in line with dividends changes also take place in the literature (Watts, 1973; Penman, 1983, Benartzi et al., 1997; Grullon et al. 2002). Empirical background pointed results out that dividends policy changes have an impact on the information about future cash flows, particularly, increases in dividends refer better news than decreases in them (John and Williams, 1985; Miller and Rock, 1985). With this notion managers use dividends as a signal of future profitability (Allen and Michalely, 2002) because they have more information about the firm future cash flows than shareholders, and they have incentives to signal information to investors. An increase in dividends should mean sufficient cash flows expected by the firm and enough to satisfy the dividends payments without increasing the probability of bankruptcy (Bhattacharya, 1979).

Mature firms suffer a declining in growth because they are prone to have smaller number of options to keep growing, investment opportunities are more distant to reach as well (Grullon et al*.,* 2002), this may have consequences by way of signal that firms have limit growth options in its present business. Miller and Rock (1985) conclude that dividends payers exit to exhibit a favorable signal of information to the capital market. In other words, it seem that managers react in the premise that markets give a premium to dividend payers and to interpret the stop in the payment as a bad signal (Brav et al*.,* 2005)[33].

However the information of dividends have been questioned in the recent years. Moreover, Amihud and Li (2004) find a decrease in the proportion of stock price reactions to dividends announcements, although it is well notice that stock prices act in response to changes in dividends (Michaely et al*.,* 1995). Another view is the one proportioned by DeAngelo et al. (2004), who report that dividends are augmenting in the

[33] Managers with this idea must prevent the reduction on the dividend payments whatever happens (DeAngelo and DeAngelo, 1990)

concentration among small number of large payers, and this behavior is determinant to avoid the idea about future earnings changes.

Rozeff (1982) emphasized the dividend importance using the agency theory arguing that firms pay dividends and increase capital at the same time mitigating managerial discretion. The principles for these explanations are (Jensen and Meckling, 1976) in response to the agency costs attributed for the different goals of managers in line with the shareholders. The firm's available resources play an important role in the dividend policy because it reflects the company ability to pay it or not more clearly than the current earnings, which in some extent are more sensible by accounting practices (Alli et al., 1993). Jensen (1986) explains how dividends reduce the free cash flow which managers would otherwise use to invest in projects that reduce shareholders wealth or used by their own. In terms of the dividends agency costs arguments, firms that experience great amount of free cash flow and moderated levels of the debt-financing costs will tend to have larger payouts. However, companies with a large portion of free cash flow tend to appear in a risk scheme of overinvestment, therefore if they employ this cash to shareholders, managers could dimish this phenomenon and also obtain another benefits directly from the shareholders. In a study about the relationship between dividends, investment and financial resolutions Green et al. (1993) find that payout levels are not fully influenced after the firm investment and financial choices have been complete, so dividend decision is progressing during the investment and financial choices. In this vein Partington (1983) exposes that dividends are independent of investment policy. Moreover, DeAngelo and DeAngelo (2006) give a perspective about the optimal payout policy is directed by the correct distribution of the firms free cash flow. They arguments posit that changes in dividends are optimally driven by the progress in time of prospective investment opportunities.

In addition, Easterbrook (1984) provides arguments on a partial raise of external capital are usually affected when increments in dividends appear. Likewise, the capital market will be more influenced by experts and suppliers who use this kind of information to monitor companies. In other words, periodic dividend payments get managers to ask for external capital for the new projects funding, doing that they exert a market discipline effect on the firm.

IV.2.2.1. The determinants of dividends

Agency theory considers that high levels of resources in a firm lead to higher payout ratios in order to prevent firms from overinvesting (Lang et al., 1996; Lamont, 1997; Chen and Ho, 1997; Chakraborty et al., 1999; Del Brio et al., 2003; Morgado and Pindado, 2003; Neves et al., 2006). Consequently a positive relation between a firm's free cash flow and its payout ratio is argued to exist.

The financial literature widely supports the role played by debt and dividends as agency-cost control mechanisms (see Grossman and Hart, 1980 and Jensen, 1986 for debt; Rozeff, 1982 and Jensen, 1986 for dividends) as well as by mitigating asymmetries of information between firms and potential investors (see Ross, 1977 and Harris and Raviv, 1991 for debt; Lintner, 1956 and Bhattacharya, 1979 for dividends). This literature suggests that debt and dividends may be related, although previous research is not unanimous about the way in which they are related. On the one hand, the search for a trade-off between costs and benefits leads to a substitution hypothesis based on the minimization of agency conflicts without duplicating efforts (Easterbrook, 1984; John and Senbert, 1998). In others words, this hypothesis holds that high leverage makes

dividends less valuable, and vice versa[34]. On the other hand, the alternative hypothesis points to the complementary use of the different mechanisms as the most effective solution to a firm's inefficiencies, because none of them can be a satisfactory solution in themselves without generating additional costs (Jensen, 1989)[35].

According to Lintner (1956) managers prefer to increase dividends only if they believe that the new level can be sustained. In these circumstances corporate earnings serve as the principal determinant of dividends (DeAngelo et al., 2004). Miller and Rock (1985) provide evidence on dividends acting as a signal but companies only willing to be use dividends in this manner when earnings are permanent rather than transitory. In sum changes in dividends are highly correlated with past and current changes in earnings (Benartzi et al., 1997; Brav et al., 2005; DeAngelo et al., 2004).

Recent literature (see for instance, Allen and Michaely, 2002; Aivazian et al., 2003), supports the argument that the nature of a firm's assets influences its dividend policy. Specifically, Aivazian et al. (2003) show that the probability of a firm to pay dividends increases with the tangibility of its assets. Additionally, Barclay et al. (1995) point out the nature of a firm's assets affects both its financing decision and its dividend policy. Firms with tangible assets can generally access the market for long term debt due to the existence of collateral and the subsequent ability to secure debt (Scott, 1977).

Finally, a firm's size has been traditionally considered among the determinants of its dividend policy and previous evidence seems to agree that larger firms pay higher dividends. There are several arguments justifying the positive relationship between size and payout ratios. For instance, larger firms enjoy better access to the capital market and, consequently, are less financially constrained, which allows them to pay more

[34] Subsequent empirical evidence on the substitutability of debt and dividends as cash flow commitments can be found in Moh´d et al. (1998) and more recently, in Lozano, Miguel, and Pindado (2002).
[35] Consistent with this hypothesis, the results in Eckbo and Verma (1994) show a positive and significant relationship between debt and dividends and, more recently, Zwiebel (1996) and Douglas (2001) confirm that firm value is optimized only when debt and dividends are simultaneously used.

dividends (see, for instance, Holder et al., 1998; Twite, 2001). Additionally, larger firms are usually mature firms that are prone to pay more dividends in order to avoid overinvestment (see, for instance, Barclay, et al., 1995). Fama and French (2001) show that the largest US companies have higher payout ratios and more recently, Denis and Osobov (2005) provide evidence of a positive relationship between the likelihood of paying dividends and size.

IV.3. Empirical models, variables and hypothesis

IV.3.1. Censored and basic models

Our main interest in this analysis is to test the implications of firm's payout ratio for product diversification strategies and vice versa. Accordingly we have analysed two basic models that account for the determinants of the firms': i) product diversification and ii) payout ratio. Agency theory arguments posit that diversification strategies and firm payout ratios depend to some extent on the available resources in the firm and we have thus specified two separate models: the first one giving explanation on the most common determinants of the product diversification strategy, including the firm's payout ratio variable; the second incorporates the determinants of payout ratios incorporating the diversification variable.

A firm's payout ratio has been widely recognized as a censored variable since some firms pay dividends whereas others do not. The diversification variable might be treated in the same way since some firms are diversified while others are not. Following most of the empirical papers that attempt to explain the firms' propensity to diversify (see for instance, Campa and Kedia, 2002; Villalonga, 2004 and Ferris et al., 2007) we

use the following Tobit model to predict product diversification strategies for each time period from 1996 to 2007:

$$CPD_{it} = \beta_0 + \beta_1 (I/K)_{it} + \beta_2 (CF/K)_{it} + \beta_3 (D)_{it} + B_4 (SI)_{it} + \mu_{it} \quad (1)$$

with $PD_{it} = CPD_{it}$ *if* $CPD_{it} > 0$

$PD_{it} = 0$ if $CPD_{it} \leq 0$

where CPD_{it} is a latent variable only observed when it is positive, whereas we only know that it is negative in the remainder of the cases. The variable PD_{it} represent the product diversification index measured by the Revenue-based in the Herfindahl index[36]. The explanatory variables of the diversification strategy are: investment (I_{it}/K_{it}), cash flow (CF_{it}/K_{it}), debt (D_{it}) and size (S_{it}). Investment and cash flow are scaled by the replacement value of total assets (K_{it}), calculated as explained in previous chapters.

Taking into account that CPD_{it} follows a normal distribution with mean μ and variance σ_2, and letting

$$\beta_0 + \beta_1 (I/K)_{it} + \beta_2 (CF/K)_{it} + \beta_3 (D)_{it} + \beta_4 (S)_{it} + \mu_{it} = X'_{it}\beta$$

then the logarithmic likelihood function of our model is:

$$\ln L = \sum_{PD_{it}>0} -\frac{1}{2}\left[\ln(2\pi) + \ln\sigma^2 + \frac{(PD_{it} - X'_{it}\beta)^2}{\sigma^2}\right] + \sum_{PD_{it}=0} \ln\left[1 - \Phi\left(\frac{X'_{it}\beta}{\sigma}\right)\right]$$

where the first term picks up the observations for which $PD_{it} > 0$ (that is, observations for which the diversification variable is observable and, consequently, the density function

[36] The Revenue-based Herfindahl index, RH, is calculated across n business segments as the sum of the squares of each segment i's sales, S_i, as a proportion of total sales. Thus, the closer RH is to zero, the more the firm's sales are concentrated within a few of its segments (see Berger and Ofek, 1995 for more details).

is known), whereas the second term refers to the rest of the observations for which the diversification variable is unobservable, and we assume that the function Φ(.) is distributed as N (0, 1).

We next proceed to censor the firm's payout ratio in a similar way. Following the model procedures by Auerbach and Hasset (2003) on the equality of sources and uses of funds we perform the following Tobit model that allows the prediction of the payout ratio for each time period from 1996 to 2007:

$$CPR_{it} = \beta_0 + \beta_1 (I/K)_{it} + \beta_2 (CF/K)_{it} + \beta_3 (\Delta B/K)_{it} + B_4 (\Delta SH/K)_{it} + \mu_{it} \qquad (2)$$

with $PR_{it} = CPR_{it}$ *if* $CPR_{it} > 0$

$PR_{it} = 0$ if $CPR_{it} \leq 0$

where CPR_{it} is a latent variable only observed when it is positive, whereas we only know that it is negative in the remainder of the cases. The variable PR_{it} stands for the firm's payout ratio. The explanatory variables of the payout ratio are: investment (I_{it}/K_{it}), cash flow (CF_{it}/K_{it}), increment of debt ($\Delta B_{it}/K_{it}$) and increment of shares ($\Delta SH_{it}/K_{it}$)[37].

Tables IV.1 and IV.2 provide the summary statistics (mean, standard deviation, minimum and maximum) of the product diversification and payout ratio variables obtained by the maximum likelihood estimation of the Tobit model in (1) and (2). In addition, the estimation of a Probit model including the same set of explanatory variables allows us to check the predictive ability of the models in (1) and (2). The last column of Table IV.1 provides the correct classification index for the diversified censored variable, while the last column of Table IV.2 reports the percentages of correct classifications for the payout ratio which are similar to the ones reported in previous

[37] All the explanatory variables are scaled by the replacement value of total assets (K_{it}), calculated as explained in previous chapters.

studies. Additionally, the last row of the tables displays the summary statistics of the new variables, CPD_{it} and CPR_{it}, respectively for which the problem of censor is solved and which form the dependent variables in our models.

Table IV.1

Summary statistics of the estimated diversification measures

Variable	Mean	Standard deviation	Minimum	Maximum	Correct classification
CPD96	0.17004	0.1141	-0.1440	0.5699	61.21
CPD97	0.1763	0.1116	-0.1332	0.5720	61.85
CPD98	0.2086	0.1115	-0.1489	0.6121	66.01
CPD99	0.2097	0.1120	-0.1422	0.6056	66.53
CPD00	0.2415	0.1173	-0.1105	0.6580	70.04
CPD01	0.2444	0.1152	-0.0873	0.6586	70.98
CPD02	0.1111	-0.1031	0.6500	0.6500	69.70
CPD03	0.2200	0.1093	-0.0812	0.6234	68.62
CPD04	0.2130	0.1089	-0.1266	0.6118	67.99
CPD05	0.2118	0.1049	-0.0717	0.5815	67.82
CPD06	0.2080	0.1033	-0.1006	0.5660	67.55
CPD07	0.2338	0.1203	-0.0860	0.6591	69.53
CPD total	0.2166	0.1130	-0.1489	0.6591	

CPD07, for instance, is the diversification variable estimated by using a Tobit model for the year 2007 in order to solve the censure problem. Correct classification stands for the percentage of correct classification arising from a Probit model including the same set of explanatory variables.

Table IV.2

Summary statistics of the estimated payout ratios

Variable	Mean	Standard deviation	Minimum	Maximum	Correct classification
CPR96	0.2950	0.0795	-0.6273	0.6835	79.10
CPR97	0.2952	0.0846	-0.4650	1.0078	78.41
CPR98	0.3142	0.0794	-0.8717	0.9094	75.32
CPR99	0.2370	0.1087	-1.0360	1.5320	72.62
CPR00	0.1944	0.1452	-2.2977	0.8991	71.82
CPR01	0.1929	0.2026	-4.5839	1.715	72.23
CPR02	0.1553	0.2297	-2.0490	1.9900	71.19
CPR03	0.1249	0.2116	-1.8029	0.7850	71.75
CPR04	0.1265	0.1717	-1.395	0.6988	72.73
CPR05	0.1603	0.1752	-1.9325	0.9422	74.34
CPR06	0.1821	0.1577	-1.1410	1.9238	74.97
CPR07	0.2250	0.1048	-0.8470	0.5758	76.19
CPR total	0.1968	0.1751	-4.5839	1.9900	

CPR07, for instante, is the payout ratio estimated by using a Tobit model for the year 2007 in order to solve the censure problem. Correct classification stands for the percentage of correct classification arising from a Probit model including the same set of explanatory variables.

Once the censor problem has been resolved for the product diversification and payout ratio variables, they are then used as dependent variables in the following basic models:

$$CPD_{it} = \alpha_0 + \alpha_1 PR_{it} + \alpha_2 FCF_{it} + \alpha_3 D_{it} + \alpha_4 PROF_{it} + \alpha_5 SQ_{it} + \alpha_6 IA_{it} + \alpha_7 SI_{it} + \varepsilon_{it} \quad (3)$$

$$CPR_{it} = \alpha_0 + \alpha_1 PD_{it} + \alpha_2 FCF_{it} + \alpha_3 D_{it} + \alpha_4 NI_{it} + \alpha_5 TA_{it} + \alpha_6 SI_{it} + \varepsilon_{it} \quad (4)$$

Where INV_{it} denotes investment, D_{it} is the debt ratio, $PROF_{it}$ is the firm's profitability, FCF_{it} denotes free cash flow, IA_{it} stands for the firm intangible assets, NI_{it} denotes firm's net incomes, $TANG_{it}$ are the tangible fixed assets, and SI_{it} is the firm size.

IV.3.2. Variables

IV.3.2.1. Explanatory variables

Reflecting the discussion in Sub-section IV2.1.1, the explanatory variables incorporated into our diversification model are free cash flow, leverage, profitability, Tobin's q, intangible assets and size. To understand the potential funds available to the firm for expansion and the agency mechanism of the correct use of the firm's free cash flow, our model attempts to test a free cash flow index (FCF_{it}) obtained by interacting cash flow with the inverse of the investment opportunities[38]. We compute a firm's cash

[38] Details about the interpretation of this index can be found in Miguel and Pindado (2001).

flow as $CF_{it}=NIAPD_{it}-DEP_{it}$, where $NIAPD_{it}$ denotes net income after preferred dividends, and DEP_{it} stands for the book depreciation expense.

Leverage is widely recognized as explaining diversification strategies because the coinsurance effect may be utilized to obtain greater debt and to mitigate the existing problem with the available funds for the managers; the debt ratio is accordingly defined as $D_{it}=MVLTD_{it}/(V_{it}+PS_{it}+BVSTD_{it}+MVLTD_{it})$, where $MVLTD_{it}$ is the long term debt, V_{it} denotes firm value, PS_{it} is the value of the firm's outstanding preferred stock, and $BVSTD_{it}$ is the short term debt. We use in the numerator the long term debt since most of the arguments in financial theory are related to this type of debt (see, for instance, Miguel and Pindado, 2001 and, more recently, DeAngelo and DeAngelo, 2006).

As diversified firms are usually associated with profitability since represent growth strategies, and as most of the literature focused on the premium or discount associated with their valuation we measure it as the earnings before interest and taxes fractioned to the replacement value of total assets $(PROF_{it})$. To capture the effect of the investment opportunities by multi-segment corporations on the allocation across internal capital markets we use the Tobin's q as $SQ_{it}=(V_{it}+PS_{it}+MVLTD_{it}+ BVSTD_{it})/ K_{it}$, where PS_{it} is the value of the firm's outstanding preferred stock. In addition, we include the intangible assets variable in order to test the repercussions of these investments done by diversified firms computed as the firm's intangible assets scaled by the replacement value of total assets (IA_{it}). Size is measured as the logarithm of the replacement value of total assets (SI_{it}).

Moreover, to test the determinants of the dividend policies explained in Sub-section IV.2.2.1, the left hand side variables used in our payout model are, free cash flow, leverage, earnings, tangible fixed assets and size. To capture the potential benefits of dividends as a mechanism to reduce the conflict of interests between owners and

managers with respect to the allocation of the firm's free cash flow, our model incorporates a free cash flow index obtained as previously. To investigate whether there is a substitution or a complementary relationship between debt and dividends, the debt ratio also enters into our model constructed as before.

To test Lintner's (1956) predictions about the relevance of a firm's earnings for its dividend policy we have included the firm's net incomes, NI_{it}, in our model, measured as $NI_{it}=(PI_{it}-ITX_{it})/K_{it}$, where PI_{it} stands for all income before taxes, and ITX_{it}, represent all taxes levied on a firm's income.

Finally, tangible fixed assets (TA_{it}) are computed as the net book value of property, plant and equipment, scaled by the replacement value of total assets. Firm size is also a potential determinant and constructed as before.

IV.3.3. Hypothesis

We next discuss the arguments that underlie the link between a firm's product diversification strategy and its payout ratio, and pose our main hypothesis.

IV.3.3.1. The link between diversification strategies and dividends

Being involved in multi-segment operations give firms the reward to perform mechanisms to overcome the market power advantages in relation to the fewer opportunities that their single-business competitors have (Caves, 1981). This can be done by exploiting the firm's specific assets in other areas (Bodnar et al., 1999) or markets. As noticed in previous arguments on diversification literature, a focused firm is more limited in terms of investment (for instance, through cross-subsidization)

because it cannot so easily access to capital in terms of debt and equity since are more expensive than the resources produced internally[39] (Lang et al., 1995). Alternatively, a multi-segment firm enjoys of greater flexibility on investment since it can exploit the benefits of external funds and the internally resources generated across its business segments (Lang and Stulz, 1994). By using the within generated cash flow, a diversified firm can opt for the specific use to it, so it can incorporate resources to their best use (Harris and Raviv, 1996 and Matsusaka and Nanda, 2002). An explanation of the superiority of the internal capital markets over the external capital markets is founded in the work of Servaes (1996), who posits that corporate headquarters have better information than external suppliers about the firm's investment opportunities. At this respect, agency costs are supposed to be lower in small firms with plentiful growth opportunities and higher in firms where the capital is largely earned. Myers and Majluf (1984) show profitable firms with good quality investment opportunities tend to be forced between dividends payments and investments (such as diversification strategies) when capital market frictions are significant. Diversification and dividends are somehow related if a single-segment firm presents more difficulties raising capital due to capital market imperfections than multi-segment firms.

Moreover, diversification and dividends compete for the use of the firm's resources, on account of this competition if the firm's available resources are used to diversify in consequence the dividend payments will be lower, and consequently if more dividend payments are made by the firms as a result they hardly diversified. In addition, in a diversified firm context, it seems that managers prefer to use the funds owned by the company to invest it within the firm rather than distribute it in dividends to the shareholders, even if they are negative NPV projects (Stulz, 1990). Jensen (1986) posits

[39] That applies when internally generated funds are well managed by the firm.

that managers of diversified firms with available free cash flows are more prone to invest in negative net present value projects than if they had operations at the single-segment level. Meyer et al. (1992) assert that managers of divisions with high expectations to arise in the field tend to influence the top management of the firm to redirect the resources in their way. Also the asymmetry of information in a multi-segment company makes more difficult the alignment between central and divisional management, this translates in costs (Harris et al., 1982). Jensen (1993) also argues that the monitoring effect exert by external mechanisms on managers could mitigate the agency costs associated with the free cash flow.

Hypothesis 1a. Highly diversified firms will pay more dividends since they can raise capital more easily than non diversified companies.

Hypothesis 1b. Highly diversified firms will pay fewer dividends since diversification and dividends compete for the use of the firm's resources.

To test these hypotheses we have used Equation (3), and then a positive coefficient in the payout variable will support our Hypothesis 1a. and a complementarity effect between diversification and dividends. Moreover, a negative coefficient in the dividend variable will provide evidence for a substitution effect between diversification and dividends accepting our Hypothesis 1b.

Dividends behavior in terms of capital markets have been broadly studied in the literature (Watts, 1973; Penman, 1983; Benartzi et al., 1997; Grullon et al., 2002) and the most explored repercussion is the signaling hypothesis by paying dividends (Miller and Rock, 1985). In other words, it seem that managers react in the premise that

markets give a premium to dividend payers and interpret the stop in the payment as a bad signal (Brav et al., 2005). In addition, Easterbrook (1984) provides argument on a partial raise of external capital is usually affected when increments in dividends appear. By this way the capital market will be more influenced by experts and suppliers who use this kind of information to monitor companies. In other words, periodic dividend payments get managers to ask for external capital for the new projects funding, doing that, they exert a market discipline effect on the firm.

Frictions in capital markets lead to a sort of competition between dividends and investment in diversification strategies as alternative uses of the firm's resources. This competition could have an intrinsically meaning to the explanation of firms with strong investment opportunities often pay less dividends (Jensen et al., 1992). Furthermore, the small and unprofitable firms that had strong growth opportunities seem to have a decline in dividends payments (Fama and French, 2001). High payouts could be an opportunity for the underinvestment risk due the high expectation in external finance (Myers, 1977). In this reasoning firm may invest more by reducing their payouts (Cronqvist et al., 2001).

The cash flow plays an important role in the dividend policy because it reflects the company ability to pay it or not more clearly than the current earnings, which in some extent are more sensible by accounting practices (Alli et al., 1993). Free cash flow arguments document that firm value should increase if over-investing managers payout more of cash flows as dividends investing less and less in projects with negative NPV. In short, managers might through cash away on negative NPV projects, in this instance dividends payment help to control this type of agency problem by limiting the discretionary funds available to them (Grossman and Hart, 1988; Jensen, 1986). By this

way dividend payouts can be seen as mechanism to reduce the cash flow produced by the company to avoid the use of it for the managers at their discretion (Jensen, 1986).

Hypothesis 2a. A firm's payouts will be affected positively by the effect of diversification since external capital markets exert a monitoring effect.

Hypothesis 2b. A firm's payouts will be affected negatively for diversification since both are competing for the use of the firm's resources.

Model in Equation (4) has been constructed to test these hypotheses eventually a positive coefficient for the diversification variable will hold the complementarity effect previously explained accepting our Hypothesis 2a. By contrast, a negative sign in the diversification variable will support our Hypothesis 2b. confirming the substitution effect relying on these two strategies.

IV.3.3.2. Country factors

Finally, we account for country factors and propose additional hypothesis about the relation between diversification and dividends depending on the legal, financial systems and developing of the economy.

Previous evidence shows that the product diversification strategy differs across countries (Khana and Palepu, 1997; Lins and Servaes, 2002; Fauver et al., 2003; 2004; Ferris et al., 2007); and the same trend is found on the dividend policy (La Porta et al., 2000; Rahman, 2002; Aivazian et al., 2003; Brav et al., 2005). Moreover, the globalization effect has encouraged the firms to act in different environments and,

consequently, in other markets and geographic areas. Consequently, if we attempt to understand the forces that determine the modern corporation's diversification strategies and the influence of payout policy and vice versa, it would seem essential to study these mechanisms from an international perspective.

To investigate whether the characteristics of legal systems, financial systems and developing economies moderate the relationship between firm product diversification and payout ratio, we extended on the models in Equations (3) and (4) as follows:

$$CDP_{it} = \alpha_0 + (\alpha_1 + \gamma_1 LS)PR_{it} + \alpha_2 FCF_{it} + \alpha_3 D_{it} + \alpha_4 PROF_{it} + \alpha_5 SQ_{it}\alpha_6 IA_{it} + \alpha_7 SI_{it} + \varepsilon_{it} \quad (5)$$

$$CPR_{it} = \alpha_0 + (\alpha_1 + \gamma_1 LS)PD_{it} + \alpha_2 FCF_{it} + \alpha_3 D_{it} + \alpha_4 NI_{it} + \alpha_5 TA_{it} + \alpha_6 SI_{it} + \varepsilon_{it} \quad (6)$$

where LS_{it} is a dummy variable constructed to capture the nature of legal system. We follow La Porta et al. (1998) in the construction of this index. We then replace LS_{it} for FS_{it} to account for the moderating role played by the financial system. The construction of the index of financial systems is based on Beck et al. (2001) and Demirgüç-Kunt and Maksimovic (2002)[40]. Finally, we replace FS_{it} for EDE_{it} to test for emerging and developed economies constructed as the criterion of the World Bank Classification.

This way, the coefficient of the variables (PD_{it}), and (PR_{it}) is α_1 for firms operating in civil law countries, bank-oriented financial systems and developed countries (since LS_{it}, FS_{it} and EDE_{it} takes value 0, respectively); and it is ($\alpha_1+\gamma_1$) for firms involved in common law countries, market-oriented financial systems and emerging

[40] The exact calculation of the index is based on the ratio of banking sector development and stock market development of each country, so with these two measures they classify with respect to their median value, then values above the median are considered as countries with market-based systems and bank-based below the median of both indexes.

economies (since LS_{it}, FS_{it} and EDE_{it} takes value 1, respectively). It is worth noting that in all cases whenever the dummy variable (LS_{it}, FS_{it} and EDE_{it}) equals one, the statistical significance of the coefficient must be checked by performing a linear restriction test. The null hypothesis to be tested in these cases is the hypothesis of no significance, H_0: $\gamma_1+\alpha=0$.

IV.3.3.2.1. Legal systems

Recent research has focused on the link between law and finance, specifically on the role played by differences in legal systems across countries. The laws that protect investor have been widely recognized to have dissimilarities across countries, due to differences in legal origins (see, La Porta et al., 1998). La Porta et al. (1997) use the legal tradition[41] as an exogenous variable to explain the legal protection for investors (shareholders and creditors) across countries. In their research, they separate the legal world in two main legal traditions: common and civil law. They study the implications on the differences of investor protection across countries, regardless of their obvious association with particular modes of corporate governance. They look at the ability of firms in various countries to raise external financing (either equity or debt). More specifically, they find that countries with common law legal origins have the best access to equity markets, whereas French legal origin countries have the worst. Relative to debt, common law countries provides better access than civil law countries origins.

Firms operating in civil law countries are characterized to have alternative circumstances for managers to explain their specific information on the perspective of

[41] Most of the arguments found support on Hayek's (1960) study on the superiority of English to French legal traditions. In Hayek's analysis, the spontaneous order represented by the *common law* is more consistent with individual liberty than the more rationalist and constructivist (and, therefore, more interventionist) tendencies of the *civil law*.

futures cash flows to investors, and also when a dependence on internal funds to carry on projects emerge (Dewenter and Warther, 1998). Alternatively, insiders have the opportunity to transfer information to the major shareholders representatives, by this way mitigating asymmetries of information (Ball et al., 2000).

In the field of diversification strategies research, there is no substantial empirical evidence about the role played by the legal system. However, Fauver et al. (2003) find that there is less discount in the valuation of multi-segment firms in countries where the legal system is civil law in origin, whereas product diversified firms operating in countries with an English legal system origin trade at a substantial discount. Fauver et al. (2004) find that the market value of U.S. globally diversified firms is discounted, while this is not the case for UK and German global firms. The attribution of these results relies on the fact that the benefits of diversification strategies (in terms of internal markets) are more valuable for firms in civil law countries where it is more difficult to raise of external finance. Moreover, Moeller and Schlingemann (2005) attempt to study whether global diversification varies across different institutional environments but find no support. Ferris et al. (2007) find a reduction in the discount for industrially and globally diversified firms and better excess values in civil law countries. In general, there is not a conclusive answer to the question as to how the legal system influences the behavior of product and global diversification.

Hypothesis 3. The legal system will moderate the dividend payment in diversified firms.

Differences in dividend policies across geographic markets vary systematically (Rahman, 2002; Aivazian et al., 2003; Brav et al., 2005); as a consequence, among other

thing, of the legal protection provided to minority shareholders (La Porta et al., 2000; Faccio et al., 2001). La Porta et al. (2000) argue that minority equity investors extract more dividends from controlling shareholders in common law legal origins countries because investors have the ability to use their legal resources to obtain more benefits, but this activity might be difficult when agency costs tryout superior levels, whereas in civil law one is more difficult since the effective protection to shareholders is less strong.

Alternatively, according to the substitution model, insiders in order to issue more equity in the future are encourage to pay dividends to build a good reputation handling very carefully the treatment of the minority shareholders. Faccio et al. (2001) support this view and find that draws in dividends are higher in environments characterized by weaker investor protection (i.e. civil law), since they want to limit the expropriation of minority shareholders.

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Moreover, investors may prefer to have participations in firms where the payouts are larger or where the shareholders receive a considerable fraction of the earnings to use in their own preferences, mainly in corporations working in low investor protection environments, hinting the idea of lower payouts ratios in respect with high protection countries regardless of growth opportunities and other agency costs. Additionally, based in agency arguments, La Porta et al. (2000) find that dividends and growth opportunities will vary in civil law and common law environments. Investment opportunities produce

a downward effect in dividend payments just in high protection countries and have no evidence for the counterpart legal system (La Porta et al., 2000). This turn into investor behaviors to claim for whatever dividend payments they can get due shareholders in countries with poor protection are not capable to be sure if they will receive some participation on the cash flows reinvested in high growth projects. In sum, they found that investment opportunities diminish the payout ratios only in high protection geographic areas (common law countries), but not in low protection environments (civil law countries).

Hypothesis 4. The effect of the diversification strategy on a firm's payouts will be moderated by the country legal system.

To test these Hypotheses, we have constructed a Legal Origin Index in Equation (5) for Hypothesis 3 and in Equation (6) for Hypothesis 4, respectively, that classifies the countries under analysis according to their legal origin, and it takes value 1 if the country is a common law in origins and 0 if it is a civil law in origins.

IV.*3.3.2.2. Financial systems*

Corporate finance literature has been employed to understand the differences and qualities of financial markets and banks as capital providers across countries. When banks[42] act as financial intermediaries it is clear that a bank-oriented financial system manages the situation of capital transfer. Alternatively, a capital-market oriented system

[42] Or other financial institutions providing similar services, respectively of whether or not they are closely related to banks.

provides those services directly in the stock markets[43]. In short, bank-oriented financial systems are predominantly found in continental Europe and Japan, and the typical examples of market oriented systems are the US and the UK. As a result of the study about the dichotomy between market-oriented and bank-oriented financial systems of Rajan and Zingales (1995), several papers have been performed to understand this phenomenon (see for instance, Levine, 2002; Beck and Levine, 2002 and Demirgüç-Kunt and Maksimovic, 2002).

Financial systems are very useful in the institutional environment since they provide automatically capital formation, facilitation of risk sharing, information production and monitoring. The fundamental question is which financial system provides greater benefits to firms, and how this superiority varies across the operational countries environments (Rajan and Zingales, 1998). In the literature, some authors argue that market-based systems are intrinsically superior (Macey, 1998), while others underscore the intrinsic value of banks (Gilson and Roe, 1993). It seems that agency problems are also associated with the success of one system over another; more specifically, firms in industries with consistent state verification make use of the financial markets, and firms that require high levels of monitoring tend to be in bank systems (Boot and Thakor, 1997). Bank-based systems on their own fit situations with low contractibility combined with high capital scarcity relative to investment opportunity. Market based systems offer better yields in environments characterized by high contractibility and high capital availability relative to investment opportunities (implying growth opportunities).

Evidence on the influence of the capital market development on diversification strategies has received scarce attention in the literature. Moreover, Fauver et al. (2003)

[43] As a main regulator factor in capital-market financial system is the law of supply and demand.

find that the discount of diversified firms is less pronounced in countries where capital markets are less developed, while it is higher in countries with well established capital markets and better structural conditions. They argue that diversified firms obtain benefits from internal capital markets, especially in countries with costly and less developed external capital markets.

Hypothesis 5. The financial system will moderate the payout of diversified companies.

Regarding dividends, no empirical evidence is found hitherto. Using on the one hand Demirgüç-Kunt and Maksimovic (1996) arguments on the substitution of equity for debt financing in countries with developed stock markets, managers will be concern to proceed in line with shareholders interest to preserve a high-quality name in the capital market. On the other hand, as Gilson and Roe (1993) suggest, banks-oriented systems provide a great monitoring effect. Consequently, dividend payments arise as a solution for this objective (Rozeff, 1982; Easterbrook, 1984).

Hypothesis 6. The effect of diversification on a firm's payout ratio will depend on the country financial system.

These hypotheses can be tested by substituting the dummy variable in Equation (5) and in Equation (6) (for Hypothesis 5 and 6, respectively) by another dummy variable, FS_{it} which takes value of 0 for firms operating under bank-oriented financial system and 1 for firms in market-oriented financial systems.

IV.*3.3.2.3. Emerging and Developed Economies*

Nowadays, it is important to highlight the performance of firms operating in emerging markets. They are involved in great diversification, growth projection and incomparable revenues possibilities. In the middle of the 90's, emerging economies were involved in transitional changes like privatizations, more regulation in their currencies and democratically governments.

In emerging markets it is usual that firms enjoy of greater levels of asymmetry information and agency problems and other markets imperfections[44]. Lins and Servaes (2002) posit that diversified firms may take advantage of the internal capital markets or, otherwise, been subject of the expropriation of minority shareholders in emerging economies. At this respect, they argue that multi-segment firms in emerging economies trade at a discount. Moreover, Lin and Su (2008) find higher valuation for diversified firms as compared to single-segment firms in less developed contexts. A possible explanation to this value premium is that diversified firms in developing countries are able to emulate the strategies of their counterparts in developed countries and then exploit their current institutions (Khanna and Palepu, 1997) Subsequently, Khana and Palepu (2000), in a diversified group firm study, provide evidence that the behaviour of these multi-segment firms vary from less developed to developed countries due to corporate governance schemes and the level of capital market integration.

Hypothesis 7. The developed of the economy will moderate the payout ratio of diversified companies.

[44] Khanna and Palepu (2000), argue that financial markets in emerging economies suffer inadequate disclosure and weak corporate governance and control mechanisms.

Emerging markets have been explored also to explain the divided behavior (Glen et al., 1995). Emerging markets are subject to global equity investments, because investors are seeking growth and expect good dividends payments in line to exploit some government regulations. Studies about dividend policies in different developed countries drop the common result that firms follow stable dividend policies (Chateu, 1979; Leithner and Zimmermann, 1993; Lasfer, 1996). However, Glen et al. (1995), found differences between dividend policies across developed and emerging market economies and firms in emerging markets do not follow stable dividend policies. Moreover, Aivazian et al. (2003), find the same pattern in dividend policy for emerging markets and US firms.

Hypothesis 8. The effect of diversification on a firm's payout ratio will depend on the level of development of the economic system.

To test these hypotheses, we have constructed several indices. The first one, Legal Origin index, classifies the countries under analysis according to their legal origin, and it takes value 1 if the country is as a common law country and 0 if it is a civil law one. The second one, Financial System, gives the value of 0 for firms operating under bank-oriented financial system and 1 for firms in market-oriented financial systems. Finally the third index classified emerging economies taking the value of 1 and developed economies with the value of 0.

These hypotheses can be tested by substituting the dummy variable in Equation (5) and in Equation (6) (for hypothesis 7 and 8, respectively) by another dummy variable, EDE_{it} which classified emerging economies taking the value of 1 and developed economies with the value of 0.

IV.4. Data and Methodology

To test the hypotheses posed in the previous sub-section we use data from 29 countries. These countries represent a great diversity of institutional environments. The selection of sample countries is motivated by the existence of distinct financial and institutional settings prevailing all over the world. For each country we construct an unbalanced panel of non-financial companies whose information was available for a least six consecutive years from 1996 to 2007[45]. This strong requirement is a necessary condition since we lost one-year data in the construction of some variables, we lost another year-data because of the estimation of the model in first differences, and four consecutive year information is required in order to test for second-order serial correlation, as Arellano and Bond (1991) point out. We need to test for the second-order serial correlation because our estimation method, the Generalized Method of Moments (GMM) is based on this assumption.

From our first country sample (34 countries) we have excluded those countries that provide mandatory dividends. In addition, economies that do not satisfy with the data requirements for multi-segment companies have also been omitted because we do not have sufficient information to construct several variables. The structure of the samples by number of companies and number of observations per country is provided in Table IV.3. As shown in Table IV.3, the resultant unbalanced panel comprises 3,628 companies and 28,143 observations. Using an unbalanced panel for a long period (12 years) is the best way to resolve the issue of survival bias because some firms will be delisted and, consequently, dropped from the database.

[45] We restrict our analysis to non-financial companies because financial companies have their own specificity.

Table IV.3

Structure of the samples by countries

Country	Number of companies	Percentage of companies	Number of observations	Percentage of observations
Austria	20	0.55	130	0.46
Belgium	32	0.88	249	0.88
Canada	99	2.73	710	2.52
Chile	39	1.07	324	1.15
Denmark	34	0.94	277	0.98
Finland	20	0.55	155	0.55
France	184	5.07	1352	4.80
Germany	151	4.16	1142	4.06
Hong Kong	162	4.47	1179	4.19
India	145	4.00	1039	3.69
Ireland	11	0.30	100	0.36
Japan	420	11.58	4006	14.23
Korea	182	5.02	1428	5.07
Malaysia	326	8.99	2375	8.44
Mexico	33	0.91	241	0.86
Netherlands	53	1.46	448	1.59
New Zealand	15	0.41	127	0.45
Norway	12	0.33	91	0.32
Pakistan	34	0.94	152	0.54
Philippines	33	0.91	231	0.82
Portugal	19	0.52	157	0.56
Singapore	148	4.08	1035	3.68
South Africa	88	2.43	611	2.17
Spain	34	0.94	286	1.02
Sweden	58	1.60	431	1.53
Switzerland	34	0.94	271	0.96
Thailand	75	2.07	470	1.67
UK	343	9.45	2865	10.18
USA	824	22.71	6261	22.25
Total	3628	100	28143	100

We use Worldscope as the principal source of data, with variables such as the growth of capital goods' prices, the rate of interest of short term debt and the rate of interest of long term debt being extracted from the Main Economic Indicators published by the Organization for Economic Cooperation and Development's (OECD) and from the International Financial Statistics provided by the International Monetary Fund (IMF). For the construction of the product diversification indicator we use firms with reported industry and level segment data. Following Berger and Ofek (1995), Campa and Kedia (2002) and Denis et al, (2002) we exclude firm-year observations with a missing value of total assets, observations of financial companies (SIC 6000-6999) and firm-year observations with reported sales in product segments higher than the total sales reported by each company. Table IV.4 provides summary statistics (mean, standard deviation, minimum and maximum) of the variables used in the construction of the dependents and explanatory variables in our models.

Table IV.4
Summary statistics

Panel A. Tobit model to solve diversification censure				
Variable	Mean	Standard deviation	Minimum	Maximum
PD_{it}	0.2920	0.2698	0	0.7985
$(I/K)_{it}$	0.0435	0.0942	-1.1664	0.9484
$(CF/K)_{it}$	0.0306	0.1019	-0.8220	0.6283
$(D)_{it}$	0.0993	0.1260	0	0.8879
$(SI)_{it}$	12.7475	1.9650	6.8719	19.8551
Panel B.Tobit model to solve dividends censure				
Variable	Mean	Standard deviation	Minimum	Maximum
PR_{it}	0.3108	0.3478	0	1
$(I/K)_{it}$	0.0435	0.0942	-1.1664	0.9484
$(CF/K)_{it}$	0.0306	0.1019	-0.8220	0.6283
$(\Delta D/K)_{it}$	0.0052	0.1095	-4.7681	1.1362
$(\Delta SH/K)_{it}$	0.005812.747 5	0.0544	-2.1560	2.7572
Panel C. Other variables for the basic models				
Variable	Mean	Standard deviation	Minimum	Maximum
SQ_{it}	0.9996	0.9169	0.1017	9.9551
FCF_{it}	0.0311	0.1556	-1.9228	2.3855
$PROF_{it}$	0.0477	0.1110	-0.8417	0.7603
NI_{it}	0.0164	0.1024	-0.9402	0.6188
TA_{it}	0.2909	0.1940	0.0000	0.9788
IA_{it}	0.0776	0.1335	-0.0896	0.9774

PD_{it} stands for the diversification measure by the Revenue based in the Herfindahl index. PR_{it} denotes payout ratio, $(I/K)_{it}$ denotes investment, $(CF/K)_{it}$ is the cash flow, D_{it} stands for the debt ratio, SI_{it} is the size, $(\Delta D/K)_{it}$ and $(\Delta S/K)_{it}$ stand for the increment of debt and shares, respectively, SQ_{it} is the Tobin's q, $PROF_{it}$ denotes firm's profitability, FCF_{it} is the free cash flow, NI_{it} is the net income, TA_{it} and IA_{it} denote tangible and intangible fixed assets respectively.

Our models have been estimated by using the panel data methodology on the sample described in Table IV.3. Two issues have been considered in making this choice. First, unlike cross-sectional analysis, panel data allow us to control for individual heterogeneity and to eliminate the risk of obtaining biased results because of such heterogeneity (Moulton, 1986, 1987). This point is crucial in our study because the decision of undertaking diversification strategies and dividend decision in a firm are very closely related to the specificity of each company. Therefore, to eliminate the risk of obtaining biased results, we have controlled for such heterogeneity by modelling it as an individual effect, $\eta_{i,}$ which is then eliminated by taking first differences of the variables. Consequently, the error term in our models, ε_{it}, has been split into four components. First, the above mentioned individual or firm-specific effect, η_I; second, d_t measures the time-specific effect by the corresponding time dummy variables, so that we can control for the effects of macroeconomic variables on the diversification decision; third, since our models are estimated using data from several countries, we have also included country dummy variables (c_i) and finally, v_{it} is the random disturbance.

The second issue we can deal with by using the panel data methodology is the endogeneity problem. Particularly, the literature concerning the diversification discount examines whether such a discount is the result of endogenous choices of the firm. Lang and Stulz (1994), for example, find that diversified firms trade at a discount even before diversifying. Focusing on firms that diversify through acquisitions, Graham, et al. (2002) find that the diversification discount can be explained by the lower values of the firms that are acquired. Campa and Kedia (2002) suggest that the discount is considerably reduced with proper controls for the endogeneity of the diversification decision. Moreover, the endogeneity problem is likely to arise in that the dependent variable (payout ratio) may also explain some of the explanatory variables. For instance, the

payout ratio may explain leverage on the basis of the arguments used to justify the reverse causality (see Sub-section IV.2.2.1). In fact, Jensen, et al. (1992) and Mod'd et al. (1998), among others, document the existence of a significant effect of dividends on debt. Additionally, there are also reasons to expect size to be endogenous, since, as Ferris, et al. (2006) point out; large payers have continued to increase in size over the last ten years. As a consequence, endogeneity may be a problem in our models that needs to be controlled for. That is why our models have been estimated by using instruments. To be exact, we have used all the right-hand-side variables in the models lagged from t-1 to t-6 as instruments for the equations in differences, and t-0 for the equations in levels as Blundell and Bond (1998) suggest when they derive the system estimator used in this study.

Finally, we have checked for the potential misspecification of the models. First, we use the Hansen J statistic of over-identifying restrictions in order to test the absence of correlation between the instruments and the error term. Second, we use the m_2 statistic, developed by Arellano and Bond (1991), to test for a lack of second-order serial correlation in the first-difference residual. Tables IV.5, IV.7, IV.8, and IV.9 shows that there is not a problem of second-order serial correlation in our models (see m_2)[46]. In third place, the indicators presented in Tables IV.5, IV.7, IV.8, and IV.9 provide significant results for the following three Wald tests: z_1 is a test of the joint significance of the reported coefficients; z_2 is a test of the joint significance of the time dummies; and z_3 is a test of the joint significance of the country dummies.

[46] Note that although there is first-order serial correlation (see m_1), this is caused by the first-difference transformation of the model and, consequently, it does not represent a specification problem of the models.

IV.5. Results

In Sub-section IV.5.1 we first present the results of our diversification basic model (3), which includes besides payout ratio a set of control variables that have been traditionally considered as determinants of a firm's propensity to diversify. We then comment in Sub-section IV.5.2 the results of our payout basic model in equation (4), which includes the explanatory variables that have been traditionally considered as determinants of a firm's payout ratio adding the diversification index. Subsequently, we present the results of an additional analysis testing for the existence of institutional and country differences on the diversification strategy and payout policy. With this objective, we initially offer some explanation of summary statistics on Sub-section IV.5.3. Finally in Sub-section IV.5.4 we analyse the impact of legal and financial systems and developing economies on the relationship between diversification and dividends using our extended model (5) and between dividends and diversification with the extended model (6).

IV.5.1. Diversification basic model results

The results of the GMM estimation of our basic model in equation 3 are provided in Column I of Table IV.5. The negative coefficient for the payout variable (PR_{it}= -0.00241) suggests that firm's payout policies are negatively associated with diversification strategies supporting our Hypothesis 1b. Moreover, this result totally confirms the role played by product diversification and dividends as competitors of the alternative uses for the available firm's resources and, the substitution effect between diversification and dividends is then confirmed. This evidence is consistent with the

arguments pointing out: i) firms with growth opportunities often reduce their payouts (Fama and French, 2001); ii) investing in more product segments lead a reduction on the payouts to finance this kind of activities or strategies for the firm (Jensen et al., 1992; Cronqvist et al., 2001); iii) managers use the available funds to expand their line of business according to their preferences by restricting the dividend payments (Grossman and Hart, 1988; Jensen, 1986). We can argue, managers of diversified companies are encourage to expand its current lines of businesses not taking into account the new business acquisitions since they are able to reap other benefits (Amihud and Lev, 1981; Morck et al., 1990) instead of use the resources to pay more dividends to shareholders. More interesting is to understand that the potential costs of diversification are also reflected in this finding since the costs of control, effort losses, coordination and incongruity between units business (Markides, 1992) lead managers to use the available firm's resources at their discretion and to embark in overinvestment practices (Stulz, 1990). By doing this, they will use funds to finance this kind of projects punishing shareholders by reductions on payouts.

Table IV.5
Estimation Results for Product diversification and Payout ratio models

	I *(PRODUCT DIVERSIFICATION)*	II *(PAYOUT RATIO)*
Constant	-0.526*	0.140*
	(0.0034)	(0.0227)
PR_{it}	-0.00241*	
	(0.0005)	
PD_{it}		-0.0162**
		(0.0072)
FCF_{it}	0.00351**	0.0972*
	(0.0018)	(0.0160)
D_{it}	0.0180*	0.211*
	(0.0020)	(0.0138)
$PROF_{it}$	-0.130*	
	(0.0029)	
SQ_{it}	-0.000553*	
	(0.0002)	
IA_{it}	-0.00119	
	(0.0021)	
SI_{it}	0.0550*	0.0110*
	(0.0002)	(0.0016)
NI_{it}		0.826*
		(0.0311)
TA_{it}		-0.0836*
		(0.0173)
z_1	11594.39	535.04
	(7)	(6)
z_2	5660.75	661.10
	(11)	(11)
z_3	13.65	3.02
	(12)	(12)
m_1	-13.90	-11.81
m_2	-0.44	-0.93
Hansen	1699.33	1126.65
	(348)	(341)

The regressions are performed by using the panel described in Table IV.3. The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) * ,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; iv) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation.

Let us now comment on the results obtained for the variables commonly used to explain the diversification decision. The positive estimated coefficient of the free cash flow indicates that high levels of cash available in the firm are translated into more diversification, as the agency view support (Jensen, 1986). Moreover, this variable helps us to explain the above finding of the competition effect between dividends and diversification, since the free cash flow is positive related with the diversification decision. The positive effect of debt on diversification explains the important role of leverage in multi-segment corporations. This finding is in line with the coinsurance effect (Lewellen, 1971) that allows multi-segment firms for a greater debt capacity than single-segment firms, and at the same time with the mitigation effect provided by reducing the available cash in the firm (Jensen, 1986) that otherwise would be wasted in overinvesting practices. Tobin's q negatively influences diversification. This is consistent with Ferris et al, (2007) and it could be that multi-segments firms invest inefficiently (Lamont, 1997; Berger and Ofek, 1995) and, consequently, their investment opportunities fall down. This relationship is also attributed to multi-segment firms presenting lower Tobin's q than the median q for single-segment firms in their industry as Lang and Stulz (1994) indicate.

Consistent with the discount hypothesis of diversified firms (Berger and Ofek, 1995; Rajan et al., 2000; Doukas and Kan, 2006), our variable of profitability is negatively related with the diversification decision. Our attempt to explain the intangibles assets is not representative in our sample since we do not find significance of its coefficient. Finally, the size variable is positive, indicating its importance since diversification represents a growth strategy (Chandler, 1962), an opportunity to obtain the best from scope and scale economies (Panzar and Willing, 1981; Chandler 1977), and is also consistent with the findings of Berger and Ofek (1995) who argue that big

companies have better access to capital markets and hence are more prone to be involved in multi-segment activities.

IV.5.2. Payout basic model results.

Once the existence of a significant effect on the payout ratios and diversification strategy has been corroborated by our results, we go a step forward and investigate the effect of diversification on a firm's payout ratio. It is worth noting that, as far as we know, there is no prior evidence supporting this view, and providing empirical support to this issue is thus one of the major contributions of this chapter. Second column of Table IV.5 reports the results for the model (4). Also in this case, the estimated coefficient of the key variable is statistically significant. The negative coefficient for the diversification variable (PD_{it}= -0.0162) confirms our Hypothesis 2b and also corroborates our above finding on diversification and dividends as competitors for alternatives uses of a firm's resources and the so called substitution effect between these two strategies. According to this result some support could be obtained from: i) multi-segment firms prefer to use the cash produced by their internal capital markets to exploit more investments than obtain extra external funds (Lang et al., 1995) and consequently pay less dividends; ii) managers of diversified companies have a preference to use the cash of the firm to invest it inside the firm rather to distribute as dividends (Stulz, 1990); iii) payout policy is conducted by the appropriately distribution of the available funds of the firms (DeAngelo and DeAngelo, 2006).

Furthermore, the determinants of the payout ratio are also consistent in their signs and significance with our arguments. The firm's free cash flow is positive; more than explain that this relation is consistent with agency theory (Jensen, 1986) due that

firms with high levels of free cash flow use the dividend payments as a strategy to retain managers' discretion and prevent them from overinvesting, this result also help us to understand that as diversification, payout ratios are dependent on the free cash flow (Mackey and Barney 2005). An interest result is found in agreement with Jensen (1989), the coefficient of leverage is positive suggesting that debt and dividends are complementary agency-cost control mechanisms. A positive relationship between a firm's earnings and its payout ratio is also confirmed. Consistent with Lintner (1956), increments in payout ratios followed by companies in our sample are in line with rising in their earnings in order to get a stable pattern of dividends and avoid dividend cuts. Concerning the nature of the firm's assets, we find a negative coefficient for the tangible assets as the agency theory suggests (Ho, 2003). Finally, as it was expected, a positive coefficient in the size variable supports the idea that larger companies are prone to pay higher dividends.

IV.5.3. Summary statistics across different samples

Table IV.7 presents preliminary results to understand the behavior of our main variables across legal systems, financial systems and country economic development. This table reports a mean comparison analysis. As shown in Panel A, the mean diversification index for firms operating in civil law countries (0.34) is higher than the reported on the common law sample (0.26). This suggests that civil law firms use product diversification strategy more than their common law counterparts in order to obtain additional benefits from the different industries. With respect to the payout ratio, higher levels are found in the civil law sample (0.35) than in the common law one (0.28), telling us that civil law firms provide more levels of payouts than their common

law counterparts. The difference in means between these two groups is statistically significant, as reported by the mean difference test.

Table IV. 6

Differences between Civil Law and Common Law firms; between Bank-Oriented and Financial-Oriented firms and between Developed and Emerging firm samples on Product Diversification and Payout Ratios.

PANEL A. Product Diversification			
Legal system	*Obs*	Means (SD)	T-value
Civil law	11219	0.3400 (0.2708)	
Common Law	16924	0.2602 (0.2645)	24.5395
Payout ratio			
Legal system	*Obs*	Means (SD)	T-value
Civil law	11219	0.3521 (0.3471)	
Common Law	16924	0.2834 (0.3455)	16.2961
PANEL B. Product Diversification			
Financial system	*Obs*	Means (SD)	T-value
Bank-oriented	10145	0.3563 (0.2620)	
Market-oriented	17998	0.2557 (0.2674)	30.5211
Payout Ratio			
Financial system	*Obs*	Means (SD)	T-value
Bank-oriented	10145	0.3604 (0.3366)	
Market-oriented	17998	0.2828 (0.3508)	18.0872
PANEL C. Product Diversification			
Country classification	*Obs*	Means	T-value
Emerging	5443	0.2199 (0.2546)	
Developed	22700	0.3093 (0.2705)	22.1223
Payout ratio			
Type of economies	*Obs*	Means	T-value
Emerging	5443	0.3426 (0.3450)	
Developed	22700	0.3031 (0.3480)	-7.5197

Moreover, the analysis in panel B also shows significant differences in mean diversification measures across different financial systems. Specifically, firms in bank-oriented systems show higher product diversification index (0.35) and payout ratios (0.36) than in market-oriented systems (0.25) and (0.28), respectively. Finally, the pattern differences between country classification samples show more product diversification (0.30) in developed countries than in emerging ones (0.25). However, the payout ratio is bigger in emerging countries (0.34) than in developed ones (0.30), as shown in panel C.

As we noticed for difference in the diversification index and payout ratio across different samples we attempt to study more in depth their consequences by using our censored dependent variables with the extended models.

IV.5.4. Results of the extended models

Once we have checked the existence of an effect between diversification a payouts ratios, we go a step forward and test whether or not the institutional context moderates this effect. Table IV.7, IV.8 and IV.9 provide the results of the estimation of Models (5) and (6), extended to include the interaction effect between legal and financial systems and country classification on the relation of dividends on diversification and vice versa. The results for the commonly determinants variables in the basic models remain practically identical once the legal, financial and country classification interactions, LS_{it}, FS_{it} and EDE_{it} are included in the analysis.

In column I of table IV.7, we find a negative effect of payout ratio on diversification for firms characterized by civil law origins (-0.00121), whereas this negative effect is stronger for firms with common law origins [(-0.00121) + (-0.00150) =

-0.00271] which is statistically different from zero (see the *t* statistic). This result may be explained by the efficiency of the internal capital markets in civil law countries (Fauver et al., 2003) as compared to common law ones. In short, these findings suggest that firms operating in countries characterized by weaker investor protection are encourage to obtain the maximum benefits from the internal capital markets generated by being a multi-segment corporation and, consequently, to have less negative payouts ratios. Additionally, in terms of firm's diversified valuation, Fauver et al. (2003) and Ferris et al. (2007) provide evidence that the discount is less pronounced in civil law firms, and then, these firms are able to provide more capital to shareholders than their common law counterparts. Additionally, insiders in civil law firms have more chances to provide information to the major shareholders that result in a reduction in the asymmetric information problem (Ball et al., 2000). Subsequently, we find support for our Hypothesis 2 about the role played by the legal systems on the effect of payout on product diversified companies. Furthermore, our Hypothesis 1b is corroborated for both samples, civil and common law diversified firms, in consequence we support the substitution effect between these two strategies for firms in these legal systems.

Column II of Table IV.7 reports a negative effect of diversification on dividend payments for firms in common law countries (-0.0183), whereas this effect turns non significant in civil law environments. It seems that although common law provides better access to capital and more dividends (La Porta et al, 2000), agency costs are higher in these legal systems and, consequently, the effect of diversification is negative. La Porta et al. (2000) also attribute a downward effect on dividends in common law firms when firms are involved in investment. In short, this finding supports our Hypothesis 3 about the different relation between diversification and dividends in different legal systems

and it corroborate Hypothesis 2b about the substitution effect between them for firms in common law origins.

Table IV.7
Estimation Results of the Moderating Role of the Legal Systems on the Product Diversification and Payout Ratio

	I *(PRODUCT DIVERSIFICATION)*	II *(PAYOUT RATIO)*
Constant	-0.528*	0.185*
	(0.0032)	(0.0194)
PR_{it}	-0.00121**	
	(0.0006)	
$PR_{it\_}LS_{it}$	-0.00150***	
	(0.0009)	
PD_{it}		-0.00684
		(0.0082)
$PD_{it\_}LS_{it}$		-0.0183***
		(0.0106)
FCF_{it}	0.00357**	0.0992*
	(0.0016)	(0.0159)
D_{it}	0.0177*	0.188*
	(0.0019)	(0.0137)
$PROF_{it}$	-0.131*	
	(0.0028)	
SQ_{it}	-0.000713*	
	(0.0002)	
IA_{it}	-0.00335	
	(0.0020)	
SI_{it}	0.0551*	0.00594*
	(0.0002)	(0.0013)
NI_{it}		0.816*
		(0.0310)
TA_{it}		-0.0143
		(0.0145)
t	-4.2596811	-2.8155
z_1	11704.39 (8)	455.83 (7)
z_2	6266.24 (11)	716.44 (11)
z_3	15.64 (12)	2.96 (12)
m_1	-13.92	-11.95
m_2	-0.46	-0.94
Hansen	1810.62	1212.44
	(450)	(347)

The regressions are performed by using the panel described in Table IV.3. LS_{it} is a dummy variable that takes the following values: 1 for common law countries and 0 for civil law countries reported in column I and II respectively The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) * ,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; iv) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation

Table IV.8 provides results regarding the influence of the financial system into our models. In column I we observe a negative coefficient for the payout ratio of diversified firms in market-oriented systems (-0.00430), while there is no effect in their bank-oriented counterparts. It is worth noting that although diversified firms in market oriented systems have more availability of capital to invest, they still provide less dividends. We thus find only partial support for our Hypothesis 5, but our Hypothesis 1b is confirmed for firms in market-oriented systems, then a substitution effect appears also in this financial system between diversification a dividends.

As shown in Column II of Table IV.8, the effect of diversification on dividends is positive for firms in bank-oriented systems (0.0221) and negative for firms in market-oriented systems [(0.0221) + (-0.0574)=-0.0353 significantly different from zero, see the t statistic]. This result supports our Hypothesis 6 about the moderating role played by the financial system in the relationship between diversification and dividends. Additionally, it supports our Hypothesis 2a on the complementarity between diversification and dividends in bank-oriented systems because of signaling arguments, the market discipline effect, and tactics to avoid over-investment processes by managers. In contrast, there seems to be a substitution effect between them in market-oriented systems, thus supporting our Hypothesis 2b, according to which firm's payouts are affected negatively for diversification practices due the competition of the available firm's resources.

Table IV.8.
Estimation Results of the Moderating Role of the Financial Systems on the Product diversification and Payout ratio

	I *(PRODUCT DIVERSIFICATION)*	II *(PAYOUT RATIO)*
Constant	-0.531*	0.127*
	(0.0034)	(0.0231)
PR_{it}	0.000243	
	(0.0006)	
$PR_{it\_}FS_{it}$	-0.00430*	
	(0.0009)	
PD_{it}		0.0221**
		(0.0102)
$PD_{it\_}FS_{it}$		-0.0574*
		(0.0134)
FCF_{it}	0.00363**	0.103*
	(0.0016)	(0.0157)
D_{it}	0.0185*	0.209*
	(0.0019)	(0.0135)
$PROF_{it}$	-0.131*	
	(0.0028)	
SQ_{it}	-0.000630*	
	(0.0002)	
IA_{it}	-0.00270	
	(0.0021)	
SI_{it}	0.0552*	0.0108*
	(0.0002)	(0.0016)
NI_{it}		0.803*
		(0.0305)
TA_{it}		-0.0639*
		(0.0171)
t	-6.5420	-3.8946
z_1	10234.58 (8)	466.07 (7)
z_2	6477.95 (11)	731.86 (11)
z_3	12.63 (12)	4.44 (12)
m_1	-13.93	-11.86
m_2	-0.45	-0.96
Hansen	1793.89	1208.31
	(449)	(393)

The regressions are performed by using the panel described in Table IV.3. FS_{it} is a dummy variable that takes the following values: 1 if the country is classified as a Market-oriented System and 0 if it is considered a Bank-oriented System in columns I and II respectively. The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) * ,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; iv) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation

Finally in Table IV.9 we study the implications of emerging and developed countries. In column I we find support for the substitution effect between diversification and dividends for the developed country sample since the coefficient of the payout ratio is negative (-0.00233). However, there is no significance for the coefficient of payout on the emerging sample. These results thus support Hypothesis 7, and corroborate our Hypothesis 1b on the substitution between diversification and dividends for firms operating in developed countries. Column II offers interesting results. The negative effect of diversification on dividend payments in firms in developed countries (-0.0242) totally confirms Hypothesis 2b. However, contrary to this relation about the substitution effect, the diversification coefficient is positive for firms in emerging economies [(-0.0242) + (0.0447) = 0.0205 significantly different from zero, see the t statistic] supporting our hypothesis 2a on the complementarity relationship between diversification and dividends in firms in emerging economies. More importantly, this evidence supports Hypothesis 8, arguing that these differences can be attributed to the fact that emerging economies are expected to provide higher dividends payments due to some government regulations.

Table IV.9.
Estimation Results of the Moderating Role of the Development of the Economy on the Product diversification and Payout ratio

	I *(PRODUCT DIVERSIFICATION)*	II *(PAYOUT RATIO)*
Constant	-0.529*	0.157*
	(0.0033)	(0.0226)
PR_{it}	-0.00233*	
	(0.0005)	
$PR_{it\_}EDE_{it}$	0.000124	
	(0.0011)	
PD_{it}		-0.0242*
		(0.0075)
$PD_{it\_}EDE_{it}$		0.0447*
		(0.0169)
FCF_{it}	0.00355**	0.101*
	(0.0016)	(0.0156)
D_{it}	0.0182*	0.215*
	(0.0019)	(0.0133)
$PROF_{it}$	-0.130*	
	(0.0028)	
SQ_{it}	-0.000637*	
	(0.0002)	
IA_{it}	-0.00471**	
	(0.0021)	
SI_{it}	0.0552*	0.0106*
	(0.0002)	(0.0016)
NI_{it}		0.821*
		(0.0302)
TA_{it}		-0.106*
		(0.0170)
t	-2.1571	1.3226
z_1	10261.37 (8)	502.98 (7)
z_2	6234.98 (11)	686.73 (11)
z_3	14.57 (12)	3.59 (12)
m_1	-13.89	-11.78
m_2	-0.45	-0.92
Hansen	1811.56	1203.84
	(449)	(395)

The regressions are performed by using the panel described in Table IV.3. EDE_{it} is a dummy variable that takes the following values: 1 if the country is classified as an emerging economy and 0 if it is considered a developed country in columns I and II respectively. The rest of the information needed to read this table is: i) Heteroskedasticity consistent asymptotic standard error in parentheses. ii) * ,** and *** indicate significance at the 1%, 5% and 10% level, respectively; iii) z_1, z_2 and z_3 are Wald tests of the joint significance of the reported coefficients, of the time dummies and of the country dummies, respectively, asymptotically distributed as χ^2 under the null of no significance, degrees of freedom in parentheses; iv) m_i is a serial correlation test of order i using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation.

IV.6. Conclusions

There is not previous evidence on the role played by dividends in diversified companies and diversification in firm's payout ratios by taking into account the censored problem. This chapter contributes to the literature by testing the determinants of firms' diversification and dividend strategies, accounting for their mutual effects and using censored models and panel data methodology in an international sample from 1996 to 2007. Then, extended models are provided that incorporate the moderating role played by the legal systems, financial systems and development of the economy in the relationship between diversification and dividend payments.

The estimation results reveal that diversification is negatively affected by dividends, even after controlling for the censure problem of the diversification variable. And the same pattern appears with payouts and diversification also after controlling for the dividend censure problem. The principal fact in this investigation relies on the substitute effect between diversification and dividends and vice versa indicating that both are competing for the firm's available resources. Additionally, our results provide further evidence on the role played by different institutional context in diversification strategies and firm's payout ratio. More specifically, the substitute effect between both strategies is conditioned by the legal system, the orientation of the financial system and the development of the economy, so the general rule of the substitution turns into a complementarity effect in some of the cases.

CHAPTER V

CONCLUSIONS

The increasing wave of literature on diversification strategies and their implications on firm value over the last decades have motivated the realization of the present document. As our outstanding contribution, we offer a complete analysis about the influence of both diversification strategies (i.e., product and global diversification) on firm value. Additionally, we go further on the question about the causes of diversification by providing evidence on the principal determinants of this decision, and the choice of giving premiums in terms of dividends to shareholders of multi-segment corporations. Finally, we emphasize the level of methodology innovation that conveys the use of data panel methodology and the estimation of our models by means of the Generalized Method of Moments. Additionally, we proceed to summarize the degree of attainment of the aims of our study.

As our first objective, we raise the proposal of offering new evidence on the relationship between diversification and firm value, taking into account the types and levels of this strategy. On the one hand, considering the gains of being involved in multi-segment business operations as scale and scope economies, increment of market power, reduction of firm's risk, coinsurance effect and the creation of internal capital markets among others, give raise to the premium hypothesis. On the other hand, the discount hypothesis manifests the potential disadvantages associated with diversified firms as a consequence of the agency theory and the inefficient capital markets arguments. The joint consideration of both effects emphasized the notion of a quadratic relationship

between firm value and diversification, finding support for our non linearity hypothesis. Moreover, considering the different types of diversification strategies, we extend our study to pose our last hypothesis about the moderating role of relatedness on the valuation of diversified firms.

In accordance with the specifications of diversified firms and to solve this first objective and provide new evidence to the Eurozone case, we specify 3 models testing first for a linear relation and afterwards for a non linear relation to the diversified excess value firms. The specifications of the second and third model have allowed us to obtain the breakpoints on the proposal relations by means of optimization, and not with subjective criterions such as the majority of the previous literature conceive. The innovative panel data methodology has permitted us to remove the unobservable heterogeneity across firms, and the model's estimation using the GMM with instruments makes it possible to control the possible endogeneity of the diversification decision.

Our empirical evidence confirms the destruction of value for diversified companies in the Eurozone area. This value reduction is consistent with the evidence pointing out that multi-segment activity: i) creates inefficient internal capital markets during the course of overinvestment in low performing-business; ii) generates influence costs; iii) encourages managers to invest free cash flows to support organizational inefficiencies; iv) generates control and effort losses, coordination costs and other diseconomies related to organization, and discrepancy for ideas between businesses, among others.

The results also confirm the existence of a non linear relationship between market value and diversification and, therefore, the existence of benefits and costs of being involved in diversification strategies for firms in the Eurozone area appear. Moreover, we provide evidence of an optimal level of diversification, which implies

that, other things being equal, increases in a firm's diversification level and creates value until this optimum is reached, and then diversification turns into a value-destroying strategy.

Since we obtain strong support on a quadratic relationship, the relatedness implication of diversification on firm value has been studied as a non linear relation as well. Our results of related and unrelated diversification totally confirm the above findings. However, more impressive are the optimal points obtained for both types of diversification, suggesting that related diversification is more value-creating than non-related diversification and that non-related diversification turns into a value-destroying strategy at lower levels than related diversification.

This empirical evidence bring us to the conclusion that diversification is valuated as discounted even after control for the endogeneity problem, and that the differences in the levels and types of multi-segment activity outstandingly contribute to the explanation of the value-creating and value-destruction relation in the Eurozone diversified firms.

As our second objective, we propose the analysis of the role played by global diversified firms on market value. To be precise, our primary primarily interest is to elucidate the influence of product diversification activity on the valuation of global firms, and if this moderating consequence occurs to check the implication on the discount or premium that conveys. Furthermore, with the aim of extending the existing literature, we have analyzed the sensitivity of our results controlling the legal and financial systems where the global firms have their home business. For these purposes, we specify four different models using the firm's excess value as a dependent variable. Our methodology election was motivated to control the unobservable heterogeneity problems across firms, and the endogeneity of the global diversification decision.

Our first estimation model result shows that having operation on global markets destroys value. This evidence demonstrates that by working on global segments businesses convey trade-off costs as: i) transaction and governance costs; ii) inefficient investment activities; iii) liabilities of newness and foreignness. The costs of coordination difficulties, information asymmetry and lack of understanding between headquarters and divisional managers translate into value destruction for globally diversified firms. This behaviour points out that costs of being global go beyond their potential benefits.

The consequences of global firms involved in high or low product segment activity produce interesting results. The negative impact of global diversification on excess value is larger for firms with a high degree of product diversification than for global firms with a low degree of product diversification. Specifically, the difficulties globally diversified firms face in terms of coordination, information asymmetry, and the misalignment of ideas between managers and shareholders seem to be accentuated when the global firm simultaneously opts for product diversification. In essence, we provide evidence that global firms with high levels of product diversification are more value-discounted than those with low levels of product diversification.

To further explain the behaviour of global firms on firm value we extend our models by incorporating the different legal systems and financial systems to provide another perspective. Our results for the legal systems (common and civil law) are more than interesting. In short, global firms in common law countries trade at a premium, suggesting that common law firms are able to better exploit the benefits of having operations in global markets because they expand their market opportunities, diversify risks and increment market power. Moreover, global firms in civil law countries are valuated as discounted as their excess values shown.

Regarding financial systems (market and bank-based), our results indicate that global diversification creates value when firms operate in countries characterized by market-oriented financial systems, while a destruction of value exists in global firms operating under bank-oriented financial systems.

Once we had controlled and verified the moderating effect of product diversification, legal and financial systems on the valuation of global firms, we considered testing the joint impact of all these factors. The results are in line with our previous findings on the moderating effect of the level of product diversification, as well as legal and financial systems on the valuation of globally diversified firms. Specifically, firms that diversify into different business and geographic segments at the same time trade at a premium if their home country is common law in origin, and trade at a discount if they operate their core business in a civil law country. The value premium of global firms head-quartered in common law countries is larger when lower levels of product diversification are chosen. Similarly, the value discount of global firms head-quartered in civil law countries is smaller if these firms opt for low levels of product diversification. Moreover, the effect of global diversification on excess value in firms with low levels of product diversification is negative under bank-oriented systems, whereas it is positive under market-oriented systems. Particularly, the excess value of firms with a high degree of multi-segment activity and global diversification are negatively related for firms operating in bank-oriented systems and positively related for firms operating in market-oriented systems. As with the legal tradition, this evidence supports the previously reported results on the relevance of the level of product diversification and the orientation of the financial system to the valuation of global firms.

To summarise, there is a joint impact between product diversification and global diversification trading at a premium when operating under common law and market-oriented financial systems, and trading at a discount if they operate under civil law and bank-oriented financial systems, and this creation or destruction of value is regulated by the level of multi-segment activity.

The third and last objective of this piece of work is based on the premise of diversification and dividends as competitors of the firm's resources. In fact, since dividends are mechanisms of reducing the funds of the companies, diversification strategies may suffer a significant impact in view of the fact that multi-segment activities are investments used by managers relying on the funds available to the firm. In this case the extent of diversification strategies will depend on the payout ratios, and additionally shareholders' premiums will be regulated by the extent of firm diversification strategies. Specifically, we investigate how the product diversification strategy is influenced by a firm's payout ratio and vice versa in order to underlie their most common determinants (with censored models). Furthermore, to increase and provide more fundaments to the literature of diversification and dividends we have included the most studied determinants of both strategies. To achieve our aim we have proposed two models; the first one tests the diversification strategies determinants including a firm's payout ratio; and the second one accounts for the determinants of a firm's payout ratio adding the diversification measure. Both models have been censored in their dependent variables since the diversification index and the dividend variable presents this problem.

Country environmental differences, including institutional settings, such as the legal tradition or the financial system of the firm's country, as well as the level of the development of the economy, are key factors that underlie the effects of diversification

and dividends policies since the current firm's era is more globalized. For this reason we provide an extended analysis by testing all of these factors in our models.

The estimations are carried out by the Generalized Method of Moments, hence we use the panel data methodology that eliminates the individual heterogeneity and controls for endogeneity problems. Since the data quality requirements are very high, we have extracted our data from Worlscope database for several countries.

Our results of the diversification model show that a firm's payout policies are negatively associated with diversification strategies, confirming that these two firms' activities are competitors for the available resources within the company and the substitution effect between them emerges. This evidence is consistent with the arguments pointing out that: i) firms with growth opportunities often reduce their payouts (Fama and French, 2001); ii) investing in more product segments leads to a reduction in the payouts for financing these kinds of activities or strategies for the firm (Jensen et al., 1992; Cronqvist et al., 2001); iii) managers use the available funds to expand their line of business according to their preferences by restricting the dividend payments (Grossman and Hart, 1988; Jensen, 1986). In accordance with the most common determinants of the diversification decision we find that the free cash flow, debt and size are positively related to the level of a firm's product diversification, whereas Tobin's q and profitability present a negative relation with multi-segment activities.

Once the existence of a significant effect on the payout ratios and diversification strategy has been corroborated by our results, we go a step further and investigate the effect of diversification on a firm's payout ratio. Also in this case, the negative coefficient for the diversification variable corroborates our above finding on diversification and dividends as competitors for alternative uses of a firm's resources

and the so called substitution effect between these two strategies. According to this result some support could be obtained from the fact that: i) multi-segment firms prefer to use the cash produced by their internal capital markets to exploit more investments than to obtain extra external funds (Lang et al., 1995) and consequently pay less dividends; ii) managers of diversified companies prefer to use the firm's cash for internal rather than distributing it as dividends (Stulz, 1990); iii) payout policy is conducted by the appropriate distribution of the firm's available funds (DeAngelo and DeAngelo, 2006). Furthermore, the determinants of the payout ratio are also consistent in their signs and significance with our arguments. The firm's free cash flow, leverage, earnings and size are positively related to the firm's payout ratio and a negative coefficient for the tangible assets appears.

Once we have checked the existence of an effect between diversification and payouts ratios, we go a step forward and test whether or not the institutional context moderates this effect. The results for the common determinants variables in the basic models remain practically identical once the legal, financial and country classification interactions are included in the analysis.

We find a negative effect of payout ratio on diversification for firms characterized by civil law origins, whereas this negative effect is stronger for firms with common law origins. Consequently, we find support for the role played by the legal systems on the effect of payout on product diversified companies. Furthermore, our premise of diversification and dividends as competitors of firm's resources is corroborated for both samples, civil and common law diversified firms, and consequently we support the substitution effect between these two strategies for firms in these legal systems.

With respect to the extended payout model the results report a negative effect of diversification on dividend payments for firms in common law countries, whereas this effect turns non significant in civil law environments. In short, this finding supports the different relation between diversification and dividends in different legal systems, and it corroborates Hypothesis 2b about the substitution effect between them for firms in common law origins.

Interesting results regarding the influence of the financial system are found in our models. We observe a negative coefficient for the payout ratio of diversified firms in market-oriented systems, while there is no effect in their bank-oriented counterparts. We thus find differences between the payout ratios of the diversified companies according to the financial system and then a substitution effect between diversification and dividends appears in firms operating in market oriented systems.

Interestingly, in the extended payout model the effect of diversification on dividends is positive for firms in bank-oriented systems and negative for firms in market-oriented systems. This result supports the moderating role played by the financial system in the relationship between diversification and dividends. Additionally, it supports the complementarity effect between diversification and dividends in bank-oriented systems. In contrast, there seems to be a substitution effect between them in market-oriented systems according to a firm's payouts it is affected negatively for diversification practices due to the competition of the available firm's resources.

Finally, we study the implications of emerging and developed countries. In the results we find support for the substitution effect between diversification and dividends for the developed country sample since the coefficient of the payout ratio is negative. However, there is no significance for the coefficient of payout on the emerging sample. These results thus support the differences between diversified firm's payments on

dividends in these economies and then corroborate the substitution between diversification and dividends for firms operating in developed countries. Additionally, the negative effect of diversification on dividend payments in firms in developed countries totally confirms the differences in these economies. However, contrary to this relation with the substitution effect, the diversification coefficient is positive for firms in emerging economies supporting the complementarity relationship between diversification and dividends in firms in emerging economies. More importantly, this evidence supports the argument that these differences can be attributed to the fact that emerging economies are expected to provide higher dividends payments due to some government regulations.

Overall, the evidence we provide here points out that the diversification strategies have an effect on both creation and destruction of firm value, and the shareholders' premiums and multi-segment activity are competitors for the available resources within the company. It is important to emphasize that all the effects related to diversification are conditioned to the different international contexts.

To summarize, the thesis proved in this piece of work is as follows: "The diversification strategy can be value-creating or value-destroying depending on the type and level of product diversification and the institutional characteristics of the firm's home country, and it competes with dividends for the firm's resources."

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