

The Valuation Effects of Global and Industrial Diversification

International Business

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Christian Ruffini

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Author Christian Ruffini		
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Abstract

In this master's thesis the market value of diversified firms has been compared to the value of single-segment firms, in order to find out how different types of diversification affect firm value. The impact of the 2008 financial crisis on the valuation of diversified firms has also been investigated and discussed. The empirical results point out that, between 1997 and 2012, industrially diversified firms have been trading at a premium of 22.5% compared to focused firms, while globally diversified firms have not. The combination of industrial and global diversification has been found to yield an additional premium of 9.2%. This positive effect is even stronger for firms that diversified into unrelated industries after the crisis. It has also been discovered that the premium for industrial diversification increases with the number of segments a firm reports to be operating in.

The empirical findings have also been interpreted from an accounting perspective. It has been discussed how earnings management can explain the existence of a diversification discount, especially for cross-border diversification. It has also been illustrated how diversified firms have a greater propensity towards expansion through acquisition and how this could help explaining the discount found by studies using Tobin's q as a measurement for comparing firm value.

The different theories explaining the international business related background of corporate diversification have also been presented and discussed, from Coase's market imperfection theory to Buckley and Casson's internationalisation theory and Dunning's eclectic paradigm. The relation between diversification and market entry mode has been described and it has been emphasised how the different combinations of diversification strategies and host-country entry modes are significant for a firm's internationalisation approach.

Keywords diversification, international business, accounting, multi-business, firm value, premium, discount

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1. Introduction

Multinational Corporations (MNCs) have become a very important player in today's economy and a thoroughly studied phenomenon, as they numerically account for about half of the firms in the United States.¹ A MNC is defined as “*an organization that owns and operates affiliated subsidiaries in one or more foreign countries. Establishment of overseas subsidiaries is achieved through foreign direct investment (FDI)*”.²

Multi-segment firms (i.e. those that operate in different industries or sectors) are also very common, although less-frequent than multinationals. 17.8% of US-based companies reported to be operating in more than one business sector between 1984 and 1997, and 18.6% between 1997 and 2012.³ Several studies, carried out during the 1990s, suggested that these companies trade at a discount compared to stand-alone firms in the same industries.⁴ The discount was commonly associated to agency problems and to the cross-subsidisation of weaker units by stronger units, which resulted in the inefficient allocation of valuable resources.⁵

Later studies, however, found that these results might have been caused by methodological weaknesses such as sample selection bias or due to the endogeneity of a firm's diversification decision. Some authors even claimed that the discount is only an artefact of the data employed for the analysis.⁶

Another weakness of these studies was that they analysed industrial diversification only, and therefore did not consider the effects of global diversification, which is much more significant and common. Firms that diversify globally also very often diversify industrially. This strong observed correlation between industrial and

¹ See Table IV on page 10 for the precise figures.

² Some authors prefer to define a MNCs as a firm that produces in at least five different countries instead of only one. The present thesis instead will use the definition by Akoorie/Scott-Kennel (2005), p.100, which is quoted above. The terms *global*, *geographic* and *cross-border diversification* are used interchangeably throughout this thesis to describe MNCs and should be considered as synonyms. The term *industrial diversification* is used for multisegment/multibusiness firms. FDI is defined by the IMF to describe “*an incorporated or unincorporated enterprise in which a foreign investor owns 10 per cent or more of the ordinary shares or voting power of an incorporated enterprise or the equivalent of an unincorporated enterprise.*” Source: <http://www.imf.org/external/np/sta/bop/pdf/diteg20.pdf>

³ See Denis/Denis/Yost (2002), p. 1958 for the first statistic and Table IV on page 10 for the second.

⁴ For example, see the results of Lang/Stulz (1994) pp. 1278 and Berger/Ofek (1995) pp. 59-60.

⁵ See Erdorf et al. (2011) pp. 4-5.

⁶ Villalonga (2004) used a different dataset than previous studies and found a diversification *premium*. Campa/Kedia (2002) found that, by controlling for endogeneity, evidence in favour of a diversification discount is significantly reduced, and in some cases even a premium can be found.

global diversification could have introduced an omitted variable bias in studies that did not control for this type of diversification.⁷

Bodnar/Tang/Weintrop (1999) were the first to take into account the effect of geographic diversification on firm value and to argue that previous studies were flawed by omitted variable bias. The empirical results of their research suggest that, while industrial diversification does indeed create a value *loss*, geographic diversification yields a *premium*.⁸

More recent studies found that during the 2008 financial crisis, industrially diversified firms increased in value compared to single-segment firms. Most likely because they are perceived by investors as a safer option compared to focused firms.⁹ These studies however did not verify how the financial crisis affected the valuation of different *types* of diversification, i.e. distinguishing between industrial, global and related/unrelated diversification. Previous studies that compared the valuation effects of different types of diversification were carried out using pre-2008 data; today the scenario might be quite different.

Kuppuswamy/Villalonga (2010) found that the risk-perception of investors may have changed after the collapse of Lehman Brothers and the beginning of the most-recent financial and economic crisis. They found that the diversification discount disappeared after 1997.¹⁰ It is therefore necessary to examine if the financial crisis' impact on the valuation of global diversification was different to its effect on industrial diversification. It also needs to be measured if unrelated diversification, which generates non-perfectly correlated cash flow streams, is more highly valued than related diversification during the crisis.

The aim of this master's thesis is to compare the market value of diversified firms to the value of single-segment firms, and to find out how different types of diversification affect firm value. The empirical analysis differentiates between *industrially* and *globally* diversified firms and takes into account if the diversification is

⁷ See Denis/Denis/Yost (2002), p. 1963 and Table VIII and Table IX of the present thesis.

⁸ Some researchers argue that the term "global" should be used instead of "geographic", as the latter could also be referred to diversification across regions of the same country. However, since these term as used interchangeably in most studies, they are considered as synonyms in the present writing and have been used accordingly. Cf. Denis/Denis/Yost (2002), p. 1957.

⁹ Cf. Kuppuswamy/Villalonga (2010) p. 3.

¹⁰ See Kuppuswamy/Villalonga (2010), p.36.

related or *unrelated*. The impact of the 2008 financial crisis on the valuation of diversified firms has also been investigated and discussed.¹¹

The research question of the thesis is: “*what are the effects of corporate diversification on firm value and to what extent does the impact of global diversification differ from that of industrial diversification? Has the recent financial crisis affected this valuation in the United States?*”

In order to add a strategic and a practical interpretation, the empirical findings have also been discussed from an accounting and international business (IB) perspective in chapters 8 and 9. The remaining part of the thesis is divided as follows: the literature review of chapter 2 offers an in-depth introduction to the topic of corporate diversification and to the empirical results of the most important research of the past years. It is explained why corporate diversification is still a very controversial topic and why the financial crisis might have affected the way multibusiness and multinational companies are perceived by investors.

The methodological aspects of the thesis are explained in chapter 3, whereas chapter 4 outlines which data has been used and how it has been processed. The empirical results are presented and discussed in chapters 5, 6 and 7: Chapter 10 provides a summary of the findings and adds some concluding remarks.

2. Literature review on corporate diversification

This chapter introduces the topic of corporate diversification, from the early studies carried out in the 1990s to the present day. The section is divided into four paragraphs: the first will introduce the topic of diversification and the results of early studies; the second presents the later research that criticised the methodologies and results of the earlier studies; the third paragraph focuses on the differences between industrial and global diversification; the fourth paragraph explains how the 2008 financial crisis might have had an impact on corporate diversification and why today this is a relevant research topic.

¹¹ Different names can be found to define the financial and economic crisis that originated from the US sub-prime mortgage crisis and affected the global financial markets and economy. In the present thesis, for simplicity, it will be referred to as “the 2008 financial crisis”.

2.1. Definition of corporate diversification and studies of the 1990s

Corporate diversification is defined as a “*strategy that takes the organisation away from both its existing markets and its existing products [...], increasing the organisation’s scope*”.¹² Several reasons have been provided by past researchers in order to justify the existence of diversified firms. The three most frequent ones are the **market-power** view, the **resource-view** and the **agency view**. The first describes that firms increase in size (both horizontally and vertically) to extend their power over competitors. Thereby, they are gaining a competitive advantage, such as being able to offer products at predatory prices through cross-subsidisation of firm-segments. The second view states that, in response to excess capacity in productive resources, firms will tend to expand in order to make use of their overcapacity. Some capabilities can therefore be shared across segments, thus reducing costs through economies of scope and gaining competitive advantage. The third view is based on agency theory and explains diversification through managers’ self-interest and power-seeking strategies.¹³

Despite the large number of diversified firms in the United States, several studies of the early 1990s found that corporate diversification might actually not be beneficial for investors as it destroys firm value. Kaplan/Weisbach (1992) find that almost 44% of large companies acquired during the 1970s and the early 1980s were sold within a few years. Despite most divestitures being profitable, the resale of *unrelated* segments was three times more likely than the resale of *related* segments. The profitability of the divested segments usually grew significantly under the new acquirer.¹⁴

Lang and Stulz (1994) were among the first to compare the value of diversified and non-diversified firms. They constructed a portfolio of non-diversified firms and used it to compare its value with that of diversifying firms, discovering the existence of a significant conglomerate discount between diversified and focused firms.¹⁵

The finding of a diversification discount seemed counterintuitive at first, since perfect-market assumptions suggest that firm diversification should be irrelevant for the reduction of unsystematic risk. According to capital market theory, firms will internalise activities only if that is more efficient than leaving the interactions to the open market.

¹² See Johnson/Scholes/Whittington (2010), p. 262.

¹³ See Montgomery (1994), pp. 164-167 and Furrer (2010), pp. 46-47.

¹⁴ Related segments are defined as those that operate in the same industry as the parent company. See Kaplan/Weisbach (1992), pp. 136-137.

¹⁵ See Lang/Stulz (1994), p. 1278.

However, empirical findings on firm data from the 1960 to the 1990s suggest that this is not the case, as very often multi-segment firms trade at a significant discount compared to their focused counterparts, even when controlling for firm size and profitability.¹⁶

Agency theory has often been used to explain why firms diversify even though this causes a value reduction. The most common problems incurred by conglomerates are explained by the theories of *risk reduction*, *empire-building* and *entrenchment*, which are phenomena that very often can be observed in the same firm. Risk-reducing diversification occurs because managers want to decrease the overall insolvency risk by diversifying into several unrelated industries. If the firm earns uncorrelated cash-flow-streams, it will also be less likely to go bankrupt, which reduces managers' individual employment risk. It has also been found that firms with greater owner concentration display lower degrees of value-destroying diversification as managers' possibilities for risk-reducing investments are limited by the stronger owner groups.¹⁷

Empire-building stands for the tendency of managers to increase their power, compensation and bonuses through unnecessary firm growth. This is closely related to *entrenchment*, which takes place when managers overinvest to increase the firm's complexity and the number of different operations, thereby making themselves more difficult to substitute.¹⁸ This can be achieved by investing in businesses related to their own background experience or by making as many contracts as possible implicit instead of explicit. Entrenchment makes it costlier for shareholders to replace the manager, who can therefore demand a higher compensation or greater power.¹⁹ Inefficient investment has been found to be greater for firms that have more borrowing power or large free cash flows. These are thus more likely to undertake inefficient diversification investments that will generate lower gains.²⁰

The results of Lang/Stulz (1994) have been confirmed by several other studies. Berger and Ofek (1995) also find the existence of a conglomerate discount, which ranges between 13% and 15%. They argue that cross-subsidisation of weaker units by stronger units and overinvestment in industries with low opportunities (two typical characteristics of multi-segment firms) are the main factors that underlie their results.

¹⁶ Cf. Erdorf et al. (2011), p. 3 and Coase (1937).

¹⁷ See Villalonga (2003), pp. 1-2.

¹⁸ See Erdorf et al. (2011), p.4 and Amihud/Lev (1981), pp. 609 and 615.

¹⁹ See Shleifer/Vishny (1989), pp. 123-125.

²⁰ Cf. Jensen (1986), pp. 323-324 and 328.

They also find that the extent of the value loss is significantly lower for firms that operate in related industries, probably because the obtainable synergies reduce the costs of diversification.²¹

Servaes (1996) investigates the changes of diversification over time and discovers that multi-segment firms traded at a discount during the M&A wave of the 1960s and at no discount during the 1970s. He also finds that firms with higher managerial equity ownership abstained from diversifying-mergers in the 1960s. Some of them diversified in the 1970s when the discount disappeared.²²

Scharfstein (1998) reports that conglomerates, on average, overinvest in industries with low opportunities and underinvest in industries with high opportunities. This phenomenon is stronger when managers have lower equity stakes, which he links to higher agency problems. Over the 14 sampled years, however, more than two-thirds of the included firms re-focused or were acquired, which the author takes as evidence against the efficacy of multibusiness operations.²³

Denis, Denis and Sarin (1997) find a negative relation between managerial equity ownership and value-destroying diversification, suggesting that the alignment of owner and agent interests could reduce the diversification discount. They also find that agency problems are the reason why value-destroying firms remain diversified despite re-focusing would be the more valuable and efficient solution.²⁴

This was also confirmed by a more recent study by Sautner/Villalonga (2010), who find that firms with higher ownership concentration benefit from a much more efficient internal capital market, because the stronger owners are able to exert stronger control on the firm's managers. The benefits of ownership concentration therefore outweigh its cost and reduce the value-destroying effects of corporate diversification.²⁵

John/Ofek (1995) study the performance improvements related to asset divestures by US-firms. They document a significant performance improvement in the three years that follow the divesture, but only for firms that increased their focus. They also find that focus-increasing firms have higher abnormal stock and that the value gains are

²¹ They define industries with a low Tobin's q ratio as those with limited opportunities. See Berger/Ofek (1995), p. 40.

²² See Servaes (1996), pp. 1222-1223.

²³ See Scharfstein (1998), p. 21.

²⁴ See Denis/Denis/Sarin (1997), pp. 156-158.

²⁵ See Sautner/Villalonga (2010), pp. 26-27.

greater when there is a better fit between the divested asset and the buyer (i.e. what Berger/Ofek defined as relatedness).²⁶

Comment/Jarrell (1995) study the trend towards greater operational focus found in the 1980s, which followed the diversification trend of the 1970s. Their results show not only that greater focus is associated with greater shareholder wealth, but also that diversified firms often do not benefit from the advantages commonly associated with diversification, such as economies of scope or greater use of debt due to coinsurance between business units.²⁷

Daley/Mehrotra/Sivakumar (1997) also report that re-focusing strategies and corporate spin-offs increase firm value and return-on-assets. Excess stock returns have also been found to significantly increase upon the announcement of the spin-off decision. These performance improvements could only be observed for cross-industry spin-offs and not for own-industry (i.e. related) spinoffs. The authors argue that removing unrelated business units allows managers to focus their attention on core operations, which improves their decision-making.²⁸

Desai/Jain (1999) find that focus-increasing spin-offs can explain the improved long-run stock market performance found in a sample of 155 firms. The principal reason for non-focus-increasing spin-offs is to sell underperforming units. Nonetheless, re-focusing firms are found to outperform non-focus-increasing firms by 47.7%.²⁹

Krishnaswami/Subramaniam (1999) explore the effect of divestment on firm value and conclude that spin-offs increase firm value for diversified firms that were characterised by strong information asymmetry before the spin-off. Since this is true both for related and for unrelated diversification, they conclude that information asymmetry (and not negative synergies) is the main cause of the diversification discount.³⁰

The cross-subsidisation theory is supported by Rajan/Servaes/Zingales (2000), who find that highly diversified firms transfer resources from units with above-average

²⁶ See John/Ofek (1995), pp. 121-122 and 124-125.

²⁷ While 62% of firms in their sample was diversified in the 1970s, only 44% was diversified in the 1980s. See Comment/Jarrell (1995), pp. 68 and 74-75.

²⁸ See Daley/Mehrotra/Sivakumar (1997), p. 280.

²⁹ Measured using abnormal stock returns for the three years following the divestiture. See Desai/Jain (1999), pp. 99-100.

³⁰ Information asymmetry is proxied in their study using analyst forecast errors. See Krishnaswami/Subramaniam (1999), p. 110.

opportunities to units with below-average opportunities. They argue that this is the principal reason why multi-segment firms trade at a discount.³¹

Bodnar/Tang/Weintrop (1999) were the first to also include cross-border diversification in the analysis, thereby opening the question about the validity of previous studies. Their results, however, also confirmed that industrial diversification is value-destroying. Geographic diversification instead was found to be valued positively, even after controlling for self-selection.³²

2.2. Methodological issues of those studies and more recent results

Towards the end of the 1990s and going forward, an increasing number of researchers started raising some concerns regarding the methodology used by previous studies. In particular, it was argued that the discount was found due to sample selection bias, endogeneity of the choice of diversifying, the use of COMPUSTAT as a data source and by other methodological issues.³³ Additionally, earlier studies have been criticised for the small number of pure-play firms used to compute industry q_s , the exclusion of financial industries from the sample and for the use of the book value of debt to compute *Tobin's q*.³⁴

Hyland/Diltz (2002) infer that the valuation differences are not caused by diversification *per se*, as diversifying firms are endogenously different from non-diversifying ones, regarding aspects such as cash, R&D expenses, executive salaries and the type of industries they operate in. Moreover, they argue that diversifying firms traded at a discount even before they diversified.³⁵ This finding is confirmed also by Lamont/Polk (2002), who find also that part of the discount is attributable to exogenous industry shocks that negatively affect the capital allocation of firms towards underperforming units.³⁶

Matusaka (2001) turns around the common argument that diversification causes value loss. He explains that it is the value discount that pushes firms to diversify and not *vice versa*. Furthermore, he adds also that declining sales often push companies to apply

³¹ See Rajan/Servaes/Zingales (2000), pp. 61 and 76-77.

³² The issue of global diversification is discussed in greater detail in paragraph 2.4. See Bodnar/Tang/Weintrop (1999), p. 2.

³³ COMPUSTAT is a commercial database that includes information such as sales and asset value for business segments (cf. SFAS 14 / 131 for a precise definition of "segment").

³⁴ See Erdorf et al. (2011), pp. 11 and 20.

³⁵ See Hyland/Diltz (2002), p. 76.

³⁶ See Lamont/Polk (2002), pp. 53, 59-60 and 75.

their valuable resources and capabilities to other sectors in order to survive. According to the author, firms diversify on an experimental basis until they find a suitable new market to access. The discount is thus caused by the underachievement of unsuccessful units.³⁷

Schoar (2002) discovers that diversified firms are generally more productive than focused firms and that the discount is attributable to the value dissipation caused by higher wages paid by conglomerates. Since this is suboptimal from the point of view of shareholders, they therefore discount the market values of conglomerates.³⁸

Gomes/Livdan (2004) dispute the notion that the discount should be interpreted against corporate diversification. They replicate Lang/Stulz (1994)'s results and assert that diversification is a natural response to a firm's profit-maximising strategy. Similarly to Matsusaka (2001) and Hyland/Diltz (2002), they argue that when firms become unprofitable they seek new fortune in new sectors. They also add that this *a-priori*-difference is what studies measure as a discount compared to focused firms that are already successful in their sectors.³⁹

Focusing on M&As, Graham, Lemmon and Wolf (2002) find similar results to Hyland/Diltz (2002). They also claim that half of the discount that has been found by previous studies can be explained by pre-existing differences between the acquired units and the benchmark-firms used for comparison. In particular, their results point out that acquired units, in most cases, traded at a discount compared to non-acquired single-segment firms even before their acquisition.⁴⁰

A substantial part of the loss is also correlated to a firm's choice of corporate governance. Hoechle et al. (2012) added governance variables to their regression models and found that by controlling for the type and quality of corporate governance the discount moves towards zero. This is closely related to the agency theories provided in earlier studies.⁴¹

Campa and Kedia (2002) also claim that underlying firm characteristics are the reason for the discount and not the actual choice of diversifying. Opting for a diversified strategy is also often due to industry effects and not to pure firm-related decisions. By

³⁷ See Matsusaka (2001), pp. 420-421.

³⁸ See Schoar (2002), pp. 2401-2402.

³⁹ See Gomes/Livdan (2004), p. 508.

⁴⁰ See Graham/Lemmon/Wolf (2002), p. 717.

⁴¹ See Hoechle et al. (2012), p. 58.

controlling for endogeneity and for firms' characteristics, they find that the evidence in favour of a diversification discount is significantly reduced and that in some cases even a premium can be found. Their results suggest that diversified firms systematically differ in size, growth and capital expenditure from single-segment firms used as benchmark in previous studies.⁴²

Mansi and Reeb (2002) analyse the effects of risk on companies' excess values and claim that a substantial part of the diversification discount can be explained by the risk reduction attributable to diversification. They also find that the discount is strongly correlated to leverage, and that multi-segment firms with a low long-term debt ratio trade at no significant discount. A further finding of their research is that the book value of debt is more downward biased than the market value of debt; this suggests that results for firms with a high debt ratio could be skewed because of the approximation used to calculate excess values.⁴³

Table I presents a summary of the major results of studies of the 1990s and the early 2000s. It can be seen how all the earlier studies found the existence of a diversification discount, ranging from 6% to 59% in the United States, with the exception of Germany. Starting from Villalonga (1999), however, studies started correcting for sample selection bias or other methodological issues. While the uncorrected results of the later studies still yielded a discount, the correction, in most cases, made the discount disappear or even turn into a premium. The most significant change was measured by Campa/Kedia (2002), who found a premium of up to 30% after correcting for fixed effects in their regression model.⁴⁴

More recent studies come to different conclusions according to the chosen methodology. Villalonga (2004) argues that the use of COMPUSTAT or LRD (the two most commonly used data sources) is the reason why previous studies found that diversified firms trade at a discount and not at a premium. One major problem with COMPUSTAT is that it only allows the reporting of a maximum of ten business segments, while a more precise disaggregation would allow for a more consistent comparability across industries. Using alternative data, Villalonga was able to create a sample in which the average number of establishments across all firms is 122. Also, the

⁴² See Campa/Kedia (2002), pp. 1759-1760.

⁴³ See Mansi/Reeb (2002), pp. 2181-2182.

⁴⁴ See Villalonga (2003), p. 2.

number of units in her sample is almost five times larger than the average number of segments obtained by COMPUSTAT data. Some other databases also only include data on specific industries, such as manufacturing firms, which may be endogenously different than other firms and non-representative of the whole economy. Villalonga also argues that an issue with many previous studies is that they did not consider vertical integration as a form of diversification. Related diversification has been proven to be significantly less value-destroying than unrelated diversification and vertical integration should therefore be measured separately.⁴⁵

Table I : Estimates of the diversification discount in previous literature

This table, originally published in Villalonga (2003), lists the results of the most important researches on the valuation of corporate diversification from the beginning of the 1990s to the early 2000s. The table contains the initial (uncorrected) univariate or multivariate regression results of each study and, where available, the corrected results for sample selection bias and other methodological issues. The method employed to measure the discount is also listed.

	Uncorrected	Corrected	Measure
Lang and Stulz (1994)	-0.27 to -0.54		Tobin's q
Berger and Ofek (1995)	-13% to -15%		Assets and sales multipliers
Servaes (1996)	-0.06 to -0.59		Tobin's q
	0% Germany		
Lins and Servaes (1999)	-10% Japan -15% U.K.		Assets and sales multipliers
Lins and Servaes (2002)	-7%		Assets and sales multipliers
Villalonga (1999)	-0.08 to -0.24	+0.08 to +0.34	Tobin's q
Graham et al. (2002)	-9.6% to -13.7%	-5.7% to -6.6%	Assets and sales multipliers
Campa and Kedia (2002)	-9% to -13%	0% to +30%	Assets and sales multipliers
Mansi and Reeb (2002)	-4.50%	0%	Assets and sales multipliers
Villalonga (2003)	-0.18	0.28	Tobin's q

Source: Villalonga (2003), p. 2

Choe/Yin (2009) argue that diversified firms usually benefit from a more efficient internal capital market that allows individual units to overcome problematic budget constraints, especially in periods of distress. They find that, as long as the advantages of the more efficient internal capital market are not outbalanced by the costs of information rents to divisional managers, multi-segment firms don't trade at any discount.⁴⁶

⁴⁵ See Villalonga (2004), pp. 479-482.

⁴⁶ See Choe/Yin (2009), pp. 190-191.

Wulf (2009) instead explains that corporations' inefficiencies are caused by divisional managers' ability to skew information, by their compensation schemes and by the public signals of investment opportunities. As the ability to skew information is much greater in diversified firms, decision-makers need to pay much more attention to external signals, which adds to the internal inefficiencies caused by divisional managers' private interests.⁴⁷

Xi He (2009) finds a strong correlation between firm size and the extent of the diversification discount. Poorly performing firms are more likely to diversify because they might believe this strategy to be beneficial for their situation and hope to regain some value by engaging in new businesses. His results indicate that some diversification is value-enhancing, although only up to a certain point. Moreover, value loss occurs at higher degrees of diversification, partially contradicting Lang and Stulz's (1994) results that find that the discount already starts when firms move from one to two segments. Finally, post-1997 data in his sample yields different results than previous data, most likely due to the accounting reforms introduced in the United States in 1997. He therefore argues that post-1997 studies should be interpreted with this in mind.⁴⁸

The most notable accounting reform of 1997 was the introduction of SFAS 131, which replaced SFAS 14. The standard became effective for the fiscal years that began after the 15th December 1997 and regulates the compulsory and discretionary disclosures of firms in the United States. Berger/Hann (2003) report a significant increase not only in the number of reported firm-segments, but also more disaggregated information and better forecast accuracy by investors. The same is found by Ettredge et al. (2013), who also confirm that the quality of financial information noticeably increased after the introduction of the new standard.⁴⁹

Heinrichs/Erdorf/Hartmann-Wendels (2011) analyse firm valuations according to the relatedness of the business units. Contrary to previous findings, their results suggest that firms with highly independent segments are better valued than firms that perform related-only diversification. This is due to the fact that unrelated diversification reduces the probability of default and thereby increases the present value of future cash flows

⁴⁷ See Wulf (2009), pp. 316-317.

⁴⁸ See He (2009), pp. 361-362.

⁴⁹ See Berger/Hann (2003), pp. 211-212 and Ettredge et al. (2013), p. 801. A brief summary of SFAS 131 can be found at <http://www.fasb.org/summary/stsum131.shtml>.

(as they are more likely to be achieved). They also argue that cross-subsidisation of distressed segments by more profitable segments is usually positive and not value-destroying.⁵⁰

Stock returns and their skewness could also explain a substantial part of the differential. Mitton and Vorkink (2010), for instance, find that stock returns of single-segment firms have higher positive skewness than the stocks of diversified firms. They argue that this can explain up to 53% of the excess returns that characterise diversified firms, since these have to compensate investors with higher average returns for the lack of upward potential (the positive skewness) of their stock, or otherwise they will trade at a discounted price.⁵¹

Brendel/Rudolph/Schwetzler (2013) use the so-called Oxaca-Blinder decomposition to provide an alternative measurement to conventional OLS regressions. This method allows them to separate the diversification discount into an “explained” and an “unexplained” part. The “explained” part is that which other studies usually try to account for using control variables in the regression (e.g. size, profitability, debt, etc.). The unexplained part is interpretable as the effect of unobservable omitted variables that affect the dummy coefficients, such as, for instance, agency costs. They also find that the conflict between majority and minority shareholders can explain part of the discount found for larger conglomerates. The discount created by the extraction of private benefits of majority shareholders to the disadvantage of the others.⁵²

Overall, it is clear how the mind-set towards diversification has greatly shifted after the early 2000s. While many studies have shown that it disappears when controlling for different characteristics, there is still no unanimous opinion on the causes of the discount and on how to measure it.

2.3. The 2008 financial crisis

The 2008 financial crisis was a great shock for the global economy, which has yet to completely recover to its pre-2008 state. It has led academics and practitioners to

⁵⁰ See Heinrichs/Erdorf/Hartmann-Wendels (2011), pp. 27-29.

⁵¹ See Mitton/Vorkink (2010), pp. 27-28.

⁵² It has to be noted that Brendel/Rudolph/Schwetzler (2013)’s study is based on companies operating in Germany, where, according to Lins/Servaes (1999), there is no observable discount between diversified and non-diversified firms. Their study still needs to be replicated using data from the United States. See Brendel/Rudolph/Schwetzler (2013), pp. 1-3, 7-8 and 21-22.

question many widely held beliefs about business and economics, including the one about the value of corporate diversification.⁵³

One major impact of the crisis was the so-called “credit crunch”, defined as the tightening of banks’ lending conditions to consumers and private corporations. Figure I depicts the change in lending standards for private companies between 1990 and 2013 and the spreads between banks’ loan rates and their cost of funds. On the first graph a spike can be observed towards the end of 2007, representing how banks suddenly tightened their lending conditions, making it very difficult for corporations to obtain loans and thereby causing significant liquidity shortages. It is evident that these conditions, together with all the other negative effects of the financial and economic crisis, had a substantial impact not only on firms’ operations but also on their valuation. It can be observed from the second graph in Figure I how borrowing costs have increased for US firms during the recent crisis. Yan/Yang/Jiao (2010) demonstrate that when external capital becomes more costly the investment of focused firms decreases while the investment of diversified firms is unaffected. They also find that with depressed capital markets, it becomes more efficient for firms to allocate funds internally; this alleviates external financing constraints caused by higher borrowing costs. The empirical analysis also demonstrates how the market value of diversified firms is less affected than the value of focused firms during a financial crisis.⁵⁴

Even before the recent crisis, it was empirically shown that diversified firms perform significantly better than focused firms during economic downturns. Dimitrov/Tice (2006) demonstrate that single-segments firms exhibit larger average drops in sales growth and inventory growth when the economy slows down, compared to their multi-segment competitors.⁵⁵

Kuppuswamy and Villalonga (2010) affirm that the diversification discount disappeared during the recent financial crisis because investors became more risk averse and diversified firms were perceived as being a safer investment than single-segment firms. They argue that multibusiness firms benefit from higher debt capacity and from

⁵³ See Kuppuswamy/Villalonga (2010), p.1.

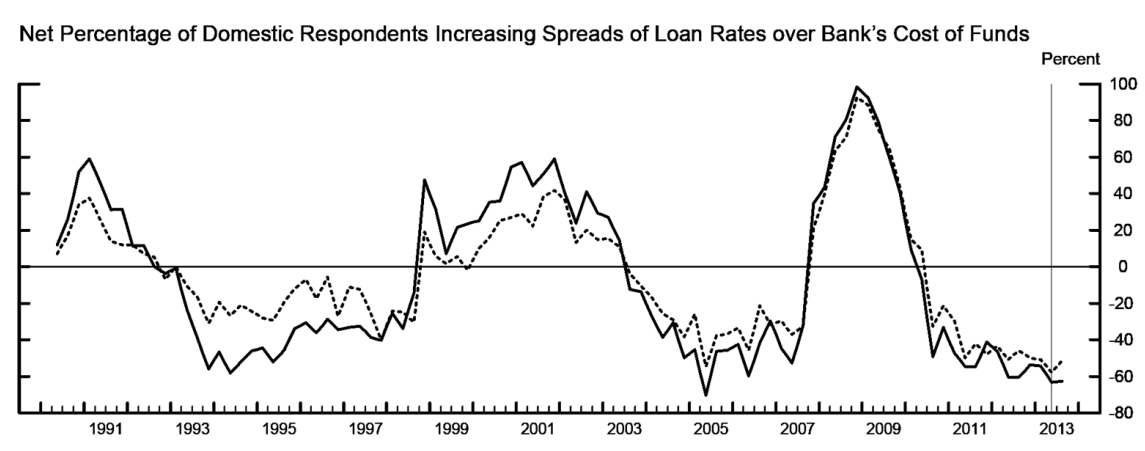
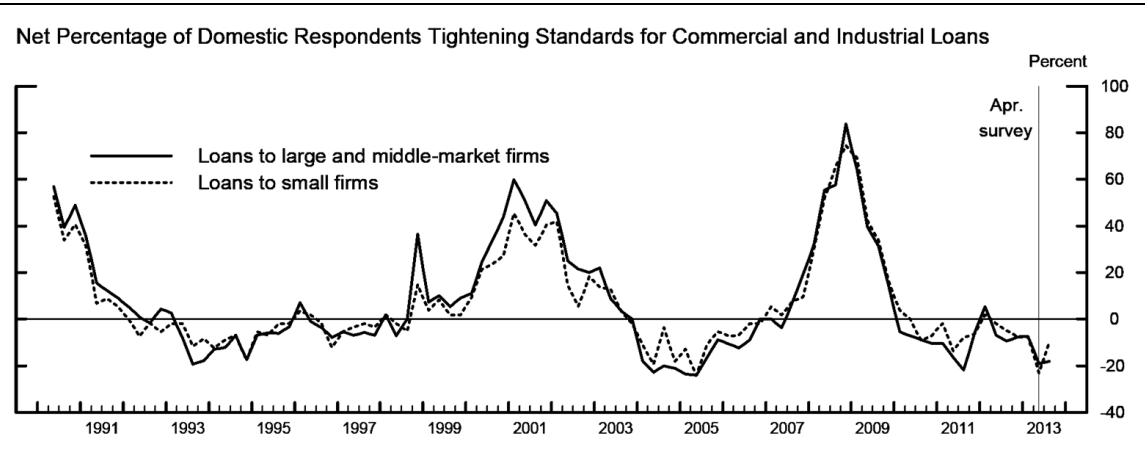
⁵⁴ Cf. Yan/Yang/Jiao (2010), p. 114.

⁵⁵ See Dimitrov/Tice (2006), p. 1496.

the fact that their internal capital markets can substitute the inefficient external market during a crisis.⁵⁶

Figure I: US lending standards 1990-2013

Survey of up to eighty large domestic banks and twenty-four U.S. branches and agencies of foreign banks conducted by the Federal Reserve quarterly, timing it so that results are available for the January/February, April/May, August, and October/November meetings of the Federal Open Market Committee. Questions cover changes in the standards and terms of the banks' lending and the state of business and household demand for loans. The first graph depicts how firms perceive the state of general lending standards to be at the time. The second graph represents the spread of loan rates over banks' cost of funds.



Source: US Federal reserve Board: Senior Loan Officer Opinion Survey on Bank Lending Practices (July 2013).⁵⁷

Amit/Livnat/Zarowin (1991) show that diversified firms have more stable earnings than non-diversified firms but greater potential profitability in normal conditions. Since investors are also more likely to prefer safer investments during a

⁵⁶ See Kuppaswamy/Villalonga (2010), pp. 38-39.

⁵⁷ Visit <http://www.federalreserve.gov/boarddocs/snloansurvey/> to read the full report.

recession or a financial crisis, the lower volatility could explain the diversification discount during non-crisis periods, as it reduces the potential profitability for investors. In a downturn, however, the lower volatility could be perceived as beneficial.⁵⁸

Hovakimian (2011) argue that agency problems become less significant during a financial crisis. While conglomerates tend to overinvest into low growth segments during non-recession periods, during an economic downturn they focus their investments on more efficient and better performing segments, and therefore have a competitive advantage over focused firms.⁵⁹

The potential impact of the financial crisis on the valuation of diversified firms is therefore a very interesting topic that has yet to be analysed from different perspectives. The present thesis will examine how it relates to different types of diversification, including global, related and unrelated.

2.4. Industrial vs. Global Diversification

Global diversification is different from industrial diversification, as it is not product-specific but nation-specific. Many firms that operate internationally, in fact, focus on one product type only.⁶⁰ The most common benefits of geographical diversification are economies of scale and scope, but it is also argued that cross-border investments reduce revenue fluctuations and spread the risk over different countries. Additionally it increases firms' market power and allows the exploitation of the market imperfections and natural resources of other countries and thus enables higher returns than in the local market. Operating in different environments also enhances a firm's knowledge and capabilities.⁶¹

Global expansion, however, also has its costs. Initially firms can suffer from liability of newness and foreignness, which makes it more difficult to compete against well-established local firms that have been operating in the market for several years. Psychic distance can increase a firm's difficulties in the new market, as its operations may need strong adaptations in order to be effective. The increasing scope of operations

⁵⁸ See Amit/Livnat/Zarowin (1991), p. 540.

⁵⁹ See Hovakimian (2011), p. 282.

⁶⁰ Only 24.6% of multinational firms are also industrially diversified. See Table IV for detailed statistics.

⁶¹ See Lu/Beamish (2004), p. 599.

can also generate growing costs and inefficiencies due to coordination difficulties and information asymmetry between divisional managers and headquarters.⁶²

Early studies on the valuation of diversification focused on cross-industry rather than cross-border diversification. Lang/Stulz (1994) were among the first to analyse the valuation effects of multinational expansion and its relation to industrial diversification in detail. They found that multi-segment firms trade at a discount even when controlling for global expansion; multinationals, instead, are found to be more valuable than their domestic counterparts.⁶³

Denis/Denis/Yost (2002) also measured the effects of global diversification. They adapted Berger/Ofek (1995)'s method to cross-border diversification and found that, on average, global diversification yields the same discounts found for industrial diversification in earlier studies. While Bodnar/Tang/Weintrop (1999) used equity-to-sales ratio and Tobin's q to measure excess value, Denis/Denis/Yost (2002) chose total capital as a proxy for firm value. This approach could be problematic if the median benchmark firm significantly differs from the segments of diversified firms; the difference could explain the inconsistencies between the results of the two researches.⁶⁴

Dos Santos/Errunza/Miller (2008) find that unrelated cross-border acquisitions yield an average 24% discount compared to their domestic counterparts. This does not apply to M&As and for related acquisitions, since no discount can be found over a two-year period after the operation has been carried out. The discount also seems to appear only for "first-time" acquirers and not for already established MNCs.⁶⁵

Gande/Schenzler/Senbet (2009), when controlling for country and industry characteristics, find a discount for geographic diversification too. Contrary to previous studies, they also find a positive and significant correlation between firm value and the percentage of foreign sales to total firm sales.⁶⁶

Hope/Thomas (2008) argue that agency costs for shareholders increase for multinationals, as it becomes more difficult and costly to monitor managers' operations in foreign countries. International operations create stronger information asymmetries between principal and agent and give greater space to managers for earnings

⁶² See Lu/Beamish (2004), p. 600.

⁶³ See Bodnar/Tang/Weintrop (1999), pp. 2-3.

⁶⁴ Cf. Bodnar/Tang/Weintrop (1999), p. 11 with Denis/Denis/Yost (2002), pp. 1969-1971 and 1976-1977.

⁶⁵ See Dos Santos/Errunza/Miller (2008), pp. 20-21.

⁶⁶ See Gande/Schenzler/Senbet (2009) pp. 11.

management. In fact, foreign earnings are consistently associated with lower profitability.⁶⁷

Jiraporn/Kim/Mathur (2008), on the other hand, argue that diversification mitigates managers' possibilities for earnings management. They find that industrial diversification lessens this phenomenon by 1.8% and the combination of industrial and geographic diversification by 2.5%, partially contradicting Hope/Thomas (2008)'s hypotheses.

Lins/Servaes (1999) analyse the valuation of diversification for different countries and compare it to the discount found in the United States. They find that there are strong differences among nations, as diversified firms trade at a 15% discount in the United Kingdom and of 10% in Japan, while there appears to be no discount in Germany.⁶⁸

Khanna/Palepu (2000) find that in emerging economies, such as India, diversified firms have an advantage over focused firms, since they are able to overcome the inefficiencies bound to their imperfect market environment, such as deficient contract enforcement, inability to protect property rights and flawed regulatory structures. Since these disadvantages are greater than those introduced by diversification, multi-segment firms are more valuable than focused firms.⁶⁹

Fauver/Houston/Naranjo (2003) also find that the valuation of diversification is positive in developing countries. A discount is found only in those countries where capital markets are well developed and internationally integrated and where the legal system is able to protect company rights.⁷⁰

These country-level differences speak in favour of considering cross-border operations separately from cross-industry ones when analysing corporate diversification. Overall, it is clear that the topic of global diversification is of great interest and can be analysed from many perspectives, and that many issues are open for interpretation. This thesis has put its focus on the valuation of globally diversified firms over the past fifteen years. In the next chapters it will be shown that there have been significant changes which could be attributable to how the financial crisis changed investors' perceptions.

⁶⁷ See Hope/Thomas (2008), pp. 622-623.

⁶⁸ See Lins/Servaes (1999), p. 2236.

⁶⁹ See Khanna/Palepu (2000), pp. 887-888.

⁷⁰ See Fauver/Houston/Naranjo (2003), p. 154.

3. Methodology

The empirical part of this thesis is based on the research of Lang/Stulz (1994), Berger/Ofek (1995) and Denis/Denis/Yost (2002). Diversification has been measured using Lang/Stulz (1994)'s *excess value* (EV) method, which is defined as the logarithm of the fraction of a firm's *Tobin's q* to its *imputed q* (see Figure III). Imputed *q* is a benchmark consisting of the sum of hypothetical values of a firm's different business segments. These are calculated using median *Tobin's q* of single-segment domestic firms ("pure players") that operate in the same industry as the diversified firm's segments, matched using SIC codes provided by COMPUSTAT.⁷¹ A minimum of five different *pure players* with the same SIC code has been used to compute *imputed q*. When this was not possible at a four-digit SIC code level, firms were matched using only the first three or the first two digits. Table II below portrays how many firms could be matched at the four, three or two-digit level.

This method is designed to estimate a firm's value using the market value of independent non-diversified firms that operate in the same industries as the diversified firm. This should allow separating the premium or discount produced by the conglomeration of single units from the purely segment-specific value (i.e. to verify if the whole is greater or smaller than the sum of its parts).

The minimum number of five segments needed to create a benchmark value should allow having consistent and solid benchmark figures; using the sales multiplier to create imputed values allows having benchmarks of the same size as the diversified firm. The OLS regression also contains control variables for other firm characteristics, such as expense ratios and profitability, to make sure that the premium or discount are not related to performance-specific characteristics of the firm.

Tobin's q has been calculated as the proportion of a firm's market value (proxied by the sum of the market value of common stock plus the book value of debt and preferred stock) to its replacement cost (proxied by the book value of total assets). Using *Tobin's q* allows for a more straightforward comparability across different firms

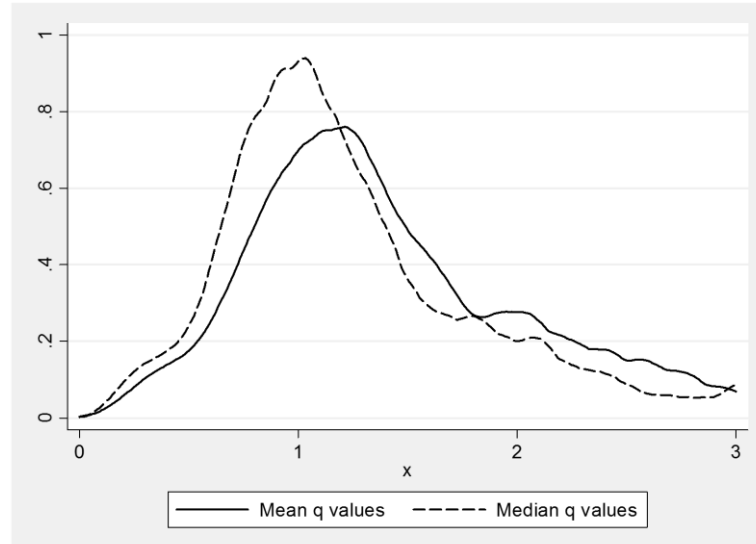
⁷¹ Standard Industrial Classification (SIC) codes are assigned by the US Census Bureau to every business establishment. SIC codes were substituted in 1997 by NAICS codes but are still available in most databases, including COMPUSTAT. For further details see www.census.gov/epcd/www/sic.html.

also without adjusting for risk or size, since it represents how the market perceives the firm's value-adding capabilities.⁷²

Using the natural logarithm of the fraction instead of the difference of the two values allows for a more straightforward and intuitive interpretation of the results. Median values have been used to compute q instead of mean values in order to correct for the imputed values' skewness, as can be observed in Figure II. Excess values were also computed with three other formulas, to allow for greater comparability with other studies that used these computations and also to verify this study's robustness. The first alternative computation, EV1, has been calculated as the difference between a firm's *Tobin's q* and its *imputed q*, using **average** hypothetical q values. EV2 is computed as the natural logarithm of the ratio of *Tobin's q* to *imputed q*. EV 3 uses the same formula as EV 1 but hypothetical q s are calculated using medians. EV4 is the value that has been chosen as the main dependent variable for all the calculations in the empirical part of this thesis. As explained above, it has been computed using median values of q and using the logarithm instead of the difference. The three alternative computations are employed in paragraph 5.3 to assess the robustness of the excess value measure used throughout the study.

Figure II: Skewness of q

Comparison of the density function of imputed q values computed using mean or median values. See Figure III for the computation of excess value measures.



Source: Own illustration

⁷² See Lang/Stulz (1994) p. 1249.

It can be seen from Table II that the same proportion of firms as in Denis/Denis/Yost (2002) could be matched at the four-digit level, whereas a much lower proportion remained unmatched. This, however, is not of great importance, as unmatched firms are removed from the dataset after matching.⁷³ To capture the effect of diversification in the multivariate regression analysis, different dummy variables were created for industrial, geographic and related/unrelated diversification, based on the methodologies developed by Lang/Stulz (1994), Berger/Ofek (1995) and Denis/Denis/Yost (2002). A firm has been classified as industrially diversified if it reports sales with at least two different SIC codes in the *COMPUSTAT Firm Segment File*. A firm is classified as globally diversified if it reports sales in at least two geographical segments.⁷⁴ A firm's diversification is classified as unrelated if it reports sales with different SIC codes at the two-digit level in the same year.⁷⁵

To assess the impact of the financial crisis on the valuation of diversification, an interaction term has been included in the regression to separate pre-2008 data from post-2008 data.⁷⁶ The sample was then split into two groups (*pre* and *post* crisis) and regressed separately using OLS. Additional graphical and empirical analyses have been carried out on the variation of excess value over time; these results will be discussed in paragraph 5.2.

In order to control for endogenous characteristics that might correlate with the decision to diversify, four additional values were included to account for industry characteristics of the firms.⁷⁷ These are yearly industry *growth rate* (1997-2012), relative industry *size* (to total) and industry *diversification trends*, measured as fraction of diversified firms per industry.⁷⁸ These, together with firm characteristics, were included in a fixed-effects model that should allow to account for endogenous traits and reduce omitted variable bias.

⁷³ Comparable sample selection and preparation techniques have been used. See chapter 4 for a detailed explanation.

⁷⁴ Adapted from Denis/Denis/Yost (2002), p. 1972.

⁷⁵ Cf. Berger/Ofek (1995), p.52.

⁷⁶ Whereas Kuppusswamy/Villalonga (2010) use quarterly data for their analysis, yearly data will be employed for this master's thesis.

⁷⁷ Cf. Campa/Kedia (2002), p. 1752.

⁷⁸ Two separate variables have been created for industrial and geographic diversification. Descriptive statistics for these variables are presented in paragraph 5.1.

Table II: Matching segment to firm data

Firm and imputed values have been matched using SIC codes. When this was not possible at a four-digit SIC code level, firms were matched using only the first three or the first two digits of their SIC code. Almost half of the firm-years could be matched at the (most precise) four-digit level. This table provides the statistic for the type of matching that could be made.

	This research	Denis/Denis/Yost (2002)
Matched at 4-digit level	47.6%	47.5%
Matched at 3-digit level	30.9%	23.3%
Matched at 2-digit level	20.6%	26.0%
Unmatched	0.8%	3.2%

Figure III Calculation of excess value

The present research's empirical analysis has been carried out using Excess Value, based on the methods developed by Lang/Stulz (1994), Berger/Ofek (1995) and Denis/Denis/Yost (2002). Four different computations of excess value have been computed. Excess Value 1 has been calculated as the difference between a firm's *Tobin's q* and its *imputed q*, using **mean** hypothetical q values (q_M). Excess Value 2 is computed as the natural logarithm of the ratio of *Tobin's q* to the *imputed q*. EV 3 and 4 use the same formula as EV 1 and 2 but hypothetical qs are calculated using median values. *Tobin's q* for a firm is its market value (MV), proxied by the market value of common equity plus the book value of preferred stock and debt, divided by replacement cost (RC), proxied by the book value of total assets as given by COMPUSTAT. *Imputed q* is calculated by assigning hypothetical q_s (q^*) to each segment of the firm, and then computing a weighted sum of these using firm and segment sales. Subscript j refers to segment j and n represents the total number of segments. *Hypothetical qs* for segments are estimated using mean or median qs for single-segment firms that operate in the same business as the diversified firm.

$$Tobin's\ q = \frac{Market\ value\ (MV)}{Replacement\ cost\ (RC)} \qquad \qquad \qquad \begin{matrix} imputed\ q \\ = \sum_{j=1}^n q_j^* \left(\frac{Segment\ Sales}{Firm\ Sales} \right) \end{matrix}$$

$$EV_1 = firm's\ Tobin's\ q - imputed\ q_M \qquad \qquad \qquad EV_2 = \ln \left(\frac{firm's\ Tobin's\ q}{imputed\ q_M} \right)$$

$$EV_3 = firm's\ Tobin's\ q - imputed\ q_{Me} \qquad \qquad \qquad EV_4 = \ln \left(\frac{firm's\ Tobin's\ q}{imputed\ q_{Me}} \right)$$

Adapted from Lang/Stulz (1994), Denis/Denis/Yost (2002), Berger/Ofek (1995) and Villalonga (2004)

4. Data and sample selection

All the sample data used in the present research has been extracted from the *COMPUSTAT Industry Segment* and *Geographic Segment* tapes, except from the

industry information used in the fixed-effects model, which has been taken from the *U.S. Department of Commerce's* website.⁷⁹

The original sample consisted of firm-level and segment-level data between 1997 and 2012 and included 157,240 and 1,020,803 observations respectively. Following previous research, utility and financial firms (SIC codes 4900–4999 and 6000–6999) and firm-years with sales of less than \$20 million have been removed from the sample.⁸⁰ Firm-years in which the total of either industrial or global segment sales were not within one percent of total reported firm sales for that year were also deleted. After removing duplicate values, observations with missing data (e.g. no SIC code), inconsistent data (e.g. sum of segment sales not within 1% of total firm sales) and outliers, the segment-database was reduced to 261,549 observations and the firm-database to the final 32,136 observations used for all the computations.⁸¹ Table III below reports a data comparison with the two previous studies on which the methodology of this thesis is based on.

Table III: Comparison with Denis et al. 2002 and Lang/Stulz 1994

Comparison of the key characteristics of this study's dataset with the data used by Berger/Ofek (1995) and Denis/Denis/Yost (2002), on which the methodology of this study is based.

	This study	Denis/Denis/Yost (2002)	Lang/Stulz 1994
Years	1997-2012	1984-1997	1978-1990
Nr. of Years	16	13	12
Nr. of observations	32,136	34,200	18,225

The fraction of diversified firms, displayed in Table IV, is reasonably consistent with the data of previous studies.⁸² This table also includes the average number of geographic segments per firm-year, a figure that was not available before 1997 and therefore could not be used in previous studies.⁸³ It can be seen that geographic diversification is much more common as industrial diversification; approximately half of US firms reported to diversify abroad. This value is greater than the one reported by

⁷⁹ See <http://www.bea.gov/itable/>.

⁸⁰ See Berger/Ofek (1995), p.43 and Denis/Denis/Yost (2002), p. 1957.

⁸¹ Segment data has been used to compute the weighted sum of imputed values for each firm in the firm-database.

⁸² See Denis/Denis/Yost (2002), p.1958.

⁸³ The number of reported geographic segments increased with the introduction of SFAS 131, which substituted SFAS 14 in 1997. See Hope et al. (2009), p. 2.

Denis/Denis/Yost (2002). This difference to previous studies could be explained by the increased reporting introduced by SFAS 131.

Table IV also shows that the majority of firms that diversify industrially are also multinationals, while about one-fourth of multinationals are also multi-segment. Correlation measures between industrial and global diversification are reported in Table V, from which it can be clearly seen that the correlation is fairly strong and significant.

Table IV: Measures of global and industrial diversification

Mean of industrial and global diversification measures for 32,136 firm-years over the period 1997–2012. A firm has been defined as industrially diversified if it reports sales with at least two different SIC Codes. A firm has been defined as globally diversified if it reports sales in at least two geographic segments.

	All Firm- Years (n = 32,136)	Industrially Diversified (n = 5,968)	Globally Diversified (n = 15,905)
Industrial Diversification			
Fraction of firm-years industrially diversified	0.1857	1.000	0.2457
Average number of industrial segments	1.2761	2,4868	1.3862
Global Diversification			
Fraction of firm-years globally diversified	0.4732	0.2498	1.000
Average number of geographic segments	2.1329	2.7611	3.6756
Fraction export sales	0.0167	0.0002	0.0346

Table V: Correlation among measures of diversification

Time-series correlation between firm-year levels of global and industrial diversification. Significance levels are reported using three, two, or one asterisk, denoting a level of 0.01, 0.05 and 0.10 respectively.

	Multi-segment Dummy	Number of Segments
Global dummy	0.1527***	0.1574***
% export sales	0.0058	0.0135**

A potential issue with the data arises from the chosen source. Villalonga (2004) criticised the use of COMPUSTAT data for studies on diversification and claimed that the finding of a *discount* is due to a bias introduced by this data. Using alternative sources, she found that multi-segment firms actually trade at a *premium*.⁸⁴ Nonetheless,

⁸⁴ See Villalonga (2004), pp. 500-501.

COMPUSTAT has been chosen as the principal data source for this thesis, since Villalonga (2004)'s methodology introduces other issues, such as the exclusion of *unrelated* diversification from the computation; *unrelated* diversification usually yields a greater discount than *related* diversification.⁸⁵ This possibility has been taken into account and Berger/Ofek (1995)'s method to account for relatedness has been adapted and applied to this research.

5. Results

5.1. Descriptive statistics and excess value measures

Table VI reports descriptive statistics for firms' principal characteristics. At first inspection of the four different categories of firms significant differences among them can be found depending on their choice of diversification. It can be seen that diversified firms, on average, tend to have a larger market valuation than non-diversified firms and that multi-business domestic firms tend to be larger, spend a smaller fraction of their revenues on R&D and capital and are more profitable than specialised firms. Single-segment multinationals are also larger than single-segment domestic firms, but are not larger than multi-segment domestic firms. Industrial diversification therefore seems to be connected to firm size much more strongly than global diversification. The most important aspect that has to be noted is the evident relation between diversification and size.

These differences point out that there could be endogenous characteristics that influence the choice of diversification of a firm. Using Tobin's q to calculate excess value should resolve the issue of firm size. A fixed-effects regression will be presented and discussed in paragraph 6.3 in order to assess the effects of endogenous characteristics on the choice of diversification and therefore its valuation by the financial markets. Table VII contains a comparison of mean excess value measures for different types of diversification strategies. It shows that multi-segment domestic firms are more highly valued than their single-segment counterparts; the same is true for multi-segment global firms. While industrial diversification yields a premium, global

⁸⁵ See Erdorf et al. (2011), pg. 33.

diversification does not appear to be as valuable for investors, neither for single-segment, nor for multi-segment firms.⁸⁶

It has to be noted that the mean excess value for single-segment domestic firms appears to be positive and significant (although small). This would make the data inconsistent, as hypothetical “pure-player” firms would be systematically undervalued compared to actual “pure-player” firms. However, the median excess value for single-segment domestic firms is zero, which means that the matching is consistent; the inconsistency is caused by firms with exceptionally large excess values, which therefore skew the mean value. For this reason, median values have been used throughout the empirical analysis instead of means.

Table VI: Firm characteristics

Descriptive statistics on various firm characteristics for the sample of 32,136 firm-year observations over the period 1997–2012. The sample is partitioned into four groups on the basis of whether the firm is industrially or globally diversified in the given firm-year. Firms are classified as multi-segment (i.e. industrially diversified) if they report more than one business segment on COMPUSTAT’s Industry Segment File. Firms are classified as multinational (i.e. globally diversified) if COMPUSTAT’s Geographic Segment File reports more than one geographic segments or export sales greater than 10% of total sales. Market value of total capital is defined as the market value of equity plus the book value of total assets minus the book value of equity. Means are reported with median values in italics below

Firm Characteristic	Single-segment Domestic	Multi-segment Domestic	Single-segment Multinational	Multi-segment Multinational
Market value of total capital (\$mill.)	2241 <i>341</i>	6910 <i>1125</i>	4331 <i>689</i>	12487 <i>2587</i>
Long-term debt / total assets	0.2532 <i>0.1919</i>	0.2637 <i>0.2441</i>	0.1865 <i>0.1253</i>	0.2207 <i>0.2003</i>
EBIT/sales	-0.0133 <i>0.0551</i>	0.0745 <i>0.0734</i>	0.0154 <i>0.0710</i>	0.0842 <i>0.0843</i>
Capital expenditure/ Sales	0.1684 <i>0.0402</i>	0.0972 <i>0.0390</i>	0.1047 <i>0.0383</i>	0.0687 <i>0.0375</i>
R&D/Sales	0.1433 <i>0.0708</i>	0.0168 <i>0.0126</i>	0.1316 <i>0.0805</i>	0.0460 <i>0.0263</i>
Advertising expense/Sales	0.0345 <i>0.0180</i>	0.0262 <i>0.0146</i>	0.0290 <i>0.0114</i>	0.0263 <i>0.0134</i>

⁸⁶ Excess value measures using different computation methods (e.g. average single-segment values) can be found in the appendix.

Table VII: Excess value measures

Mean excess value measure comparison for different types of diversification strategies. The sample consists of 32,136 Firm-Years between 1997 and 2012. Excess value is measured as the logarithm of a firm's Tobin's q to its imputed q using **median** single-segment values. Significance levels are reported using three, two, or one asterisk, denoting if the mean or median value is different from zero at level of 0.01, 0.05 and 0.10, and have been calculated using a standard two-tailed t-test and a two-tailed Wilcoxon signed rank test, respectively.

		N	Mean	Median	Std. Error
Domestic Only	Single-Segment	14761	0.0136***	0.0000	0.0044
	Multi-segment	2169	0.4014***	0.3799***	0.0125
Multinational	Single-Segment	11407	0.0095	0.0216	0.0056
	Multi-segment	3799	0.3517***	0.3403***	0.0109

One of the aims of this thesis is to investigate if the 2008-financial crisis had an impact on the valuation of diversified firms. A preliminary look at this can be given using Table VIII, which displays the fraction of diversified firms for every year between 1997 and 2012.

The illustration shows that there has been a slight increasing trend in the fraction of diversified firms over the recent four to five years, which could be explained by the fact that the recent crisis has incentivised firms to diversify both industrially and globally. The graphical representation makes it also very evident how many more firms diversify internationally compared to industrially. This trend is even more evident if the increase in diversification is compared to the trend over the past 16 years. It can be observed from the graphical illustration in Table VIII how the fraction of globally diversified firms has remained fairly constant until 2010; the fraction of globally diversified firm, which had been slowly increasing until 2009, grew more rapidly in the more recent years.

Figure IV displays the oscillations of excess value of industrially and globally diversified firms between 1997 and 2012. All four different types of excess value measures used for the empirical analysis of this thesis have been included in this representation.⁸⁷ While these values have oscillated significantly over the years, it does not appear as if the financial crisis changed how diversified firms have been valued by investors and no clear trend can be identified after 2007 or 2008, despite the recent

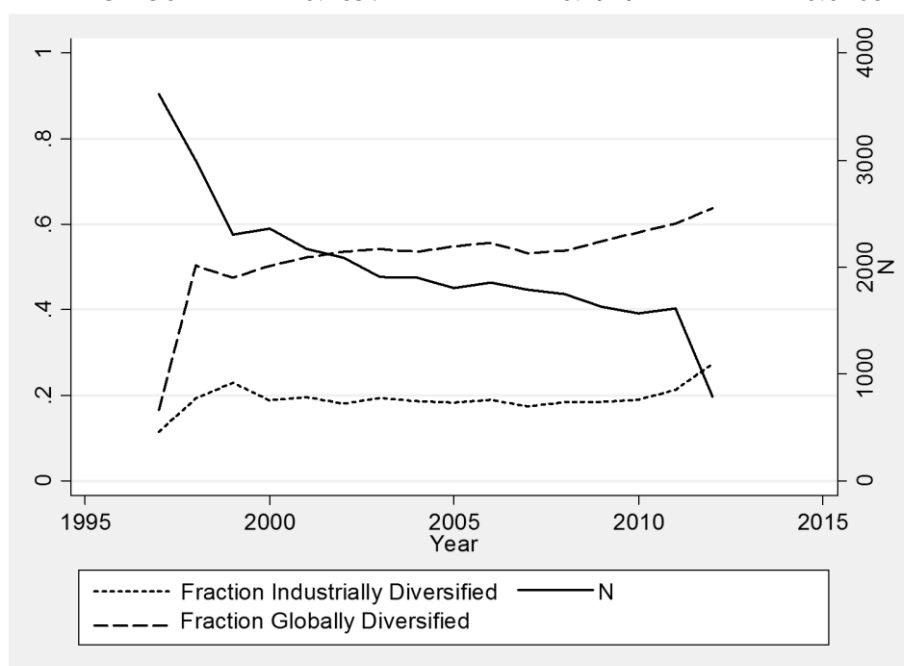
⁸⁷ See chapter 3 for a detailed explanation of the different measures of excess value.

increase in the fraction of diversified firms. The impact of the crisis will be further investigated with a multivariate regression analysis in the next paragraph.

Table VIII: Average annual industrial and global diversification measures

Fraction of industrially and globally diversified to total firms for each sampled year. Industrially diversified firms include those that are also globally diversified and vice-versa. The fifth column displays the fraction of export sales for firms that are only globally diversified. The illustration below depicts the data in the table.

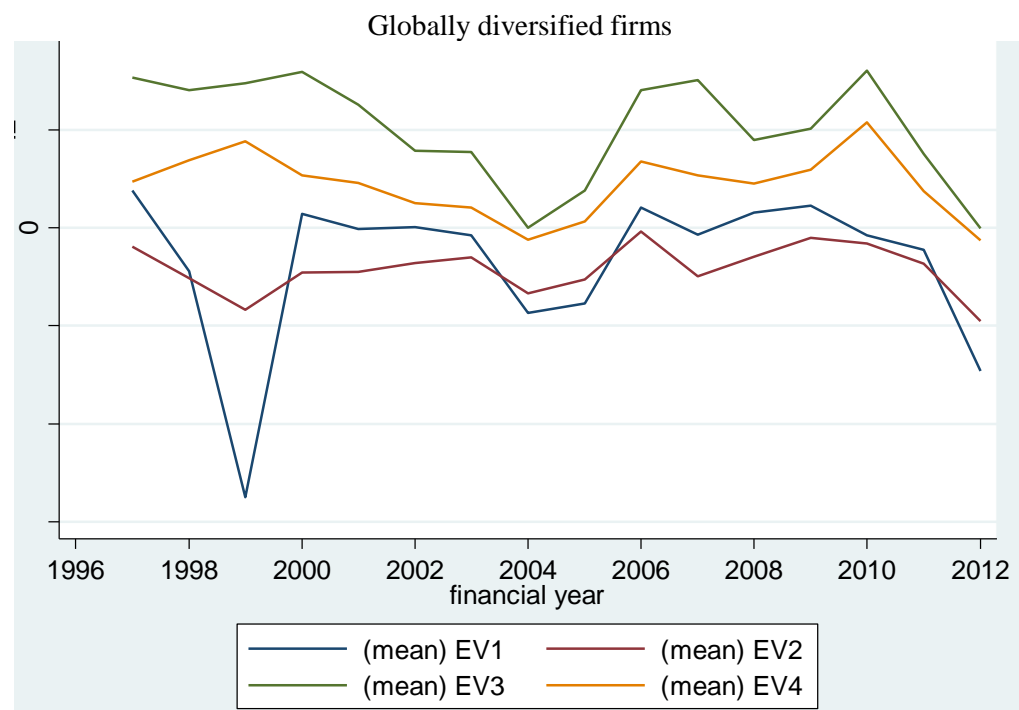
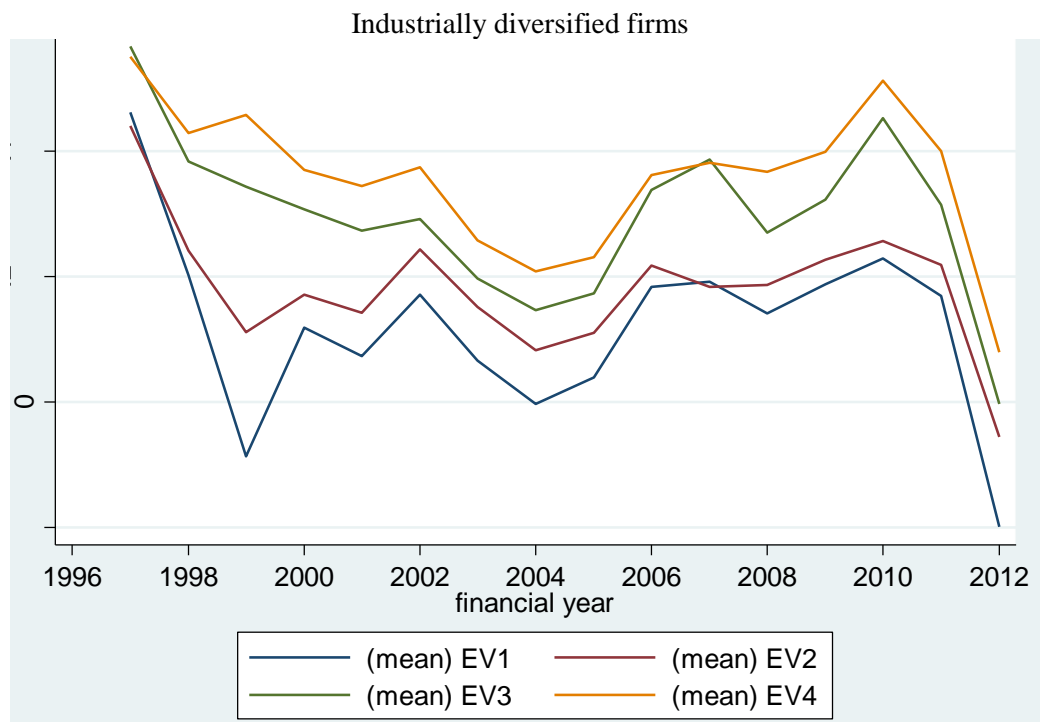
Year	N	Fraction Industrially Diversified	Fraction Globally Diversified	Export of Globally Diversified
1997	3616	0.1153	0.1659	0.0191
1998	2992	0.1932	0.5033	0.0429
1999	2304	0.2296	0.4748	0.0258
2000	2360	0.1881	0.5030	0.0223
2001	2169	0.1959	0.5224	0.0175
2002	2089	0.1809	0.5357	0.0159
2003	1907	0.1935	0.5422	0.0147
2004	1899	0.1864	0.5355	0.0134
2005	1805	0.1834	0.5485	0.0091
2006	1856	0.1891	0.5566	0.0101
2007	1790	0.1743	0.5324	0.0109
2008	1748	0.1842	0.5383	0.0076
2009	1630	0.1847	0.5601	0.0075
2010	1569	0.1899	0.5813	0.0060
2011	1614	0.2131	0.6016	0.0068
2012	788	0.2728	0.6371	0.0069
All	32136	0.1857	0.4949	0.0168



Source: Own illustration

Figure IV: Excess value over time

Oscillations of the different measures of excess value between 1997 and 2012 for multi-segment and multinational firms. EV4 is the excess value measure that has been used for all the empirical analyses of the present thesis. See chapter 3 for a more detailed explanation of excess value computations.



Source: Own illustration

5.2. Multivariate regression analysis

Table X contains the results of an ordinary least squares (OLS) regression of excess value on a series of dummies measuring different types of diversification and several control variables. Separate dummies have been used for firms that are only industrially diversified, only globally diversified or both. The regression also includes a dummy variable dividing the sample in pre and post 2007 and a dummy if the firm diversifies in related industries only.⁸⁸ The control variables are the same used by previous studies and include the market value of total capital (computed using the market value of stock and the book value of debt), the ratio of long-term debt to total capital and the ratios of capital expenditures, EBIT, R&D expense and advertising expense to sales.⁸⁹

Contrary to the findings of the studies on which the present research is based on, industrial diversification is associated with a statistically significant valuation *premium* of 22.5%.⁹⁰ Global diversification, instead, yields a statistically significant *discount* of 6.7%. This finding does not match Denis/Denis/Yost (2002)'s of an industrial discount of 20%. The existence of a global discount is found in both studies, although their discount was of over 18%.⁹¹

The combination of industrial and global diversification yields an additional premium of 9%, which would suggest that *multibusiness* MNCs are valued favourably by financial markets, while *focused* MNCs are not. This does not depend on the firm's size, expressed by its market value, as the regression coefficient is zero. This is also not consistent with Denis/Denis/Yost (2002): the combination of both types of diversification yielded an additional discount of 32% in their study.

The results for the controlling variables are all reasonably straightforward, as a premium is associated with higher profitability, R&D expenditure and advertising expense, while a discount is associated with the debt-to-capital ratio (as observed also in previous studies).⁹² Firms that limit their multi-segment operations only to related industries exhibit an additional discount of 22.4% compared to unrelated diversification.

⁸⁸ Related industries are those defined as having the first two digits of their SIC code in common.

⁸⁹ Cf. Denis/Denis/Yost (2002), p. 1967 and Berger/Ofek (1995), pp. 44-45.

⁹⁰ The presented percentages are obtained using log approximations, which are more accurate when the percentages are small.

⁹¹ See Denis/Denis/Yost (2002), p. 1967.

⁹² See Denis/Denis/Yost (2002), p. 1967.

This would suggest that investors favour “safer” firms that operate across unrelated markets, possibly contrasting the classic theory that investors are able to diversify more efficiently than firms.⁹³ Most diversifying firms are in fact operating also in unrelated industries; less than one-third of analysed firm-years report sales in related industries only.⁹⁴ This can be observed in Table IX.

Table IX: Relatedness

Type of diversification of multi-segment firms. A firm is defined as performing unrelated diversification if it reports any sales in segments that do not share the first two digits of their SIC code.

	Observations	Fraction
Unrelated diversification	4,260	0.7138
Related diversification	1,708	0.2862

The explanatory power of the regression measured by r-squared is relatively low compared to Denis/Denis/Yost (2002)’s 0.267, but is still in line with that of previous studies.⁹⁵ The relatively high number of missing variables has reduced the regression sample from the original 32,136 to an actual 7,398 included observations, which still allows for significant and relevant results.

If we look at the effects of the financial crisis, we can see that the dummy variable that divides the sample in *pre* and *post* 2007 is not significant at the 10% level. Additional regressions in which this dummy has been used as an interaction term with other diversification measures and other variables also yielded non-significant results. If, however, the sample is divided in two (pre and post crisis) sub-samples and two separate regressions are carried out (regression (2) and (3)), the results are quite different. It can be seen that the coefficients for diversification change significantly, which points out the existence of a structural break.⁹⁶

The results of the second and third regression convey that the crisis could have made investors more risk averse, as multi-segment firms trade at an even higher premium after the crisis (28.4% vs. 19.7%), while the geographic discount disappeared. Additionally, investors also seem to favour unrelated diversification, while they seemed to be indifferent before. This also suggests that there has been a shift towards firms that

⁹³ Assuming perfect capital markets. Cf. Levy/Sarnat (1970), p. 796.

⁹⁴ “Unrelated diversification” includes firms that diversify also in related industries.

⁹⁵ Cf. Lang/Stulz (1994), p. 1272 and Berger/Ofek (1995), p. 50.

⁹⁶ A Chow test for a structural break between 2007 and 2008 allows to reject the null-hypothesis of no break at the 5% but not at the 1% level.

benefit from non-perfectly correlated cash flow streams, a safer option during an economic crisis.

Table X: Multivariate regression

Ordinary least squares regressions of Excess Value on dummy variables denoting industrial and global diversification, and a set of control variables. Regressions (2) and (3) are performed on two subsamples to assess the impact of the financial crisis on Excess Value. Excess value is measured as the logarithm of a firm's Tobin's q to its imputed q. Imputed segment values are calculated using median Tobin's q values for single-segment domestic firms in the same industry. A firm is industrially diversified if it reports more than one industrial business segment. A firm is globally diversified if COMPUSTAT's Geographic Segment File reports more than one geographical segment. The sample is based on 32,136 firm-year observations over the period 1997–2012. Significance levels are reported using three, two, or one asterisk, denoting a level of 0.01, 0.05 and 0.10 respectively. The White test rejects H_0 of homoskedasticity at the 0.01 level for the regression. Therefore, reported significance levels are calculated using White (1980) heteroskedasticity-consistent standard errors.

Independent Variables	1997-2007		2008-2012
	(1)	(2)	(3)
Intercept	0.3533***	0.3557***	0.3557***
<i>Diversification-related variables</i>			
Dummy equal to one if only industrially diversified	0.2251***	0.1971***	0.2849***
Dummy equal to one if only globally diversified	-0.0667***	-0.0796***	-0.0002
Dummy equal to one if both industrially and globally diversified	0.0921***	0.0712*	0.1460**
Dummy equal to one if year is > 2007	-0.0130		
Dummy equal to one if the diversified firm operates only in related industries	-0.2244***	0.0000***	-0.2713***
<i>Control variables</i>			
Market value of total capital	0.0000***	-0.2084***	0.0000
Long-term debt to total capital	-0.7514***	0.0000***	-0.5517***
Capital expenditures to sales	0.1766**	-0.8512***	-0.0356
EBIT to sales	0.2282***	0.3558***	0.2033*
R&D to sales	0.2194***	0.2388***	0.4081***
Advertising to sales	0.7476***	0.0700	0.4650
Adjusted R ²	0.0906	0.1029	0.0806
Number of observations	7398	5231	2167

6. Robustness check

6.1. Robustness over time

To verify the regression's consistency over time, the sample has been divided into four sub-samples of four years each. The results of these regressions are reported in Table XI. It can be seen that the premium of industrial diversification declined from the first to the third sub-period, while being significant only at the 10% level in the second

and non-significant in the third. In the fourth period, after the beginning of the crisis, it became positive and significant again. It might therefore be that the crisis inverted an on-going trend of decreasing industrial diversification premium. These results resemble those of Denis/Denis/Yost (2002), although their study used 1984-1997 data.⁹⁷

Global diversification, instead, displayed a much more unstable valuation over time as its regression coefficient was significant only in the second sub-period. It has to be noted that this partitioning of the sample reduced the number of observations significantly, in some cases affecting the regression's explanatory power.

Table XI: Multivariate regressions over time

Ordinary least squares regressions of Excess Value on dummy variables denoting industrial and global diversification, and a set of control variables. The sample has been divided into four groups to compare Excess Value over time. The sample is based on 32,136 firm-year observations over the period 1997–2012. Significance levels are reported using three, two, or one asterisk, denoting a level of 0.01, 0.05 and 0.10 respectively. Reported significance levels are calculated using White (1980) heteroskedasticity-consistent standard errors.

	1997-2000 (4)	2001-2004 (5)	2005-2008 (6)	2009-2012 (7)
Intercept	0.3060***	0.3383***	0.3610***	0.3252***
<i>Diversification-related variables</i>				
Dummy equal to one if only industrially diversified	0.3573***	0.1646*	0.1058	0.3334***
Dummy equal to one if only globally diversified	-0.0409	-0.1359***	-0.0348	0.0251
Dummy equal to one if both industrially and globally diversified	0.2363***	-0.0410	0.0653	0.2030***
Dummy equal to one if the diversified firm operates only in related industries	-0.1292	-0.1984***	-0.3011***	-0.2439***
<i>Control variables</i>				
Market value of total capital	0.0000**	0.0000**	0.0000	-0.0000
Long-term debt to total capital	-0.8150***	-0.7721***	-0.7227***	-0.7287***
Capital expenditures to sales	0.1361	0.7611***	0.2476	-0.0452
EBIT to sales	0.1291***	0.2977***	0.5336***	0.1259
R&D to sales	0.1797	0.1061	0.1823	0.3648**
Advertising to sales	0.6054***	0.7340**	1.1450***	0.2593
Adjusted R2	0.1154	0.0972	0.1073	0.0833
Number of observations	1,656	2,010	2,090	1,642

⁹⁷ Cf. Denis/Denis/Yost (2002), p. 1968

6.2. Alternative estimation techniques

Table XII presents five alternative regressions to measure the valuation of diversified firms. Regression (8) is based on pooled results of 16 separate regressions (one for each year).⁹⁸ While the results are consistent with the previous regressions, the coefficients for diversification measures are not significant and adjusted R-squared is very low. Regression (9) employs total capital to calculate excess value instead of Tobin's q and is computed as the natural logarithm of the fraction of firm total capital to imputed total capital. These results, however, do not support those of regression (1) and even suggest a positive effect of global diversification. This suggests that methods based on Tobin's q and methods based on total capital might yield different results and could explain why different authors found contradicting results over the years.

Using the segment value of assets instead of sales to assign weighted imputed values to each firm-year (regression (10)) yields consistent results to those of regression (1), although the premium for industrial diversification is lower and significant only at the 10% level. This could also be due to the fact that asset data was not available for as many firm-segments as sales data.⁹⁹

To control if the type of SIC code matching influences the results, firm-years have been matched to hypothetical q_s using only the broadest 2-digit level. Using this data the coefficient for industrial diversification becomes negative and significant only at the 10% level, while the coefficient for global diversification becomes insignificant. This could be due to the lack of precision when counting segment only on industry-basis. In fact, only 9.6% of firm-years result to be diversified this way, compared to 18.6% before.

Changing the definition of geographic diversification (and therefore the formula to compute the dummy variable), to include also firms that report export sales greater than 10% of total sales, increases the discount for geographic diversification from 6.7% to 7.5%. This finding also supports the theory that foreign-centred firms are not viewed very favourably by the market.

⁹⁸ This procedure is based on Denis/Denis/Yost (2002), pp. 1969-1970.

⁹⁹ 1 out of 10 segment-years in the final sample had no asset data, while all segments in the final sample had sales data.

Table XII: Alternative estimations

Alternative estimations of excess value. Regression (1) has been copied to facilitate comparisons. Regression (8) is based on pooled results of 16 separate regressions (one for each year). Regression (9) employs total capital to calculate excess value instead of Tobin's q and is computed as the natural logarithm of the fraction of firm total capital to imputed total capital. Regression (10) uses the assets instead of sales to assign weighted imputed values to each firm-year. For regression (11) firm-years have been matched to hypothetical qs using only the broadest 2-digit level. All the other characteristics are the same used for regression (1). The sample is based on 32,136 firm-year observations over the period 1997–2012. Significance levels are reported using three, two, or one asterisk, denoting a level of 0.01, 0.05 and 0.10 respectively. Reported significance levels are calculated using White (1980) heteroskedasticity-consistent standard errors.

Independent Variables	(1)	Mean of Annual Estimates (8)	Using Total Capital (9)	Asset-weighted imputed qs (10)	Matching at 2-digit level (11)
Intercept	0.3533***	0.3559**	0.4817***	0.6079***	0.6317***
<i>Diversification-related variables</i>					
Dummy equal to one if only industrially diversified	0.2251***	0.2086	0.0783	0.1120*	-0.0544*
Dummy equal to one if only globally diversified	-0.0667***	-0.0695	0.0446**	-0.0665***	0.0003
Dummy equal to one if both industrially and globally diversified	0.0921***	0.0950	0.1689***	0.1346***	-0.0996***
Dummy equal to one if year is > 2007	-0.0130		0.0099	-0.0110	-0.0110
Dummy equal to one if the diversified firm operates only in related industries	-0.2244***	-0.2314	-0.3992***	-0.4817***	-0.4040***
<i>Control variables</i>					
Market value of total capital	0.0000***	0.0000	0.0000***	0.0000***	0.0000**
Long-term debt to total capital	-0.7514***	-0.8374***	-0.5739***	-0.7679***	-0.9758***
Capital expenditures to sales	0.1766**	0.2954	0.8815***	0.1671**	0.2220**
EBIT to sales	0.2282***	0.4001**	-0.0232	0.2315***	0.2179***
R&D to sales	0.2194***	0.2333	0.5166***	0.2430***	0.4637***
Advertising to sales	0.7476***	0.7815	0.6602***	0.8424***	0.7861***
Adjusted R2	0.0906	0.0102	0.0983	0.1184	0.1034
Number of observations	7398	462	7,398	6,880	7,398

6.3. Fixed-effects model

A common concern when measuring the valuation of corporate diversification is the fact that firms that diversify might be endogenously different to those who don't and the discount could be explained by these characterising differences and not by the

choice of diversifying *per se*.¹⁰⁰ It has already been shown that multi-segment firms differ from single-segment firms on size, profitability, capital expenditure and expenses on R&D and advertising. Additionally, firms might operate in industries that are intrinsically different from each other and this might correlate with the decision to diversify. Santalo/Becerra (2008), for instance, find that the valuation of diversified firms is not homogeneous across industries. In fact, diversified firms are valued at a 12-28% discount in industries with a large number of specialised companies, whereas in industries where diversified firms are the majority, they trade at a 14-18% premium. They argue that in industries in which soft information (i.e. information that is not transferrable externally of the company) is very important diversified firms have a competitive advantage. Diversification also improves access to financial resources and gives an advantage in vertically integrated industries.¹⁰¹

As can be clearly seen in the first chart of Figure V, industries in the United States differ in yearly growth rates and significantly differ in size, as 2 out of 18 industries make up about 25% of yearly value added.¹⁰² The same can be seen in the following chart about the percentage of diversified firms per industry. Over 60% of utilities and manufacturing firms are globally diversified, compared to only 7% of the healthcare industry. The most industrially diversified industries are utilities and construction, where over 30% of firms operate also in another industry, while the same applies to less than 4% of accommodation and food services firms. These varying characteristics could indeed reveal that the choice of diversifying is industry-related and that the discount or premium is due to industry effects. To control for these differences, a fixed-effects regression has been computed, which should allow to control for firms' endogenous characteristics and for omitted variable bias.¹⁰³ Table XIII reports the results of the fixed-effects regression next to those of regression (1). The results of regression (12) show that the valuation of industrial diversification does not appear to be industry or size-related. The valuation of global diversification instead seems to be so, as the coefficient has become insignificant. The multi-segment/multibusiness dummy is still significant and displays an additional premium that increased from 9.2% to 15.8%. This

¹⁰⁰ See Campa/Kedia (2002), p. 1732.

¹⁰¹ See Santalo/Becerra (2008), p. 877.

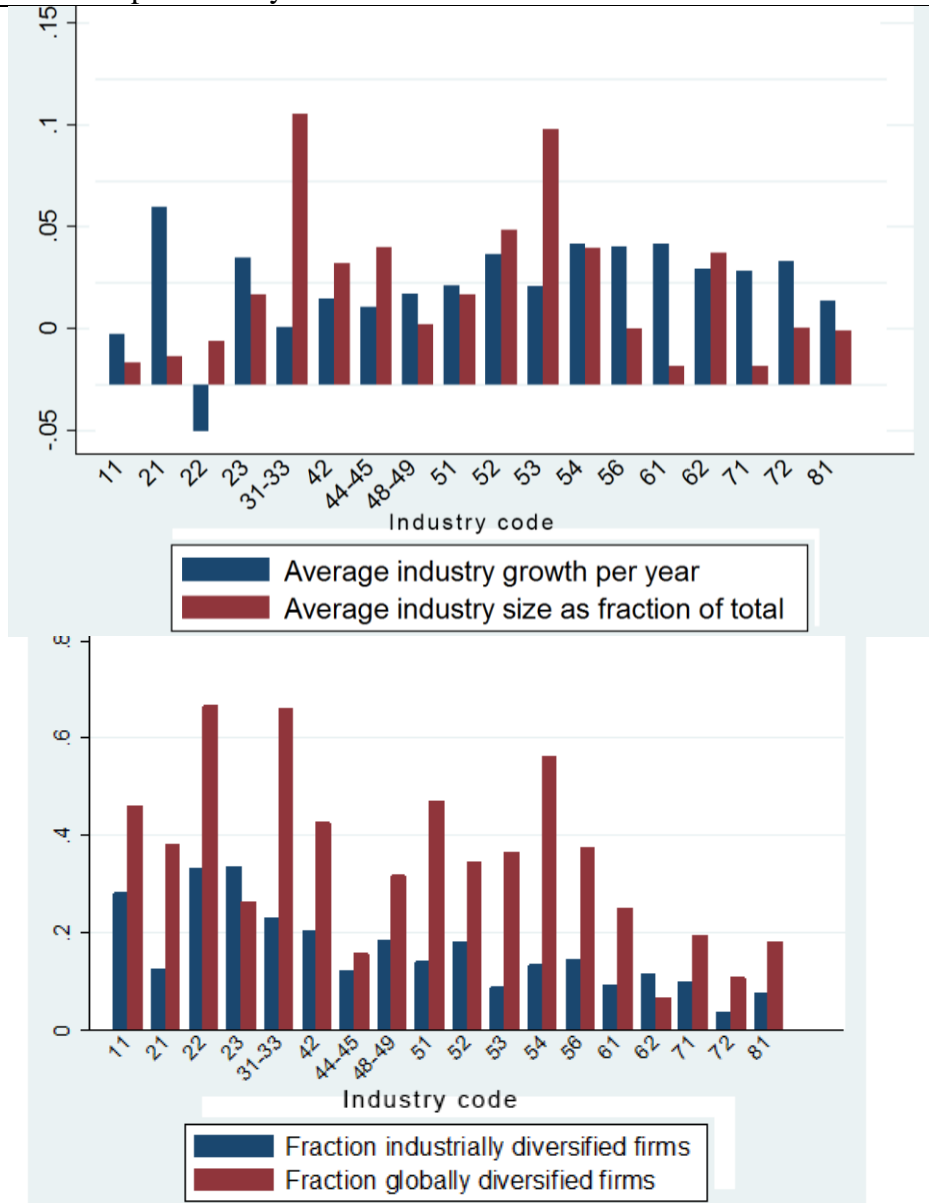
¹⁰² These industries are manufacturing and real estate.

¹⁰³ In addition to the variables included by Denis/Denis/Yost (2002), pp. 1969-1970 also industry characteristics have been added, such as those described by Campa/Kedia (2002), p.1748.

again speaks for a favourable market valuation of multiproduct MNCs. What can also be seen from regression (12) is that firms that operate in an industry with a high yearly growth rate suffer from a significant discount compared to firms of other industries, while industry size is not significant for firm valuation.

Figure V: Industry characteristics

The first chart depicts mean growth rates of US industries from 1997 to 2012, grouped by two-digit NAICS code and average industry size, measured as fraction of value added to total. The chart below depicts average fraction of industrially and globally diversified firms per industry between 1997 and 2012 and.¹⁰⁴



Source: Own illustration

¹⁰⁴ NAICS codes have been used for this analysis, because they are more segmented than SIC codes. See Table XXIII in the Appendix for NAICS code descriptions.

The industrial diversification level is not significant, which is not consistent with the results of Santalo/Becerra (2008). The global diversification level instead is significant, although it yields a discount of 19% for firms that operate in industries with a higher level of global diversification. While the industry-level global diversification rate yields a discount, the firm-level global coefficient is not significant. This could suggest that the discount found for global diversification is not firm-related but industry-related instead.

Table XIII: Fixed effects regression

Fixed effects regressions of Excess Value on dummy variables denoting industrial and global diversification, and a set of control variables. Excess value is measured as the logarithm of a firm's Tobin's q to its imputed q. Imputed segment values are calculated using median Tobin's q values for single-segment domestic firms in the same industry. A firm is industrially diversified if it reports more than one industrial business segment. A firm is globally diversified if COMPUSTAT's Geographic Segment File reports more than one geographical segment. Regression (1) has been copied from Table X to facilitate comparison. Significance levels are reported using three, two, or one asterisk, denoting a level of 0.01, 0.05 and 0.10 respectively. The White test rejects H_0 of homoskedasticity at the 0.01 level for the regression. Therefore, reported significance levels are calculated using White (1980) heteroskedasticity-consistent standard errors.

Independent Variables	(1)	(12)
Intercept	0.3533***	0.4467***
<i>Diversification-related variables</i>		
Dummy equal to one if only industrially diversified	0.2251***	0.2338***
Dummy equal to one if only globally diversified	-0.0667***	-0.0168
Dummy equal to one if both industrially and globally diversified	0.0921***	0.1581***
Dummy equal to one if year is > 2007	-0.0130	-0.0192
Dummy equal to one if the diversified firm operates only in related industries	-0.2244***	-0.2216***
<i>Control variables</i>		
Market value of total capital	0.0000***	0.0000***
Long-term debt to total capital	-0.7514***	-0.7880***
Capital expenditures to sales	0.1766**	0.1599**
EBIT to sales	0.2282***	0.2331***
R&D to sales	0.2194***	0.2435***
Advertising to sales	0.7476***	0.6843***
Yearly industry growth rate		-0.5164***
Industry size		-0.2394
Industrial diversification level		0.1260
Global diversification level		-0.1944***
Adjusted R2	0.0906	0.0934
Number of observations	7398	7365

6.4. Valuation effects of changes in diversification

The last test is aimed at assessing how the valuation of diversified firms changes as firms increase the amount of segments they operate in. The increasing number of

segments should theoretically increase the coordination and communication problems and thereby the difficulties related to unrelated diversification; a decreasing value is thus expected. Rajan/Servaes/Zingales (2000) argue that adding a new segment to an existing business alters its power-structure, thereby also its decision-making process. This could impact not only the new segment, but also the efficiency and performance of the entire firm.¹⁰⁵

Compared to previous studies, which carried out this test on the number of industrial segments only, in the present study it was possible to measure it also for global diversification. This has been made possible by the introduction of SFAS 131, which caused firms to report a greater number of segments for both types of diversification.¹⁰⁶

Table XIV contains average Tobin's q values by number of reported firms segments and Figure VI depicts excess value by number of segments. From these two items, it would appear that company average valuations decrease with the number of reported segments.

These analysis however is not sufficient, as it does not control for other variables. In fact, a multivariate regression analysis shows different results: regression (13), reported in Table XV, measures the effect of the number of reported segments on excess value, instead of a dummy variable like in the previous regressions. While Table XIV and Figure VI suggest the contrary, the regression results indicate that firm value increases with the number of reported industrial segments, as can be seen from Table XV, which reports a positive and significant coefficient (although at the 5% and not at the 1% level) for the number of reported industry-segments. Firm value again is confirmed to be decreasing with the number of reported geographic segments, as predicted by the illustration above. Regression (13) is therefore in line with the results of regression (1) and not only shows that the market favours industrial over global diversification but also that this remains true for increasing degrees of diversification.

¹⁰⁵ See Rajan/Servaes/Zingales (2000), p. 77.

¹⁰⁶ SFAS 131 made it optional for firms to report the number of geographic segments they operate in. Nonetheless, the number of reported segments grew after the introduction of SFAS 131. The greater number of reported geographic segments made it possible to analyse the valuations effects for increasing degrees of diversification not only for industrial (as done in previous studies) but also for global diversification. See Berger/Hann (2002), pp. 50-51.

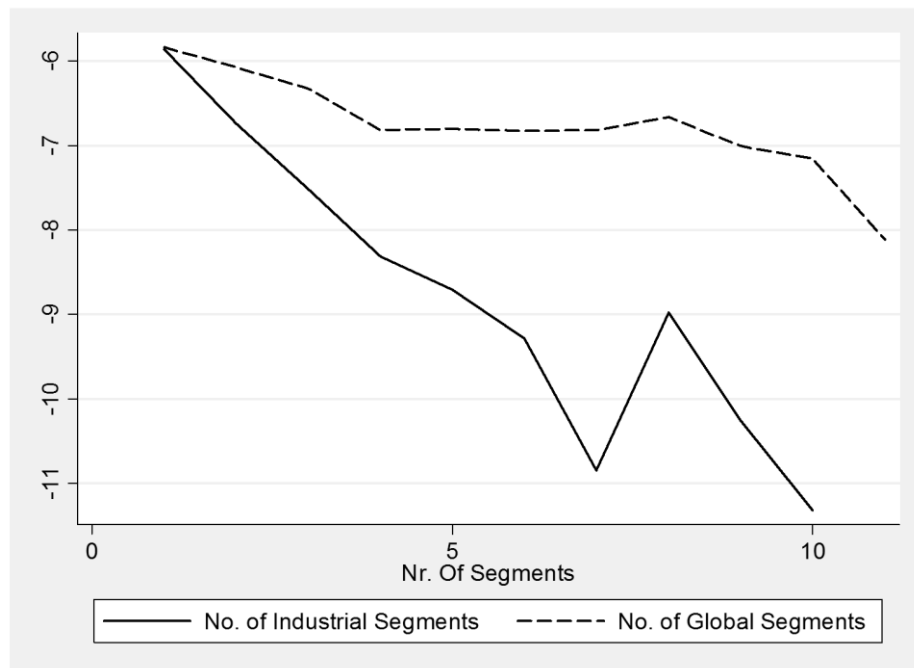
Table XIV: Tobin's q by number of segments

Mean and median Tobin's q values by the number of reported segments by firms in the COMPUSTAT database. The maximum number of industrial segments that can be reported on Compustat is ten, while there is no maximum for geographic segments.

Industrial			Geographic		
Segments	Mean q	Median q	Segments	Mean q	Median q
1	1,6412	1,1992	1	1,4310	1,0627
2	1,2226	1,0101	2	1,5810	1,1725
3	1,2074	1,0141	3	1,6286	1,2142
4	1,0103	0,9119	4	1,6500	1,2104
5	1,0330	0,8777	5	1,6036	1,2088
6	1,1349	0,9256	6	1,6794	1,2382
7	1,4820	1,3238	7	1,5858	1,2048
8	0,9832	0,8668	8	1,4463	1,1616
9	0,7351	0,7351	9	1,8876	1,2651
10	0,7287	0,7552	10	1,5773	1,2272
			>10	1,4902	1,0750

Figure VI: Excess value by number of reported segments

Mean excess value by number of reported industrial and geographic segments, without controlling for other variables and firm characteristics.



Source: Own illustration

Table XV: Changes in the degree of diversification

Ordinary least squares regressions of Excess Value on variables denoting the number of reported yearly business segments for each firm, and a set of control variables. Excess value is measured as the logarithm of a firm's Tobin's q to its imputed q. Imputed segment values are calculated using median Tobin's q values for single-segment domestic firms in the same industry. A firm is industrially diversified if it reports more than one industrial business segment. A firm is globally diversified if COMPUSTAT's Geographic Segment File reports more than one geographical segment. The sample is based on 32,136 firm-year observations over the period 1997–2012. Significance levels are reported using three, two, or one asterisk, denoting a level of 0.01, 0.05 and 0.10 respectively. Reported significance levels are calculated using White (1980) heteroskedasticity-consistent standard errors.

Independent Variables	(13)
Intercept	0.4282***
<i>Diversification-related variables</i>	
Number of yearly industrial segments	0.0407**
Number of yearly global segments	-0.0179***
Dummy equal to one if the diversified firm operates only in related industries	-0.3296***
<i>Control variables</i>	
Market value of total capital	0.0000***
Long-term debt to total capital	-0.7387***
Capital expenditures to sales	0.1789**
EBIT to sales	0.2267***
R&D to sales	0.2050***
Advertising to sales	0.7093***
Adjusted R2	0.0863
Number of observations	7,398

7. Discussion

The empirical results that have been presented in the previous chapters introduce a few original and interesting ideas about corporate diversification. This study is the first to analyse the effects of the financial crisis on the valuation of types of firm diversification; the empirical results suggest that investors have become more risk averse, as diversified firms seem to be considered a safe option today.

Other findings, such as the existence of a discount for global diversification before the beginning of the 2008 financial crisis, are in line with the those of most previous studies. The negative aspects of expanding cross-border seem to outweigh the benefits of uncorrelated cash-flows and economies of scale and scope in almost every study on global diversification, including the present one. The outcome of a premium for industrial diversification, instead, is somehow surprising, as it clearly differs from the results of previous studies that employed a similar methodology. The combination of industrial and global diversification also appears to be valued favourably by markets.

As discussed in section 2.2, however, the accounting reforms introduced in 1997 significantly improved the quality of available financial information, thereby increasing analysts' forecast efficiency. This should be considered when comparing the results of the present thesis with studies using pre-1997 data, such as Denis/Denis/Yost (2002).

However, as explained in the introductory part of this thesis, these results should still be taken carefully when drawing conclusions about the assessment of diversification, as a unique and flawless method for measuring the valuation of diversified firms does not exist and different authors using different computations have obtained contradicting results over the years.

Additionally, not all robustness test carried out on the regression analysis confirmed the primary results of the empirical analysis presented in paragraph 5.2. In particular, using total capital to measure excess value instead of Tobin's q yielded almost opposite results. Despite other computations confirming the existence of a premium for industrial diversification and a discount for global, this results should still be interpreted with this in mind.

Moreover, the regressions displayed only limited explanatory power, as adjuster R-squared ranged between 0.08 and 0.12, depending on the used parameters. While this is in line with most previous studies, it is still a relatively low figure to draw confident conclusions.

Overall, the results are still significant and robust to most controlling measures and can therefore be considered a valid contribution to the research on corporate diversification.

8. Implications for the accounting practice

Several reasons can be found to explain why multi-segment firms trade at a premium compared to specialised firms. Some of these are closely connected to the field of accounting and auditing. For example, diversified and non-diversified firms display different behaviour regarding financial disclosures to their investors. It has been found that nondisclosure of discretionary data for focused firms is generally related to competitive and strategic reasons. Nondisclosure of multi-segment firms, instead, is also explained by managerial motives and agency costs.¹⁰⁷

¹⁰⁷ Bens/Berger/Monahan (2011) analysed confidential internal information of several corporations and compared it to what the firms chose to public externally. See Bens/Berger/Monahan (2011), p. 447.

In this chapter the empirical results of the thesis will be discussed from an accounting point of view. Three main topics will be presented and discussed: *earnings management*, *cost of capital* and how the recognition of *goodwill* in M&As can influence Tobin's-q-based measurements of the diversification discount/premium. The three topics have been chosen due to their relevance to the matter and to their practical implications on the accounting practice or to the research on diversification.

8.1. Earnings management

Earnings management is “*a strategy used by the management of a company to deliberately manipulate the company's earnings so that the figures match a pre-determined target*”. The purpose of earnings management is often that of income smoothing, which means that a company tries to reduce the year-over-year volatility of earnings by artificially lowering or increasing them according to their reporting needs.¹⁰⁸ Common practices for income smoothing are advancing or postponing expenses (in quarterly or annual statements), pulling back the following year's sales, adding overtime hours at the end of the year, selling excess assets, late recording of supplies, prepaying of expenses, writing off of valuable inventory, writing up previously written-off inventory or postponing the payment of invoices.¹⁰⁹

Income smoothing affects the market value of firms, as those with a high level of discretionary current accruals (DCA) are characterised by a significantly lower average market value compared to firms with moderate or low level of DCA. Additionally, these firms are significantly mispriced by investors and therefore trade at a discount compared to firms with low level of DCA.¹¹⁰ Earnings management is also strongly associated with forced CEO turnover while not related to voluntary turnover, corroborating the fact that investors consider these practices with disfavour.¹¹¹

Jiraporn/Kim/Mathur (2008) found that a firm's degree of industrial diversification mitigates earnings management by 1.8% and that the combination of global and industrial diversification mitigates it by 2.5%. Global diversification on its own, instead, has not been found to affect earnings management in any way. This can

¹⁰⁸ See Investopedia, Definition of Earnings Management. Accessed: 12 Aug. 2013. Url: <http://www.investopedia.com/ask/answers/191.asp>

¹⁰⁹ These practices are (in most cases) legal, although unethical. See Elias (2004), p. 92.

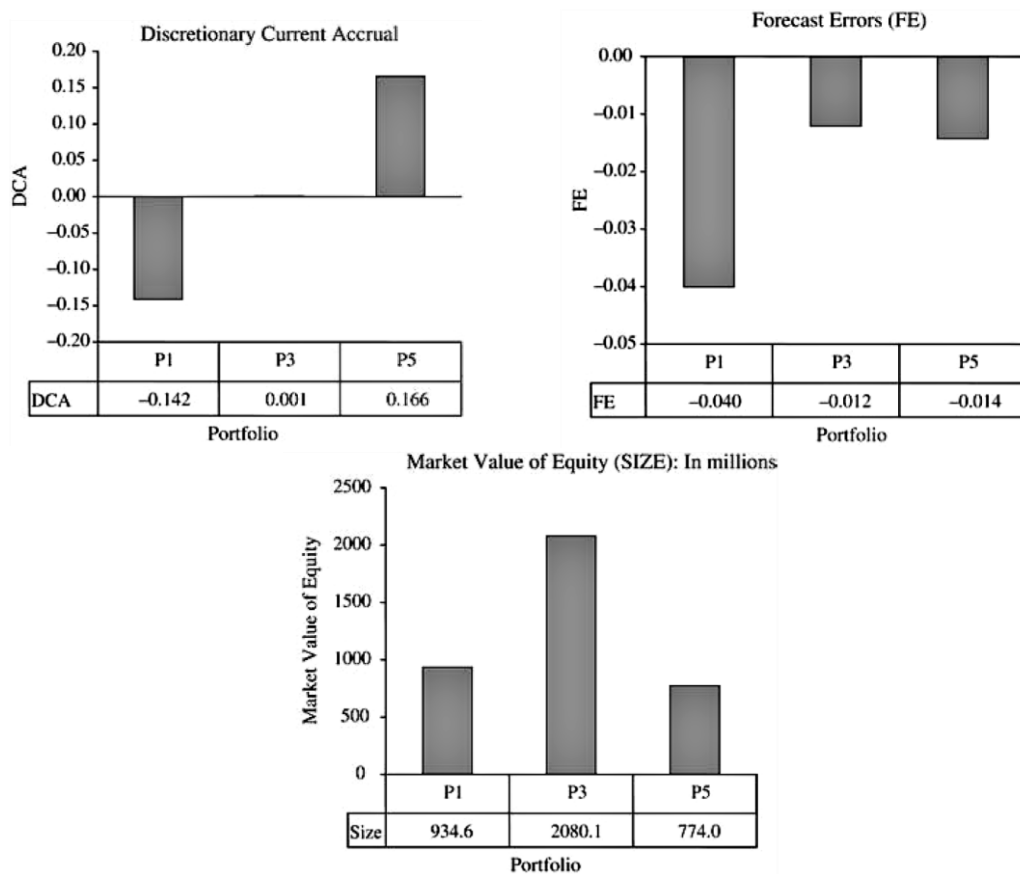
¹¹⁰ See Kwag/Stephens (2010), pp. 48, 49, 53 and 54.

¹¹¹ See Hazarika/Karpoff/Nahata (2012), p.37

be explained by the fact that diversified firms present non-perfectly correlated cash flows from diverse sources. The accruals generated from these cash flows will therefore tend to cancel each other out, making it more difficult to adapt the overall earnings to the desired target. They also found that focused firms suffer from a higher degree of information asymmetry, a common characteristic of diversifying firms that makes it more difficult for investors to monitor managers' actions, including earnings management.¹¹²

Figure VII: Market value of firms with earnings management

The first chart depicts a three portfolios of firms formed according to their level of discretionary current accruals (DCA), a proxy for earnings quality. DCA equals the difference between the total current accruals (TCA) and non-discretionary current accruals (NDCA). The second chart displays how analysts' forecast errors are significantly higher for firms with a high level of negative accruals. The third chart displays the average market value of the three portfolios.



Source: Kwag/Stephens (2010), p. 48

El Mehdi/Seboui (2011)'s study finds a significant correlation between earnings management and industrial diversification. This however, does not apply for geographic

¹¹² See Jiraporn/Kim/Mathur (2008), pp. 1088, 1098 and 1105.

diversification, also not when it goes together with industrial. According to their study, multinationals tend to display a significantly higher degree of earnings management than purely domestic firms. This is consistent with the empirical results of this thesis and with the *agency conflicts hypothesis*, which states that a higher degree of global diversification generates information asymmetry and therefore facilitates earnings management.¹¹³

Overall, earnings management (among other types of agency costs) could be a very significant for explaining the finding of a diversification discount. If this adverse phenomenon could be reduced (for example through stronger enforcement) it could be argued that also diversification would be seen less negatively; and thus also the valuation discount for globally diversified firms could decrease or even turn into a premium.

8.2. Cost of capital

In a perfectly competitive market, with no taxes and transaction costs, firm diversification should have no positive impact on firm value beyond potential synergies; risk reduction could therefore be obtained more efficiently by investors, by purchasing a portfolio of diversified stock.¹¹⁴

Empirical research, however, has shown that one of the principal benefits of firm diversification is its risk-reducing effect, obtained from the non-perfect correlation of cash flows from different business units. This generates a coinsurance effect and lowers earnings variability and the firm's default risk, thereby reducing also the firm's risk premium.¹¹⁵ Hann/Ogneva/Ozbas (2012) find that firms that diversify into unrelated industries report a significantly lower average cost of capital than comparable portfolios of stand-alone firms. This is explainable by the lower volatility of their cash flows and the lower perceived risk of uncorrelated businesses. They also find that diversification lowers firms' systematic risk, as it reduces some of the countercyclical deadweight loss.¹¹⁶

Stulz (1999) finds that globalised firms that have access to capital markets from many countries benefit from reduced market risk premia and therefore have lower cost

¹¹³ See El Mehdi/Seboui (2011), pp. 178-179.

¹¹⁴ Cf. Schall (1972), pp. 27-28.

¹¹⁵ See Lewellen (1971), p. 536 and Fisher (1959), p. 222.

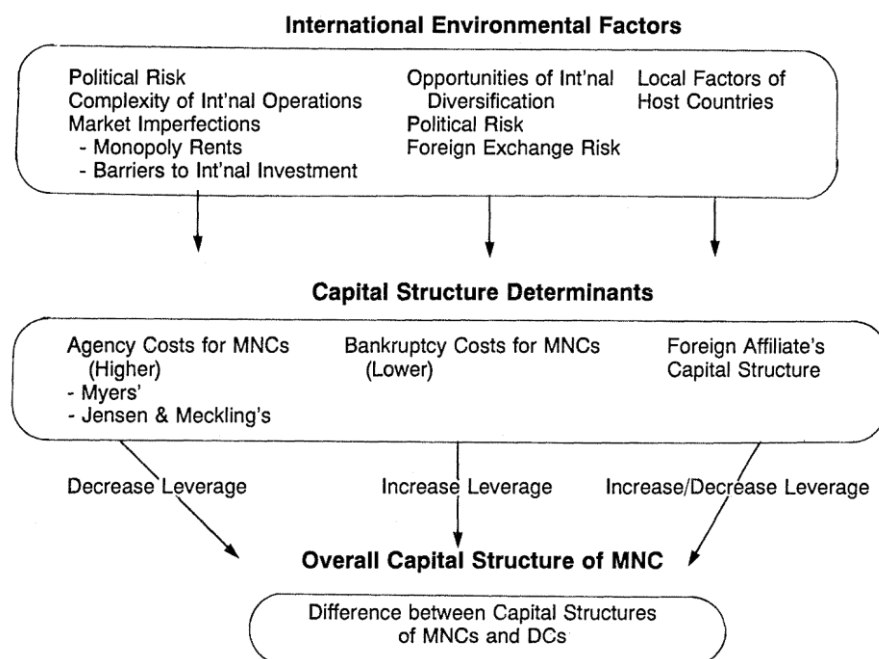
¹¹⁶ See Hann/Ogneva/Ozbas (2012), pp. 1-5).

of capital. He also argues that a “global CAPM model” should be used for multinationals, as they are less subject to the volatility of the local market.¹¹⁷

Lee/Kwok (1988) created an analytical framework to analyse the determinants of MNCs capital structures and listed several reasons to explain why they differ from those of domestic companies. These include, for example, environmental reasons such as political risk, greater complexity of cross-border operations, dealing with market imperfections and foreign exchange risk. These environmental factors affect the firm’s capital structure determinants, which thus cause the difference between MNCs and domestic firms. Their empirical analysis confirms that MNCs have higher agency costs and are less leveraged than domestic firms, while they cannot find any supporting evidence about their bankruptcy costs hypothesis.¹¹⁸

Figure VIII: Capital structure determinants

This chart depicts an analytical framework to analyse the determinants of MNCs’ the capital structures compared to those of domestic firms. Empirical evidence, however, contradicts the hypothesis of lower bankruptcy costs for MNCs when controlling for size.



Source: Lee/Kwok (1988), p. 200

Greater cost of capital due to increased operating risk is therefore also a reason that explains the existence of a valuation discount for globally diversified firms. The

¹¹⁷ See Stulz (1999), p. 24.

¹¹⁸ See Lee/Kwok (1988), p. 214.

empirical results of this thesis, however, suggest that the risk perception of global MNCs might have changed during the recent global crisis. This could bring down the financing costs of multinationals, as the capital markets now perceive them to be safer as their domestic counterparts.

8.3. Goodwill and Tobin's q

One of the most commonly used measures used by researchers to compare the value of diversified and non-diversified firms is Tobin's q. Custódio et al. (2013) argue, however, that this ratio might be skewed for firms that are very acquisitive and that this might be a reason for explaining the finding of a diversification discount. They find that multi-segment firms engage, on average, in significantly more M&A activities than their single-segment counterparts.¹¹⁹

Amit/Livnat/Zarowin (1991) also find that diversified firms are more acquisitive than focused firms and that this leads to a reduction of their book-to-market ratio.¹²⁰ This can be explained by the different treatment of internally- and externally-generated goodwill under US GAAP: while internally generated goodwill is not identifiable and has to be recognised as an expense, the excess of the cost of an acquisition price over the fair value of acquired net assets can be capitalised as goodwill on the acquirer's balance sheet.¹²¹

Custódio et al. (2013) argue that this different treatment has an impact on Tobin's q because diversified firms display a significantly higher amount of capitalised goodwill than their non-diversified counterparts. Since post-acquisition balance sheets will generally be closer to market value than the sum of pre-acquisition balance sheets, this has a negative impact on Tobin's q and could explain the finding of a diversification discount in studies that use this measure. Custódio et al. (2013), in fact, find that the industrial diversification discount disappears when controlling for goodwill and for the number of acquisitions made by diversifying firms.¹²²

The empirical results of this thesis, however, suggest that there is a premium for industrial diversification and a discount only for global diversification. Table XVI reports statistics about average goodwill and number of acquisitions of firms in the

¹¹⁹ See Custódio et al. (2013), p. 2.

¹²⁰ See Amit/Livnat/Zarowin (1991), pp. 543-544.

¹²¹ See SFAS 142.10 and SFAS 141.34.

¹²² See Custódio et al. (2013), pp. 3-5.

analysed sample. It can be seen that diversified firms are indeed more acquisitive and that they recognise, on average, more goodwill than single-segment domestic firms. Their goodwill-to-assets ratio is also significantly higher. Globally diversified firms display similar characteristics compared to single-segment domestic firms. They are however not more acquisitive than industrially diversified ones and their goodwill is also not higher. If we assume that the recognition of goodwill decreases q-values for diversified firms, and use this hypothesis to explain the finding of a discount for globally diversified firms, we must also assume that the premium found in the empirical analysis of this thesis is understated and that industrially diversified firms enjoy an even greater premium, which seems unrealistic. Further investigation on this topic would be needed, but this goes beyond scope of the present thesis. These findings should however be kept in mind when interpreting empirical results about corporate diversification, because they should make us question the validity of the results of several studies.

Table XVI: Goodwill comparison

Comparison of the average amount of goodwill recognised by firms, divided by their type of diversification strategy. Average number of acquired firms and the average recognised goodwill through acquisitions are also reported. The last column contains average goodwill-to-asset ratios, with significance levels for the difference between diversified firms and single-segment domestic firms). Significance levels are reported using three, two, or one asterisk, denoting a level of 0.01, 0.05 and 0.10 respectively.

	Number of Acquisitions	Goodwill	Acquired Goodwill	Goodwill/ Total Assets
Single-segment domestic	28.4	106.7	125.2	0.0868
Only Industrially diversified	83.2	423.2	222.3	0.1154***
Only Globally diversified	61.7	334.6	215.6	0.1139***
Multi-segment Multinational	188.2	1129.6	497.0	0.1417***

9. Implications for international business

This final chapter's aim is to analyse and discuss the empirical results of this thesis from an International Business point of view (IB). A literature-based introduction on the topic of cross-border firm operations gives a general explanation of the principal theories that describe why firms operate internationally and why MNCs exist; these are summarised in Table XVII. In paragraph 9.2 different internationalisation strategies for diversified firms are discussed and the empirical results of chapter 5 are interpreted from the IB perspective in paragraph 9.3.

9.1. Introducing literature

The connection between the valuation of corporate diversification and the field of international business and MNCs is very significant and of great interest. MNCs have already been studied from many points of view and by numerous researchers, starting from Ricardo's *comparative advantage* theory and arriving to the later process/stage, imperfect markets, transaction cost and capabilities theories.¹²³ The valuation effects of diversification, global in particular, have however never been analysed very thoroughly. Historically, research has focused on why firms choose to internationalise in the first place, rather than examining their market valuation compared to non-internationalising firms.

In 1937 Ronald Coase explained how market imperfections will push a firm to internalise those operations that it can carry out more efficiently and at a lower cost than the external market. He argued that market imperfections are actually the primary reason for the existence of corporations.¹²⁴

In 1960 Stephen Hymer tries to explain FDI using the *competitive advantage* and market imperfections model. He stated that domestic firms should, *ceteris paribus*, have an advantage over foreign firms in the form of knowledge and expertise of local laws, customs, politics, language, restrictive government policies toward foreign firms, exchange rates and lower risk. Foreign firms that enter the market must therefore possess a competitive advantage over local firms in order to be able to compete. These could be, for instance, economies of scale, market power, marketing skills, R&D capabilities, brand name, superior technologies or cheaper financing possibilities. FDI therefore occurs in countries where there is a higher degree of market imperfections.¹²⁵

Vernon (1966) argues that internationalisation occurs naturally as part of a product's life cycle as firms expand to seek economies of scale. The internationalisation process is gradual and starts from export, which requires the lowest commitment and generates the lowest risk; FDI occurs only at a later stage, since it is the strongest form of internationalisation and requires the highest commitment.

Kindleberger (1969) applies Coase's market imperfections and transactions cost theories to internationalisation. He argues that the existence of a multinational

¹²³ See for example, Johanson/Vahlne (1977), Kogut/Zander (2003), Buckley/Casson (1998) and Rugman/Verbeke (2003).

¹²⁴ See Coase (1937).

¹²⁵ See Hymer (1960), pp- 29-31.

enterprise can be justified by market imperfections, which push firms to internalise operations that would otherwise be carried out by the market.¹²⁶ MNCs therefore exist when it is more efficient to perform a cross-border operation *within* a company, rather than exchanging goods or services cross-border through import/export operations between different firms. In perfectly competitive markets, MNCs would therefore not exist, as they have a natural disadvantage over local corporations.¹²⁷

Buckley/Casson (1976) list several reasons for internalising foreign operations, which can be industry-specific, region-specific, nation-specific or firm-specific. Internalisation allows MNCs to avoid costly and risky arm's-length operations, transactions involving intangible (and inseparable) assets (e.g., brand image), tariffs and barriers to entry, additional costs for communication and uncertainty due to unfamiliarity with the foreign market. They also argue that MNCs will grow only as long as the benefits are not outweighed by the costs of communication, coordination and control that bigger international firms will inevitably incur into.¹²⁸

Dunning (1981) explained firms' internationalisation policies with his famous OLI paradigm. He described the three types of advantages that internationalising firms have. These are *ownership-specific* advantages, which are those directly related to the company (i.e. specific features that distinguish it from competitors, such as resources or knowledge); *location-specific* advantages, such as factors of production, market size, infrastructure, laws and cultural advantages (i.e. psychic distance); and *internalisation-specific* advantages, which are the reason why a multinational is more efficient than the external market (market imperfections).¹²⁹

Starting from the beginning of the 1990s, the perspective started shifting from the broader market view to the more specific firm view. Research focused on the so-called Resource Based View (RBV), which explained how firms internationalise based on their unique resources and on their ability to create value in foreign countries.¹³⁰ This view, however, assumed that firms would always start their operations in their home country and then internationalise at a later stage. This cannot adequately explain the modern phenomenon of *born globals*, which are firms that sell on international markets

¹²⁶ See Kindleberger (1969), pp. 14-27.

¹²⁷ See Akoorie/Scott-Kennel (2005), p.115.

¹²⁸ See Buckley/Casson (1976), pp. 26-28.

¹²⁹ Cf. Dunning (1981), p.35.

¹³⁰ See Sharma/Erramilli (2004), pp. 8-9.

from the beginning of their operations. This has been possible in recent years through changing consumer preferences (specialised and customised products in niche markets), changing technologies that allow small firms to compete on cost and quality with bigger MNCs, cheaper telecommunication systems that allow smaller enterprises to manage global businesses, shrinking product life cycles that make small companies more adaptable and cost effective, more readily available information on export markets (i.e. on the internet) and lowered storage and retrieval costs.¹³¹

Table XVII: Overview of principal IB theories

Year	Author(s)	Theory	Principal findings
1937	Coase	Market imperfections	Firms exist and need to internalise certain operations because of market failures
1960	Hymer	Competitive advantage and market imperfections	Domestic firms have an intrinsic advantage over foreign firms. These must give a competitive advantage over foreign firms in order to compete. FDI occurs with high degree of market imperfection.
1966	Vernon	International product life cycle	Internationalisation occurs as a natural step in the life cycle of a product, which is extended internationally for firms that seek economies of scale
1969	Kindleberger	Competitive advantage and market imperfections	MNCs exist because they are able to perform certain cross-border operations more efficiently than the market
1976	Buckley and Casson	Internationalisation theory	Internalisation allows MNCs to avoid costly arm's-length operations that may be costly and risky
1981	Dunning	Eclectic paradigm	Three types of advantages push firms to internationalise (Ownership, Location and Internalisation).

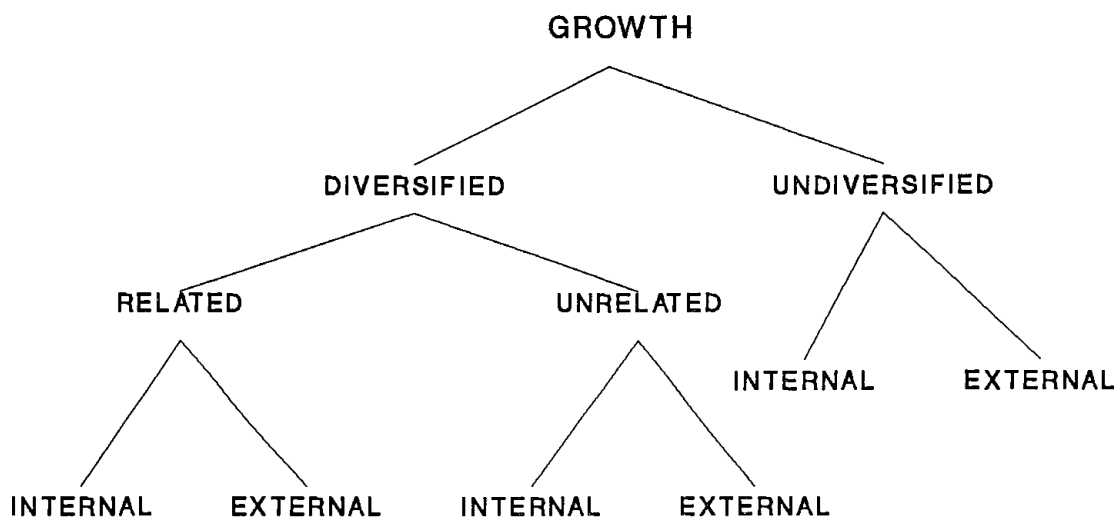
9.2. Diversification and internationalisation strategies

There are several paths a firm can take when it decides to internationalise its operations. Firms might not necessarily adopt their home-country strategy when going cross-border; for instance, a single-segment firm might enter a new country by diversifying its business; diversified firms, on the contrary, could opt to focus on only one of their segments in a foreign country. Figure IX illustrates the different strategies a firm can choose when growing its business, nationally or internationally. According to Simmonds (1990), the most common diversified strategy towards the end of the 1970s

¹³¹ See Rennie (1993), p. 48.

and beginning of the 1980s was the related-internal approach, which mean that firms expanded their business by growing through internal development into related industries. The least common strategy in those years was the unrelated-internal approach (i.e. expanding into unrelated industries using only internal capabilities). The related-internal was also found to be the most profitable strategy, while the unrelated-external (i.e. expansion to unrelated industries through acquisition) was the worst-performing, although the differences were not highly significant.¹³²

Figure IX: Strategies for firm growth according to Simmonds (1990)



Source: Simmonds (1990), p. 400

Many firms, however, internationalise their business in two steps: first they start exporting their products into the target country, and only in a second stage, after they became more familiar with the new environment, they opt for foreign direct investment (FDI). These strategies are common for both SMEs (small and medium enterprises) and bigger MNCs. The principal reason for internationalising (for both types of firms) is commonly to extend their business abroad in order to seek additional growth when their home market is saturating. This need therefore occurs at a different stage for firms that start operating in small or in bigger countries.¹³³

Cavusgil/Bilkey/Tesar (1979) find that the most frequently observed characteristics of US-based exporting firms are annual sales of over 1 million dollars and having managers with very favourable expectations regarding the effect of

¹³² See Simmonds (1990), p. 406-408.

¹³³ See Lu/Beamish (2001), p. 566.

internationalisation on firm growth and market development. In fact, 96.4% of firms with these characteristics are actually exporters.¹³⁴

Lu/Beamish (2001) find a U-curved relationship between the level of FDI of SMEs and their performance, which is negatively related to the level of export sales and improves with a greater extent of FDI. The initial decline is related to liability of foreignness, which needs to be overcome by the firm by developing new knowledge and capabilities that are specific to the foreign market; these should allow the firm to outperform its local competitors. They also found a negative relation between firm size and performance and product diversification and performance for firms in Japan.¹³⁵

In a following paper they modified their U-shape theory growth into an S-shape, arguing that internationalising firms will grow only up to the point where the benefits of internationalisation are offset by the costs of managing many subsidiaries in different markets.¹³⁶ This can be seen by the graphical representation of Figure X. The authors argue that, after the initial loss, the total benefits of diversification will overtake the total costs (point A), up to the point where the coordination costs will revert this trend back to a loss (point B).

A firm's chosen entry mode in a host country has also been proven to be very important for the success of the internationalisation strategy. Post-entry performance has been found to be related not only to whether the firm entered greenfield or by acquisition, but also on the combination of this choice and pre-entry industry factors of the home country.¹³⁷

Hitt/Hoskisson/Kim (1997) discovered a strong correlation between firm performance and the combination of industrial and global diversification. As can be seen in Figure XI, the combination of industrial and global diversification yields higher returns than non-diversifying firms for higher degrees of both global and industrial diversification. Focused firms outperform all the others with absence or at low degrees of global diversification.¹³⁸

¹³⁴ See Cavusgil/Bilkey/Tesar (1979), pp. 92-93.

¹³⁵ See Lu/Beamish (2001), pp. 575 and 582.

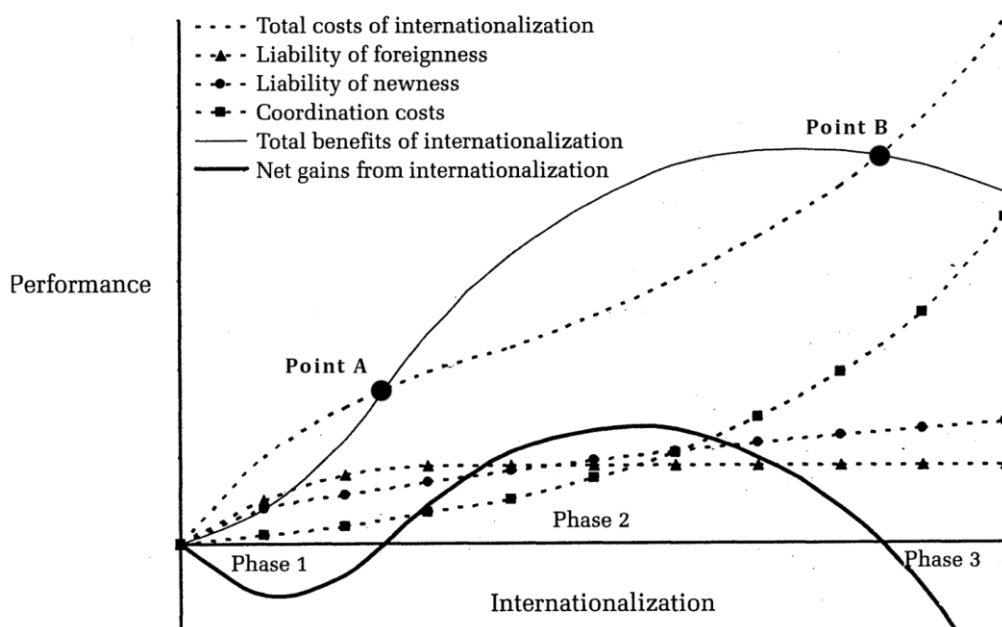
¹³⁶ See Lu/Beamish (2004), pp. 600-601.

¹³⁷ See Sharma (1998), pp. 894-895.

¹³⁸ See Hitt/Hoskisson/Kim (1997), pp. 787 and 793.

Figure X: The phases of internationalisation

Graphical illustration of the nonlinear relationship between international expansion and firm performance. The three phases of international expansion are characterised by liability of newness and foreignness (phase 1), increasing levels of geographic scope and growth of the firm's profitability (phase 2), escalation of governance and coordination costs to the point where they surpass the benefits of geographic diversification (phase 3).



Source: Adapted from Lu/Beamish (2004), p. 600

Amit/Livnat/Zarowin (1989) find that diversified firms are more acquisitive than non-diversified firms when entering a new country and that this is not mitigated by a high ownership-concentration. They also find that the international expansion mode remains fairly constant over time (i.e. acquisitive firms tend to keep expanding by acquisition, whereas internally growing firms keep investing in internal ventures).¹³⁹ Firms that adopt a mixed approach to internationalisation (acquisition or greenfield) according to the occasion, however, are not found to be performing worse than those that keep the same approach in every country.¹⁴⁰

Mudambi/Mudambi (2002) also find that diversified firms are more likely to enter a new country through acquisition and that diversifying entry strategies are commonly associated with low growth in the host country's industry equivalent to their core business at home. International product diversification is also associated with greater international experience.¹⁴¹

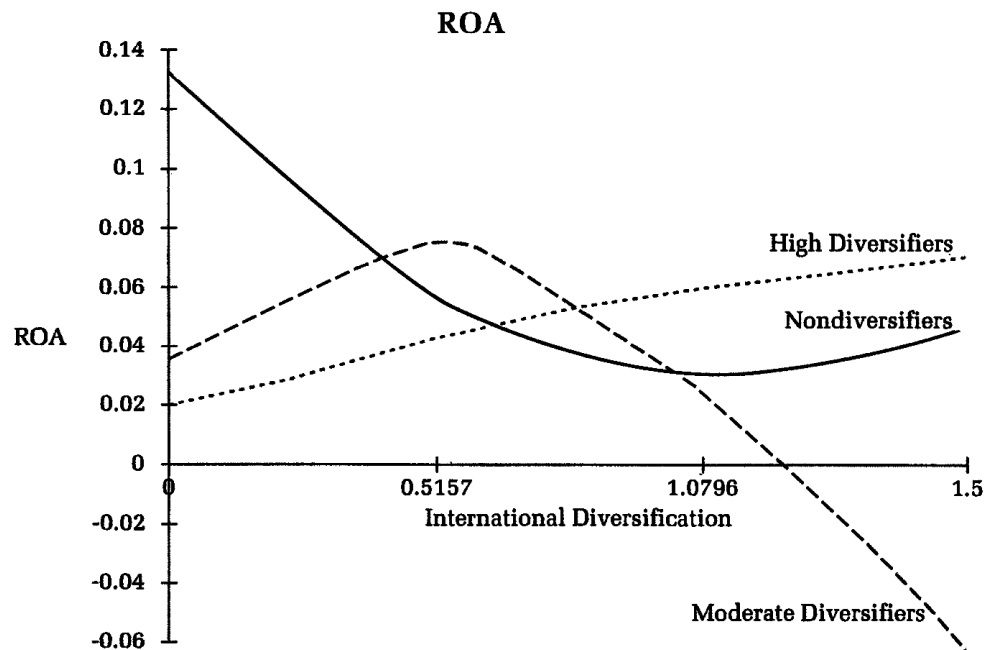
¹³⁹ See Amit/Livnat/Zarowin (1989), pp. 91-92 and 95.

¹⁴⁰ See Lamont/Anderson (1985), pp. 931-932.

¹⁴¹ See Mudambi/Mudambi (2002), pp. 48-50.

Figure XI: Interaction effects of global and industrial diversification on ROA

Interaction effects of product and international diversification on return on assets (ROA). Non-diversifiers consist of single-business firms; moderate diversifiers consist of firms whose product diversification scores are lower than .813; and high diversifiers consist of firms whose product diversification scores are .813 or higher.¹⁴²



Source: Hitt/Hoskisson/Kim (1997), p. 787

According to Chatterjee (1990) entry by acquisition is more likely in concentrated markets and for firms with higher stock prices. His results also indicate that, as predictable, firms with greater internal funds and low debt ratios are more likely to enter a new market greenfield, which is also more frequent for expansion into related industries.

Busija/O'Neill/Zeithaml (1997) analyse the relation between type of diversification (related, unrelated or mixed) on the foreign country entry mode and discover that, while there is no clear link between type of diversification and entry mode, the combination of entry mode and diversification strategy is related to the firm's subsequent profitability.¹⁴³

¹⁴² Diversification scores were created following a procedure used by Hitt/Middlemist (1978). Cf. Hitt/Hoskisson/Kim (1997), p.784.

¹⁴³ See Busija/O'Neill/Zeithaml (1997), pp. 323-325.

Ruiz-Moreno/Mas-Ruiz/Nicolau-Gonzálbez (2007) find that a firm's entry mode in foreign countries (i.e. greenfield vs. acquisition) strongly depends on the cultural distance to the host country and to the firm's size but not to its international experience or its host-country experience.¹⁴⁴ US-based firms, for instance, tend to keep lower equity stakes in firms that operate in countries with a high cultural distance compared to firms of other developed countries. The higher ownership concentration and the managerial compensation schemes in the US can explain this greater risk aversion. Lower equity stakes are also found to be associated with a greater need for learning when entering a new country.¹⁴⁵

Overall, it is clear that the type of diversification a firm chooses is very important for its international expansion strategy. The relation between industrial and global diversification and the internationalisation strategy is not only relevant for managerial decision making, but should be subject to further investigation in relation to the valuation of corporate diversification.

9.3. Interpretation of empirical results

The empirical results that have been presented in chapters 5 and 6 suggest that multi-segment firms are viewed more favourably by investors than their specialised counterparts. Multinationals, instead, traded at a discount compared to non-internationalising companies in the years that preceded the financial crisis that started in 2008. These results could be partially explained by the negative correlation found between earnings management and industrial diversification and the combination of industrial and global diversification, as explained in paragraph 8.1.¹⁴⁶ This is consistent with the results presented in Table X, as the combination of industrial and global diversification results in a valuation premium, which would support previous research that found that MNCs are generally valued favourably by financial markets.¹⁴⁷

The discount found for global diversification can be explained by the agency-costs of expansion. As a firm expands internationally, it becomes more difficult for investors to monitor managers' operations. This could lead to *empire-building*, which is characterised by increased sales growth accompanied by a decreasing profit margin,

¹⁴⁴ See Ruiz-Moreno/Mas-Ruiz/Nicolau-Gonzálbez (2007), p.802.

¹⁴⁵ See Tihanyi/Griffith/Russell (2005), p. 278.

¹⁴⁶ See Jiraporn/Kim/Mathur (2008), p. 1105.

¹⁴⁷ See Santos, Dos/Errunza/Miller (2008), p. 3.

thus reducing firm value.¹⁴⁸ Investors propensity for investing into globalising firms is also reduced by home-equity bias, which describes the tendency of purchasing stock of companies of your own country, for which information is more readily available. The lack of information about cross-border operations could therefore explain the risk-perception that disadvantages MNCs.¹⁴⁹

After 2007, however, as the financial crisis increased investors' risk-aversion, the higher degree of global diversification could have become more attractive, since it made firms less susceptible to internal market fluctuations. This trend would indicate a return to seek out MNCs as surrogate vehicles for global diversification, after the development of new financial instruments in the 1970s made it possible to achieve this through internationally diversified stock portfolios.¹⁵⁰

Geringer/Beamish/DaCosta (1989) find that there is a curvilinear relationship between the degree of global diversification and firm performance, measured as profit-to-sales and profit-to-assets; the relationship begins positive and becomes negative as the degree of diversification increases.¹⁵¹ The empirical results of this thesis, however, suggest that the discount starts already at two reported global segments. While less than 20% of US-firms are globally diversified, almost 70% of those who are operate in more than one foreign country, as can be seen on Figure XII. The same is not true for industrial diversification, as only 32% of diversified firms report sales in more than two segments.

Hitt/Hoskisson/Kim (1997) also find a curvilinear relationship between global diversification and performance. Additionally they find that the combination of global and industrial diversification has a positive effect on performance. This finding again is consistent with the results of this thesis. They argue that, at some point, the costs of global diversification start exceeding the benefits, causing diminishing marginal returns.¹⁵²

An additional issue that has to be kept in mind is that, for practical reasons, all the research on corporate diversification does not distinguish between the ways MNCs operate internationally. Some authors have taken into account the differences between

¹⁴⁸ See Hope/Thomas (2008), p. 594.

¹⁴⁹ See Rugman (2004), p. 209.

¹⁵⁰ See Rugman (2004), p. 207.

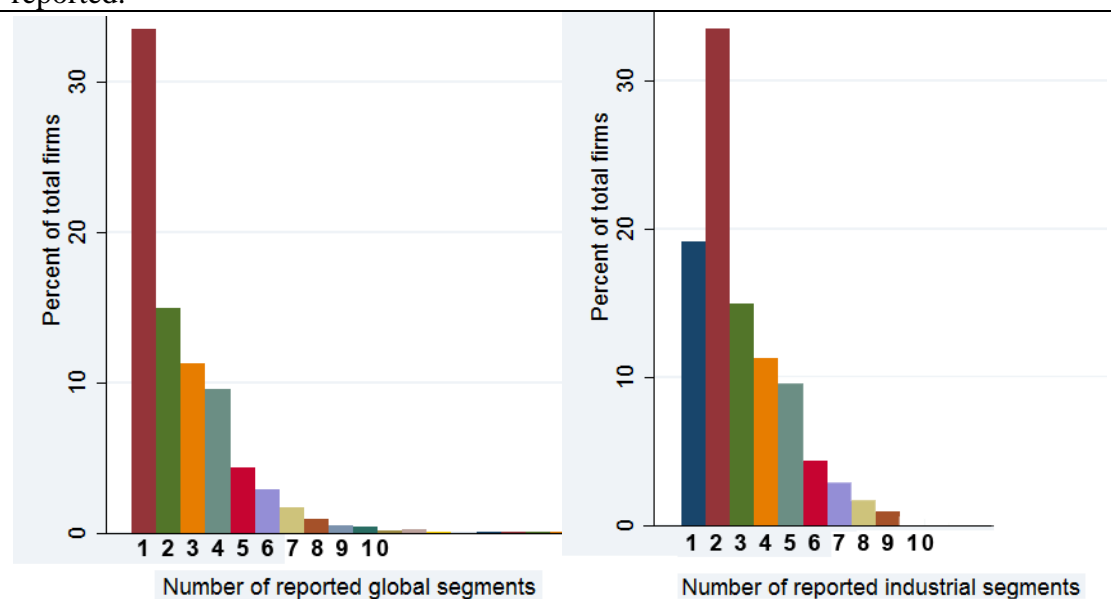
¹⁵¹ The relationship is negative when not controlling for country-effects and firm characteristics. See Geringer/Beamish/DaCosta (1989), pp. 116-117.

¹⁵² See Hitt/Hoskisson/Kim (1997), pp. 768-769.

related and unrelated diversification, but this is a very strong simplification. For example, according to Perlmutter (1969) international orientation can be distinguished between ethnocentric, polycentric and geocentric. Ethnocentric firms are home-country oriented, keep the all the authority and decision power in their headquarters, and apply the same operational standards in every country they operate in. This strategy works well for standardised products that need little adaptation in new markets, but can lead to disastrous failures if adopted by the wrong company. Polycentric firms are host-country oriented and adapt their operations very strongly to the local environment. They usually also reinvest the profits in the country they were generated in. Geocentric firms employ a mixed approach. They are able to find some optimal standards that can be applied to every country, which gives them competitive advantage over competitors. At the same time they are able to adapt their operations to local conditions.¹⁵³

Figure XII: Distribution of reported segments

Distribution of global and industrial segments reported by firms in the United States as a percentage of total firm-years. The percentage of firms reporting more than 10 global segments is 1%, while 10 is the maximum of industrial segments that can be reported.



Source: own illustration

Perlmutter's classification was the first and most famous, but several others followed later on. This should make it clear how there are several different ways of diversifying internationally and that valuation differences might not be peculiar to all types of diversification. An empirical analysis on this statement is however very

¹⁵³ See Perlmutter (1969), pp. 11-12.

complex, as firms do not define or disclose their type of international operations mode. These distinctions, however, need to be kept in mind when analysing results about the valuation of global diversification.

Summing up, the results of this thesis' empirical research, combined with past results on the topic, would suggest that the market favours multi-segment MNCs because of their internal efficiency and greater performance. Additionally, it has been found that in critical market conditions, such as a financial crisis, single-segment global firms are not perceived as unfavourably as during normal market conditions, possibly due to the risk-reducing effects of diversification.

10. Conclusion

The aim of this master's thesis was to assess if the market value of diversified firms significantly differs from that of focused firms, not only on an industrial but also on a global level, distinguishing between *related* and *unrelated* diversification and examining the different effects of the diversification types. The first part of the thesis offered an in-depth overview of the extensive literature on the topic, starting from the studies of the early 1990s, which claimed that diversified firms are value-destroying, and going to the most recent studies, which questioned the methodology of older studies and, in some cases, found that diversified firms can trade at a premium.

The different methodological approaches that have been used in the past to measure the premium/discount of diversified firms, based on which the method of this thesis has been built and developed on, have also been presented. Several theoretical reasons for the existence of multi-segment and multinational firms have been illustrated and numerous reasons to justify the discount or premium have been examined, explaining why corporate diversification is still a very actual and relevant topic, both for the academic and the corporate fields.

It has also been argued why the financial crisis is a relevant topic regarding corporate diversification, despite the current deficiency of relevant research on the valuation effects of different types of diversification during the crisis; it has been illustrated how the financial and economic events could have impacted multibusiness and multi-segment firms and their value.

The empirical results presented throughout chapters 5 to 7 point out that, between 1997 and 2012, industrially diversified firms have been trading at a premium of 22.5% compared to focused firms, while globally diversified firms have not. The combination of industrial and global diversification has been found to yield an additional premium of

9.2%. This positive effect is even stronger for firms that diversified into unrelated industries after the crisis, since firms that operate in related industries only have been found to be trading at a 27% discount compared to firms that operate also in unrelated industries. It has also been discovered that the premium for industrial diversification increases with the number of segments a firm reports to be operating in. This, however, is true only for industrial diversification, because the opposite effect can be observed for the number of reported global segments.

The impact of the financial crisis has been that of increasing the premium for industrial diversification and eliminating the discount for global diversification after 2008. The discount for related diversification also appears significant only after 2008. These results suggest that the crisis may have increased investors' risk awareness, who therefore seem to prefer safer investments into firms that benefit from non-perfectly correlated and less volatile cash flow streams, compared to the greater returns of focused firms, which are more subject to the unsystematic risk of their industry and country.

Overall, however, there is no univocal valuation of diversification, as the value of diversified firms depends on the type of strategy they have chosen. It appears, however, that the valuation of all types of diversification has improved during the financial crisis (i.e. more positive or less negative).

The empirical findings have also been interpreted from an accounting perspective in chapter 8. It has been discussed how earnings management can explain the existence of a diversification discount, especially for cross-border diversification, where managers have greater leeway and greater possibility of hiding information from investors. On the other hand, it has been considered how industrially diversified firms benefit from lower average cost of capital, due to the risk-reducing effect of their diversified cash flow streams. This has been used as an argument in favour of the existence of a diversification premium (which has not been found for global diversification). It has also been illustrated how diversified firms have a greater propensity towards expansion through acquisition and how this could help explaining the discount found by studies using Tobin's q as a measurement for comparing firm value.

Chapter 9 adds additional insights from a strategic and international business point of view. The different theories explaining the reasons for internationalisation have been presented and discussed, from Coase's market imperfection theory to Buckley and Casson's internationalisation theory and Dunning's eclectic paradigm. The relation between diversification and market entry mode has been described and it has been

emphasised how the different combinations of diversification strategies and host-country entry modes are significant for a firm's internationalisation approach.

While this thesis does not have the ambition to offer the ultimate answer to the valuation effects of corporate diversification, it has demonstrated that this strategy can be beneficial in certain circumstances and in determined economic conditions. The widespread adoption of a diversified expansion strategy among US firms and the growing fraction of diversified firms over the recent years emphasises the importance of this phenomenon. Since previous research found different performance for different international expansion modes, additional research is needed to further examine how internationalisation strategies affect the valuation of globally diversified firms.

11. Appendix

A1)

Table XVIII: Excess value using difference and averages

Sample of 32,136 Firm-Years between 1997 and 2012. Excess Value 1 has been calculated as *firm's Tobin's q* – *imputed q* using **average** single-segment values

		N	Mean	Std. Deviation
Domestic Only	Single Segment	14171	-0.0049	1.2012
	Multi-segment	2060	0.2122***	0.7202
Multinational	Single Segment	11997	-0.1188***	1.4082
	Multi-segment	3908	0.0822***	0.9154

Table XIX: Excess using logarithm and averages

Sample of 32,136 Firm-Years between 1997 and 2012. Excess Value 1 has been calculated as $\ln\left(\frac{\text{firm's Tobin's } q}{\text{imputed } q^+}\right)$ using **average** single-segment values

		N	Mean	Std. Deviation
Domestic Only	Single Segment	14171	-0.1385***	0.5179
	Multi-segment	2060	0.2345***	0.5921
Multinational	Single Segment	11997	-0.1646***	0.5939
	Multi-segment	3908	0.1659***	0.6691

Table XX: Excess value using difference and medians

Sample of 32,136 Firm-Years between 1997 and 2012. Excess Value 1 has been calculated as *firm's Tobin's q* – *imputed q* using **median** single-segment values

		N	Mean	Std. Deviation
Domestic Only	Single Segment	14171	0.2249***	1.2772
	Multi-segment	2060	0.3604***	0.6703
Multinational	Single Segment	11997	0.1889***	1.3757
	Multi-segment	3908	0.2832***	0.8225

A2)

Table XXII: Correlation Matrix of Principal Regression Variables

	EV4	Only Ind	Only Geo	Both	Crisis	Related	Tot Cap	Debt ToCap	Capx ToSales	EBIT toSales	RD toSales	Adv ToSales	Ind Size	Ind Gwt	Geo	
EV4	1.0000															
OnlyIndustrial	0.1879	1.0000														
OnlyGeographic	0.0114	-0.1881	1.0000													
Both	0.1399	-0.0526	-0.3018	1.0000												
Crisis	-0.0081	0.0046	0.0944	0.0451	1.0000											
Related	-0.1917	-0.4624	0.2953	-0.6300	-0.0354	1.0000										
TotCap	0.1055	0.0650	-0.0151	0.1968	0.0375	-0.2182	1.0000									
DebtToCap	-0.1614	0.0973	-0.2119	0.0120	0.0152	-0.0621	-0.0422	1.0000								
CapxToSales	-0.0003	-0.0098	-0.0053	-0.0227	-0.0254	0.0289	0.0426	0.0925	1.0000							
EBITtoSales	0.0938	0.0299	-0.0020	0.0645	0.0651	-0.0540	0.1047	0.0362	-0.2237	1.0000						
RDtoSales	-0.0113	-0.0838	0.2168	-0.0438	-0.0016	0.0718	0.0107	-0.1788	0.0461	-0.5133	1.0000					
AdvToSales	0.0392	-0.0236	-0.0630	-0.0369	-0.0704	0.0360	0.0072	-0.0073	0.1077	-0.2367	0.0211	1.0000				
IndGwt	-0.0196	0.0016	-0.0643	-0.0368	-0.3438	0.0237	0.0039	0.0120	0.0064	0.0129	-0.0235	0.0148	1.0000			
IndSize	0.0116	-0.0304	0.1949	0.1931	-0.0739	-0.0974	0.0540	-0.1555	-0.0833	0.0657	0.0900	-0.0470	-0.2151	1.0000		
Ind	0.0302	0.0267	0.2618	0.2273	0.1659	-0.1623	0.1019	-0.1824	-0.0876	0.0299	0.1611	-0.0346	-0.1585	0.6871	1.0000	
Geo	-0.0120	-0.0807	0.4333	0.2332	0.2178	-0.0952	0.0604	-0.2369	-0.0471	-0.0123	0.2325	-0.1099	-0.1792	0.6310	0.7076	1.0000

A3)**Table XXIII: NAICS Codes**

Code	Industry Title
11	Agriculture, Forestry, Fishing and Hunting
21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Services (except Public Administration)
92	Public Administration

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