Corporate Diversification Profile and Firm Value

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Abstract

In this study, we investigate the performance of diversification profile strategies, as indicated by single-time and multi-time corporate diversification activities. We find that diversification significantly reduces shareholders wealth relative to single-segment firms. However, the value destruction is driven by firms that diversify one-time from single-segment to multiple-segments. In contrast, firms that diversify one-time from multiple-segments to multiple-segments experience statistically insignificant value destructions, while firms that diversify multiple-times experience a value creation. Finally, we also find that diversifying firms that do not change the number of their segments trade neither at a discount nor at a premium relative to single-segment firms. Our findings suggest that aggregating diversifying firms and ignoring diversification profile may lead to the controversial conclusion that corporate diversification destroys value, whatsoever.

Keywords: Restructuring, Diversification, Singe-time diversifiers, Multi-time diversifiers, Excess value, Performance.

JEL Codes: L25, G34

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1. Introduction

Firms undertake, quite frequently, multiple diversification (investment) decisions to implement their growth strategy by means of expanding their business scope in new (distinct) lines of businesses [i.e. see Schipper and Thompson (1983), Montgomery (1994), Martin and Sayrak (2003), Villalonga (2004)]. For instance, some of the largest America's corporations, such as Nippon, Sanofi-Aventis, Posco, and several other firms, have engaged in extensive diversifications during the last decade that has allowed them to shape their corporate diversification profile that suits best to their operations. Despite the prevalence of such multiple diversifications, surprisingly, little is yet known about the performance of diversification activity.

In this study, we investigate whether the market rewards diversification profile, differently. Our study builds on and expands prior literature on corporate diversification performance.[1] Early studies, for instance, find that diversification destroys shareholders' wealth, the so-called diversification discount [Lang and Stulz (1994), Berger and Ofek (1995)]. Several researchers attribute the presence of the diversification discount to agency problems either between managers and shareholders [i.e., Amihud and Lev (1981), Jensen (1986), Shleifer and Vishny (1989), Hoechle et al., (2009)] or between corporate headquarters and divisional managers [i.e., Rajan et al. (2000), Scharfstein and Stein (2000)]. A different strand of the literature, however, challenges the existence of a discount and rationalizes the fact that many firms remain diversified or even decide to diversify further

[1] Corporate diversification in this study refers to firms that begin as a single-segment business and subsequently increase the number of their business-segments either only one-time or multiple-times at different time-instances, combining in that way business units that operate in different industries (at a four digit SIC level) under the common control of a single firm. In that respect, prior studies assess corporate diversification performance by comparing the market value of firms that operate multiple-segments to the value of a portfolio of stand-alone firms operating in the same industries as the diversifying firm's divisions [see, among others, Berger and Ofek (1995), Graham et al. (2002), Campa and Kedia (2002), Martin and Sayrak (2003)], a measure known as *excess value*.

[see discussions in Campa and Kedia (2002), Andreou et al., (2010)]. Prominent explanations of the discount, among others, refer to measurement errors [Whited (2001), Villalonga (2000)], differences in firm-risk due to the value bias of corporate debt [Mansi and Reeb (2002)], and failure to control for the endogenous nature of the diversification decision [Graham et al. (2002), Campa and Kedia (2002)].[2] However, this literature focus on the average performance of diversifying firms by investigating the cross-sectional performance between diversified (multi-segment) and non-diversified (single-segment) firms without distinguishing between diversifiers in terms of their strategy or diversifying history. In this study, we confirm the importance of diversification profile in explaining diversification performance.

Specifically, the findings suggest that the market rewards differently multi-time diversifications relative to the performance of single-time diversifications. Consistent with prior literature [e.g., (Berger and Ofek (1995), Campa and Kedia (2002)], when we compare excess value before firms diversify with excess value after firms diversify (without conditioning on the diversification profile of each firm), we find *on average* that diversification significantly reduces shareholders wealth relative to single-segment firms. However, when conditioning on each firm's diversification profile, our results reveal that the destruction in shareholders' value is driven only by firms that diversify for the first-time from one-segment to multiple-segments, which on average exhibit a value destruction equal to -6.9%. In contrast, firms that diversify one-time from multiple-segments to multiple-segments exhibit statistically insignificant value destructions while firms that diversify multiple-times realize a value creation equal to +5.2%. We attribute this novel empirical evidence to the development of capacity for organizational learning that helps this type of firms to foster

[2] For a survey of the corporate diversification literature, see, Martin and Sayrak (2003), Kuppuswamy and Villalonga (2010) and Andreou et al. (2010).

change experience. Our findings fit well with theoretical and empirical evidence from the business and strategic management point of view; for instance, Hayward (2002) organizational learning perspective elaborates on how the nature, performance and timing of a firm's (past) acquisition experience helps it to learn how to select the right (future) acquisition. Our results are also consistent with practitioners view suggesting that prior experience in managing multiple-segment firms and/or the implementation of diversification profile strategies in the past eliminate the adverse effect of corporate diversification [e.g., Shulman (1999), Heuskel, Fechtel and Beckmann (2006)]. Finally, we also find that diversifying firms that do not change the number of their segments trade neither at a discount nor at a premium, relative to single-segment firms. This evidence is consistent with conceptual models suggesting that corporate restructuring is, likely, a response to exogenous changes in the firm's environment that also affect firm value [Campa and Kedia (2002)]. Poor firm value, in turn, alters the benefits/costs from a potential restructuring. Since firms that do not change the number of their segments performs similarly with single-segment firms, our findings suggest that their benefits/costs are in equilibrium. Overall, this evidence has been missed by extant empirical research, although, it has very strong practical implications since, it can help us rationalize the existence of many U.S. firms that have persist in maintaining highly diversified structures.

A methodological novelty of this study is that, unlike previous studies that use cross-sectional analysis to investigate the impact of diversification on firm value, it instead employs a time-series analysis [see discussions in Andreou *et al.,* (2010)]. Adding the time-series dimension allows us to model separately the before and after diversification excess firm value in order to alleviate endogeneity concerns that would complicate, otherwise, the cross-

sectional analysis of firm's excess value.[3] Furthermore, any methodological problems that might arise during the estimation of the discount [e.g. Whited (2001), Mansi and Reeb (2002)] are very unlikely to explain time-series changes in the discount since methodological problems should affect the discount likewise both, before and after the decision to diversify. In that respect, compared to the limiting nature of the cross-sectional analysis, our methodological setting allows us to assess diversification performance per diversification profile.

The rest of the study is organized as follows: The next section briefly describes relevant literature and the background of the study. Section 3 outlines the research design while section 4 presents the empirical results. Finally, section 5 concludes the study.

2. Background of the study

Corporations, often engage in multiple diversifications to execute their growth plan by expanding their business scope [i.e. see Schipper and Thompson (1983), Montgomery (1994), Martin and Sayrak (2003), Villalonga (2004)]. Surprisingly, though, little is yet known about the performance of corporate diversification activity, per se. Most of the previous studies in financial economics [e.g., Lang and Stulz (1994), Berger and Ofek (1995), and Villalonga (2004)] rely on cross-sectional analysis to examine the *average* performance of diversified firms once they are diversified [Montgomery (1994), Martin and Sayrak (2003)], without conditioning on the number of individual diversification events a firm undertakes. However, when firms engage in multiple diversification decisions to expand their business scope, the performance of each individual diversification decision might be different, in other words, it

[3] Kuppuswamy and Villalonga (2010) emphasize endogeneity and self-selection biases in prior studies that have been shown to completely distort inferences regarding the diversification discount behavior [see also, Campa and Kedia (2002), Villalonga (2004)].

is possible to depend on the profile of diversification that is a function of the past diversification strategy that the firm has experienced so far.

From a management and business perspective, there is evidence to suggest that corporate expansion via acquisitions or internal growth might foster learning and change experience. Specifically, prior diversification experience may improve firm's ability, through (repetitive and accumulative) organizational learning, something that might improve the performance of future diversification events [i.e. Haleblian and Finkelstein (1999)].[4,5] In this vein, managers and workers with experience in a variety of environments are more productive than workers without such experience [Walsh, (1995), Barkema and Vermeulen (1998)]. Likewise, Hayward (2002) formalizes an organizational learning perspective to examine how the nature, performance and timing of a firm's acquisition experience helps to learn how to select the right acquisition. Qian *et al.* (2010) argue that multinational firms that pursue greater intra-regional diversification accumulate benefits from learning at a reduced cost, and realize efficiency gains associated with greater economies of scale, something that likely enhance firm performance. Hitt et al. (1998) report that prior experience in implementing change and corporate restructuring helps firms that expand their operations to achieve integration (with the new business units) more rapidly and effectively. Finally,

[4] Organizational learning might be actions related to ways that diversified firms distribute (efficiently) capital allocation between business units, employ compensation schemes that are tied to the performance of the firm as a whole, have developed subtle processes to monitor input/output performance to pursuit efficiency, can cope better with competition that they confront in their different business units, etc.

[5] There are pertinent ideas and theories that come from the strategic management literature. For instance, Amburgey and Miner (1992) discuss the existence of repetitive momentum that occurs when an organization repeats a specific previous action. They suggest that as an organization takes actions over time it develops routines and competencies which then become independent engines for further actions. As a result, an organization undertakes some activities, such as acquisitions, because the organization knows how to do them. Furthermore, Bergh and Lim (2010) discuss an organizational learning view point known as absorptive capacity, which has been used to help explain growth and expansionary behaviours such as mergers and acquisitions. According to absorptive capacity, '... managers and their firms have an ability to recognize the value of new knowledge, assimilate it, and apply it to commercial ends ... it assumes that learning is cumulative and learning performance is highest when the object of learning is related to what is already known'.

practitioners experience also suggests that serial acquirers enhance substantially shareholder wealth (i.e. see Frick and Torres (2002)).[6]

As discussed in Haspeslagh and Jemison (1991b), see also Haspeslagh and Jemison (1991a) and Hayward (2002), managing a multi-segment corporation allows managers to experience unique opportunities to learn as they move their firms into situations outside their regular strategic, organizations, and cultural contexts. In that respect, diversified firms develop capacity for organizational learning that helps them foster change experience, as well as, flexibility and adaptation skills on how to handle (their existing) diversified corporate structures and how to facilitate better management of future diversification decisions/activities [see also, Hitt et al., (1998)]. Based on this premise, we *do not expect* to observe any value-destruction (i.e., absence of diversification discount) for firms that pursue diversified corporate structures, that is, either for firms that (already) operate in multiple-segments and choose to diversify even further, or for firms that choose to maintain a constant diversified structure.

On the contrary, firms that choose to move (for the first time) from one-segment to multiple-segments lack diversification activity that would otherwise allow them to learn about the diversification strategy being pursued. Further, the company's overall organizational capabilities [Haspeslagh and Jemison (1991a, 1991b)], lack both, the specialist knowledge about how to select and integrate any acquisition type [Hayward (2002)], and the enhanced knowledge on how to assess costs/benefits arising from diversification [Lichtenstein et al. (1982)]. In that respect, Hitt et al. (1998, pg. 109) propose that without such (organizational) learning, chaotic conditions limit control over implementation

[6] In a similar context, Aktas et al. (2011) consider the learning process at the CEO level (in contrast to organizational learning that is most relevant to our study) to report that (prior) experience of the CEO in deal making affects the learning process, and both rational and hubristic (i.e., overconfident) CEOs learn on average from market signals.

processes, leading to poor financial performance and a reduction in innovative activity. Therefore, we *expect* firms that move from one-segment to multiple-segments and lack prior diversification activity to exhibit a pronounced value-destruction to take place (i.e., presence of diversification discount).

3. Research design

Measuring the value of diversification

To investigate whether diversification increase or decrease firm value, we use the excess value measure, as developed by Berger and Ofek (1995). Excess value compares a firm's actual value to its imputed value if each of its business segments operated as single-segment companies. The actual value is the sum of the market value of equity and the book value of debt. The imputed value is the sum of the imputed segment values, obtained by multiplying segment sales with the median ratio of market value to sales of single-segment firms in the same industry. The industry definition is based on the narrowest SIC grouping that includes at least five firms and sufficient data for computing the ratios. Excess value, measures the gain or loss from diversification and is defined to be the natural logarithm of the ratio of company's actual value to its imputed value.[7]

Sample selection criteria

[7] Similar with prior literature, we focus on a sales multiplier rather than on an asset multiplier since there is a strong consensus among prior literature that asset multiplier is subject to two severe problems. First, unlike sales that are almost fully allocated across business segments, the segments' sum of assets in Compustat Industrial Segment (CIS) database is usually (significantly) less than the total firm's assets from Compustat Industrial Annual (CIA). This problem arises from unallocated assets across the business segments and is considered as a manifestation of greater managerial discretion when allocating assets (i.e. see Berger and Ofek (1995)). Since there is no conventional approach to circumvent this problem, any (empirical) attempt to ratify it would either lead to the elimination of a large number of observations or to the re-allocation of the deviation between the sum of its segments' assets and total company assets among the business segments, which is ad-hoc and could potentially bias the computation of the excess values. Second, focusing on the sales multipliers allows us to avoid potential valuation problems related to purchase versus pooling accounting of acquisitions that matters when using asset multipliers, and under certain occasions, can induce a negative bias into excess value calculations (i.e. see Graham *et al.*, (2002), footnote 2).

We estimate excess value for all the companies included in both the Compustat Industrial Segment (CIS) and Compustat Industrial Annual (CIA) databases during the period 1998-2008.[8] Similar to Berger and Ofek (1995), Campa and Kedia (2002), Graham et al. (2002), and Santalo and Becerra (2008), we exclude firm-years where companies report segments in the financial sector (SIC 6000-6999), firm-years with company sales less than $20 million, firm-years with a missing value of total capital, and firm-years where the sum of segment sales is not within one percent of the firm's total sales.

Furthermore, following Andreou *et al.* (2010) we eliminate firm-years for firms that do not report four-digit SIC for their entire business segment when they are associated with a non-zero sales figure, but we keep firm-years when they are associated with zero sales figures.[9,10] Such firm-years do not affect the computation of the imputed value and increases substantially the number of firm-years by 19.6%.[11]

Finally, we also exclude firm-years with absolute excess value greater than 1.386 and firm-years with missing value in any of the main control variables we use in our analysis. The final sample for the period 1998 to 2008 includes 8,028 firms and 39,134 observations, of which 4,222 (19,398) are single-segment and 3,806 (19,736) multi-segment firms (observations). All previous figures refer to sample sizes after eliminating missing values for the control variables. We use this full sample to replicate the analysis of Berger and Ofek (1995) and Campa and Kedia (2002) (shown in Table 3) to ensure that our findings are not driven by any differences in sample periods or methodology treatments. As discussed in

[8] We perform our analysis using data after 1998 because during that year SFAS 131 superseded the SFAS 14. SFAS 14 is criticized for inconsistent segment definitions and segment underreporting (Villalonga (2004b)). SFAS 131 partially address these caveats and generally business segment data are presumed more accurate after 1998 (Berger and Hann (2003)). Therefore, our sample is homogeneous with respect to the accounting standard that governs the reporting of business segments data.

[9] Zero sales figures may arise from managerial discretion in reporting segment sales and subsequent restatement of firm's financial results.

[10] Note that the restriction that the sum of segment sales should be within one percent of the firm's total sales justifies the reliability of this treatment.

[11] As we show later in Table 2, the diversification discount, as documented by prior studies, is robust to the inclusion of these additional observations.

Graham et al. (2002), nearly two-thirds of these firms increase their number of segments via acquisitions, while the remaining one-third increase their number of business segments mainly through internal expansion.

To perform our analysis of interest, we use a subsample that consists of all single-segment firms and all diversifying firms. Diversifying firms (DF) may diversify one or multiple times. We include both types of firms, in particular, those that diversify one-time from single-segment to multiple-segments, those that diversify one-time from multiple-segments to multiple-segments and those that diversify multiple times.[12] This sample includes 5,680 firms and 25,996 observations, of which 4,222 (19,398) are single-segment and 1,458 (6,598) multi-segment firms (observations). All previous figures refer to sample sizes after eliminating missing values for the control variables.

Defining diversification profiles

The aim of the study is to investigate the impact of corporate diversification profiles on firm performance. To do so, it is crucial to identify the initiation of a diversification profile strategy since firms are expected to initiate diversification when the benefits outweigh the costs i.e. the net benefit is positive [i.e. see Campa and Kedia (2002)]. Note that some firms may calibrate net benefits at an individual diversification level but some other firms do so at a diversification profile strategy level. Therefore, a proper evaluation of the impact of diversification strategies on firm performance should consider the net benefits of the diversification profile strategy since the inception of the strategy. We define a diversification profile strategy depending on firm's diversification activity and we measure diversification profile strategy performance from the first incidence of diversification during the period of

[12] Comment and Jarrell (1995), John and Ofek (1995) and Berger and Ofek (1996) provide evidence that refocusing firms experience increases in valuation. To avoid such confounding impacts on firms' valuation we exclude all refocusing firms, in particular, those that refocus one-time from multiple-segments to single-segment, those that refocus one-time from multiple-segments to multiple-segments and those that refocus multiple times.

investigation. Such classification is consistent with the hypothesis that each individual diversification contains an option to expand in due time, should the prior experiences/knowledge and/or environmental conditions are favorable sometime in the future. Thus, firms that develop such diversification profile strategies are expected to be more successful relative to firms that do not. Despite good performance might be endogenous in our classification, our analysis is useful since it demonstrates that aggregating diversifying firms and ignoring diversification profile strategy may lead to the controversial conclusion that *all* corporate diversification incidents destroys values, whatsoever. Repetitive diversification decisions, though, foster organizational learning by experience for the subsequent diversification activities. Therefore, testing for learning is tantamount to testing for the presence of a relation between the persistence of diversification decisions and firm performance.

Similar to Campa and Kedia (2002), we classify diversified firms into four main categories: (a) firms that diversify one-time from one-segment to multiple-segments (Cat. #1 firms) (b) firms that diversify one-time from multiple-segments to multiple-segments (Cat. #2 firms), (c) firms that diversify multiple-times (Cat. #3 firms) and (d) multiple-segments firms that do not change the number of segments during the period of investigation i.e. always diversified firms (ADC firms). While in the first and the second categories firms diversify one-time only, differentiating between those firms with experience in managing multiple-segments (Cat. #2 firms) from those firms without experience (Cat. #1 firms) is crucial since it might affect their diversification performance. In this respect, the professional press and the management literature suggests that managers may learn from prior experiences [i.e. Hayward (2002), see also Bergh and Lim (2010) who discuss ways that cumulative and repetitive experience of diversification activity might positively affect firm's performance]. The third category of firms allows us to assess the impact of multiple diversifications, in

relation to single diversification. Multiple diversifications may represent a strategic choice of firms to grow in order to exploit potential synergies and benefit from economies of scope. Along this process firms are expected to develop competences and diversification capabilities that may make such strategies valuable for shareholders. Finally, the last category, ADC firms, allows us to assess whether always diversified firms trade at a discount relative to single-segment firms. Evidence in this respect should be helpful to answer why these firms remain diversified, which is an issue of vital importance for those that dispute the existence of a discount.

4. Empirical results

In this section, we investigate the impact of corporate diversification profile strategy on firm value. We first report information about the profile strategy of diversifying firms. Then, we document the diversification discount in our sample for comparison purposes with prior literature. Finally, we compare the firm value before they diversify with firm value after they diversify (including the year of diversification) for different diversification profile strategies.

The profile of diversifying firms

Table 1 reports the distribution of firms by diversification profile strategy during the period 1998-2008.[13] The largest group consists of 4,222 firms that operate in a single-segment throughout the period of investigation with 19,398 firm-year observations. The rest of the firms are classified in two broadly defined categories: Firms that diversify and firms that operate in multiple-segments but do not change the number of segments (i.e. ADC

[13] To ensure consistency among our univariate and multivariate analysis we exclude firm-year observations with missing data in independent variables based on the extended model of Campa and Kedia (2002).

firms), throughout the period of investigation.[14] Largely, 1,168 firms diversify (5,803 firm-years) while 290 firms are always diversified (795 firm-years observations). Among diversifying firms, 565 firms (2,637 firm-years observations) do so one-time from one-segment to multiple-segments, 313 firms (1,535 firm-years observations) do so one-time from multiple-segments to multiple-segments and 290 firms (1,631 firm-years observations) diversify multiple times.

Insert Table 1 here

Next, we compare the characteristics of diversifying firms before the diversification with single-segment firms. Campa and Kedia (2002), argue that firm specific characteristics may relate to the (endogenous) decision to diversify and particularly with the benefits/costs that arise from diversification. Table 2 reports information on firm size, sales, investments, profitability and leverage before firms diversify. Compared to single-segment firms, diversifying firms are generally bigger with more sales and greater profitability, but the distributions are skewed as indicated by the differences in mean and median figures per diversification profile strategy. With regard to investments, firms that diversified one-time from one-segment to multiple-segments and firms that diversified one-time from multiple-segments to multiple-segments invest less than single-segment firms. In contrast, the median firm that diversifies multiple-times invest more than single-segment firms, consistent with a strategy to expand business scope through diversification. Furthermore, the leverage of diversifying firms varies per profile strategy relative to single-segment firms. Finally, there are also significant differences between always diversified firms with single-segment firms. Always diversified firms have greater sales, fewer investments, greater profitability, and rely more on leverage.

[14] Note that to classify the firms per diversification profile we use all available (raw) data including the firm-year observations that were excluded due to sample selection criteria.

Insert Table 2 here

In summary, firm characteristics before diversification differ relative to single-segment firms across different diversification profile strategies. Firm characteristics, however, may affect both firm value and firm's decision to diversify one or multiple times. Therefore, a proper evaluation of the impact of corporate diversification on firm value should account for firm characteristics [as suggested by Campa and Kedia, (2002)], as well as the firm's diversification profile strategy that has been widely neglected by prior literature. We consider differences in firm characteristics using a time-series analysis that allows us to compare firm performance before diversification with the firm performance after diversification, per diversification profile strategy.

Documenting the diversification discount

In this section, we replicate the analysis of Berger and Ofek (1995) using cross-sectional data to ensure that our findings are not driven by any differences in sample periods or methodology treatments. Table 3 reports coefficient estimates of pooled OLS regressions of excess value as a function of a dummy variable (DCY) that equals one for each year the firm operates in multiple-segments, and zero otherwise, company size (log of total assets - Log TA), profitability (earnings before interest and taxes over sales - EBIT/SALES), and investments (capital expenditures over sales - CAPX/SALES).

Regression model (1) reports estimates for the period 1998-2008. The coefficient estimates of the control variables are consistent with prior literature [e.g., Berger and Ofek (1995), Campa and Kedia (2002)]. Company size and profitability are positively related to excess value while investment is not statistically different from zero. Turning to the coefficient of interest, consistent with prior findings, diversification discount (DCY) is equal

to -8.5% (p-value<0.01) indicating that diversification is a value-destructive corporate strategy.[15]

Next, we examine the robustness of the estimated discount to the inclusion of additional control variables based on the extended model of Campa and Kedia (2002) that accounts for firm characteristics. Regression model (2) reports estimates of the discount after controlling for past company profitability (EBIT/SALES lag1 and lag2), investments (CAPX/SALES lag1 and lag2), and company size (Log TA lag1 and Log TA lag2. We also include the ratio of long-term debt to total assets (LEV). Finally, we control for potential non-linear effect of company size by including company size squared (ASS2). Results show that compared to the median single-segment company, there is evidence that firms with high past investments are valued higher, though the coefficients are only marginally significant (p-value<0.10). There is no evidence that past profitability is valued higher than the median single-segment company. Similarly, the coefficient of the long-term debt to total assets is statistically indistinguishable from zero. Finally, the coefficient of the squared company size is negative (p-value<0.01), consistent with a diminishing effect of company size on excess value, as company size increases. Turning to the coefficient of interest, as expected, the estimated discount reduces but only slightly and now equals -8.0% (p-value<0.01).

Regression models (3) and (4) reports similar regression model estimates but after excluding firms that refocused during the period of investigation. Prior studies document that refocusing affects corporate value, therefore including these firms into the sample may introduce bias into the parameter estimates. The discount remains highly significant and ranges between -7.7% (p-value<0.01) and -6.8% (p-value<0.01), depending on the control variables included in the regression.

[15] Prior literature documents substantial variation in the discount across time (i.e. see Servaes (1996), Campa and Kedia (2002)).

Insert Table 3 here

Summarizing, like in Berger and Ofek (1995) and Campa and Kedia (2002) – see also discussions in Andreou *et al.* (2010) – diversification discount is prevalent in our sample period and is robust to the inclusion of additional control variables as well as to the exclusion of refocusing firms.

Diversification profile and firm value

Table 4 reports estimates of the relation between diversification profiles and firm value. All regressions include year dummies and standard errors adjusted for clustering at the company level.[16] The dependent variable is the excess value while the independent variables are the following: a dummy variable that equals one if the firm diversifies and zero otherwise (DC), and a dummy variable that equals one if the firm operates in multiple-segments but does not change the number of segments throughout the period of investigation (ADC). We also include control variables based on the extended model of Campa and Kedia (2002).

Regression model (1) in Table 4 shows that compared to single-segment firms, firms that decide to diversify already trade at a discount of -3.8% (p-value<0.05). This finding, however, does not necessarily imply that diversification destroys firm value. Firms that diversify their operations might have larger or lower firm value compared to single-segment firms *before* diversification, thus this type of analysis can be misleading when trying to examine any value destruction caused by the diversification decision.

To address the former issue, in regression model (2), we examine whether firm value decreases after diversification takes place. Specifically, we include the Before Diversification Dummy (Before DC) that equals one the years before a firm becomes diversified, and zero otherwise. We also include the After Diversification Dummy (After DC), defined as a

[16] Following Petersen (2009), this estimation procedure controls potential bias in the estimates of standard errors when the residuals of a company are correlated across time and when the residuals of a company are correlated across companies.

dummy variable that equals one for the year the firm becomes diversified and in all subsequent years, and zero otherwise. For all diversifying firms, we define as diversification year the first incidence of diversification.[17] Both the Before and After Diversification Dummies equal zero for single-segment and always diversified firms (ADC). This type of setting, similar with prior literature, ignores the impact of different diversification profile strategies on firm performance. If diversification destroys firm value, then the estimated coefficient on the After Diversification Dummy should be significantly lower than the coefficient on the Before Diversification Dummy.

The results from regression model (2) in Table 4 show that diversification indeed destroys firm value. Diversified firms trade at a statistically insignificant premium of 1.4% before diversification but trade at a discount of -7.7% (p-value<0.01) after the diversification year. In the lower part of Table 4, we conduct a robust t-test to compare the performance of diversification before and after the diversification event (i.e., rows terms as 'Difference Before DC – After DC'). Results show that the difference between the After Diversification Dummies and the Before Diversification Dummies is -9.2% (p-value<0.01). Finally, similar with our findings in regression (1), always diversified firm's (ADC) trade neither at a discount nor at a premium relative to single-segment firms.

Next, we examine the impact of different diversification profile strategy on firm performance. In regression model (3), we perform a similar analysis but we decompose the impact of diversification on firm value across firms with different diversification profile strategies. Methodologically, we include a series of Before and After Diversification Dummy variables for each diversification profile strategy. Furthermore, in regression model (4), we perform a similar analysis but we include two lags of the excess value (Lag 1 and Lag 2

[17] For example, if a firm diversifies several times the after diversification dummy variable equals 1 the year the first diversification occurs and thereafter, and zero otherwise. Similarly, the before diversification dummy variable equals 1 the years prior to the first diversification, and zero otherwise.

Excess Value) into our models to control for unobserved firm characteristics that might affect the diversification decision.[18] Note that this procedure also reduces potential omitted variable bias such as poor corporate governance.[19] Results in both regression models, show that diversification destroys value only when firms diversify one-time from one-segment to multiple-segments. These findings are consistent with the hypothesis that these companies lose value from their (relative) inexperience in operating at a diversified status that are initially unfamiliar with, in terms of customers, suppliers, rivals etc. Consistent with our expectations, no such value destruction is observed neither for firms that diversify one-time from multiple-segments to multiple-segments (Cat #2) nor for firms which diversify multiple times (Cat #3). These findings may suggest that firms that are already diversified and choose to diversify even more have richer knowledge structures than those of firms that diversify only one-time. The greater diversity in the knowledge of managers and other workers aggregates to richer knowledge structures at the level of the firm [see further discussion in Walsh (1995) and Barkema and Vermeulen (1998)]. Relying on the strategic management literature [e.g., Amburgey and Miner (1992), Bergh and Lim, 2010], the performance of these firms is not adversely affected like the case of firms that diversify for the first time, since they

[18] We view this regression model specification as a robustness test that controls for any residual endogeneity bias that resides to the diversification decision and has not been mitigated by the time-series analysis employed. Campa and Kedia (2002) suggest that organization structure should be treated as an endogenous outcome that maximizes firm value. In that respect, lag excess value can be used as an instrument that encapsulates information of unobserved characteristics that relate to profiles and impact firms' values. The use of lag-excess value is further motivated by the findings of Ahn (2009), who finds that excess value has a prediction power on the survival of the diversification strategy (i.e., excess value is negatively related to the probability of refocusing).

[19] For instance, Hoechle et al., (2009) find that 25-30% of the diversification discount is related to poor corporate governance structure. Thus, to assess the robustness of lag excess values as variables that mitigate omitted variable bias, we use the index constructed by Gompers et al. (2003) to investigate the robustness of our findings with respect to poor corporate governance. The index is reported by the Investor Responsibility Research Center (IRRC) and consists of various publications (1998, 2000, 2002, 2004, and 2006). Following Gompers et al. (2003), we assume that between two consecutive publications, firms have the same index value as in the previous publication year. Untabulated results, but available upon request, reveal that when we don't include lag excess values, poor corporate governance is negatively related with excess value, a finding that is consistent with Hoechle et al., (2009). However, this relation does not affect our results as reported. By including both lag excess values and corporate governance index simultaneously into our regression analysis, the index becomes statistically insignificant, thus, providing support to our argument that lag excess values mitigate omitted variable bias concerns.

have developed competency in the process of making such type of corporate actions. Naturally, the (frequent) pursuit of diversifying decisions allows these competencies to be refined to better achieve economies of scope that translate to above-average performance - as attested by the 5.2% value-increase in regression model (4). In that respect, we can hypothesize that firms that engage in multiple diversification actions possess, at best, greater experience (and flexibility) at integrating different resources (e.g., manufacturing, transportation, distribution, etc) and capabilities (communication, coordination, managerial costs, etc) of their different business units [Haspeslagh and Jemison (1991)].[20] Firms that maintain diversified structures develop specialist skills to exploit their existing opportunities and generalist skills to better explore new ones [Hayward (2002)]. In the spirit of Bergh and Lim (2010, pg. 598), '… firms having more experience and higher absorptive capacity would be able to use their resources more effectively and leverage their greater ability to transform experience benefits than firms with less'.

Finally, firms that were always diversified neither trade at a discount nor at a premium, when compared to single-segment firms. Drawing inferences from the strategic management literature (e.g., Amburgey and Miner, 1992), we view these firms as being at a positional momentum state that occurs when an organization takes strategic actions that sustain its existing strategic position. When compared to firms that diversify only one-time, this group of firms most probably gains economies since they can best assimilate knowledge accumulated from previous diversification actions in order to improve operationally. For example, a firm that reached a diversified position through internal expansion has a strategic position of diversification that translates to competitive advantage compared to firms that

[20] The pursuit of greater scope through a diversification decision, allows firms to build up their experience towards the development of explicit knowledge that can exploit, in terms of value creation, in subsequent diversification actions. Such corporate actions are also related to the strategic momentum of the firms since it reveals their tendency to expand the emphasis and direction of prior strategic actions in current strategic behavior (Amburgey and Miner, 1992).

diversify only one-time or are in a pursuit of further diversification. These firms have probably reached a steady-state in their corporate scope where there is optimum competency at managing the firm's operations. Put differently, since this group of firms do not change the number of their segments and perform similarly with single-segment firms, our findings suggest that the benefits/costs are in equilibrium. All in all, this finding has significant implications for the empirical corporate diversification literature, since, while the vast majority of prior research has mainly attempted to address the impact of diversification on performance, it missed answering the more fundamental economic question of why highly diversified firms such as General Electric, 3M, Honeywell, etc, "have stubbornly and successfully stuck with their conglomerate structures" [Martin and Sayrak (2003, pg. 38)]. Finally, although it does not directly emerge from our data, in the spirit of Santalo and Becerra (2008) these might be either firms that face less competition, have greater power over their customers, are confronted with a limited range of challenges, or firms that have reached an optimal capital structure [Kuppuswamy and Villalonga (2010)].

Insert Table 4 here

Overall, our findings demonstrate the importance of diversification profile strategies in explaining diversification performance.

5. Conclusions

This study investigates the impact of diversification profile strategies on firm value by comparing the discount before firms diversify with the discount after firms diversify. Generally, the findings are consistent with the hypothesis that diversification destroys shareholders' wealth. For diversifying firms, however, the pattern is pronounced only when a firm diversifies from one-segment to multiple-segments. No such pattern is observed for

diversifying firms that further diversify either one or multiple times. Firms that are always diversified trade neither at a discount nor at a premium compared to single-segment firms.

Our finding contributes to the literature by demonstrating the impact of different diversification profile strategies on firm value. In particular, it accentuates on the idea that when organizations engage into persistent diversification decisions, prior experiences allow for increased execution effectiveness that helps to reduce any mistakes that could otherwise harm firm value. In other words, firms that have experience in operating multiple business segments learn from that and apply that learning to facilitate better management of subsequent diversifying decisions.

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Table 1

Distribution of firms by diversification profile strategy

This table presents the distribution of firms by diversification profile strategies. The sample includes all firms reported in Compustat during the period 1998-2008 that meet sample selection criteria described in the text. To classify firms into different categories we use all firm data before excluding firm-years due to sample selection criteria.

	Firm-years	Number of Firms
Firms that Diversified	5,803	1,168
Firms that diversified one-time from one-segment to multiple-segments	2,637	565
Firms that diversified one-time from multiple-segments to multiple-segments	1,535	313
Firms that diversified multiple-times	1,631	290
Multiple segment firms that do not change the number of segments	795	290
Single-segment firms	19,398	4,222
Total	25,996	5,680

Table 2

Summary statistics by diversification profile strategy

This table presents descriptive statistics for firms classified in different diversification profile strategies. Total assets and sales are measured in millions of dollars, CAPX/SALES is the ratio of capital expenditures to total sales, EBIT/SALES is the ratio of earnings before interest and taxes to total sales and LEV is the ratio of total debt to total assets. All variables are measured during the period before the diversification. *, ** and *** indicates 10%, 5%, and 1% level of significance, respectively.

	Total Asset (Millions)	Sales (Millions)	CAPX/SALES	EBIT/SALES	LEV (Debt/Assets)
	Mean Median N	Mean Median N	Mean Median N	Mean Median N	Mean Median N
Firms that Diversified	1,572.60 298.19*** 2,403	1,462.78 282.76*** 2,403	0.107*** 0.041 2,403	0.052*** 0.074*** 2,403	0.236 0.201 2,403
Firms that diversified one-time from one-segment to multiple-segments	1,092.89*** 261.55* 1,491	1,049.34*** 249.66*** 1,491	0.118** 0.041 1,491	0.038** 0.070*** 1,491	0.227** 0.169* 1,491
Firms that diversified one-time from multiple-segments to multiple-segments	2,785.80* 289.38*** 465	2,750.57 336.87*** 465	0.077*** 0.037** 465	0.060*** 0.073 465	0.259 0.260*** 465
Firms that diversified multiple-times	1,910.61 454.43*** 447	1,502.18 396.26*** 447	0.101*** 0.048** 447	0.088*** 0.089*** 447	0.240 0.228 447
Multiple-segment firms that do not change the number of segments	1,823.66 249.88 795	2,065.49** 249.30*** 795	0.085*** 0.037*** 795	0.038* 0.075** 795	0.276*** 0.227*** 795
Single-segment firms	1444.60 222.91 19398	1247.41 192.29 19398	0.137 0.041 19398	0.020 0.061 19398	0.246 0.189 19398

Table 3

Estimation of the diversification discount

This table reports coefficient estimates of Berger and Ofek (1995) regressions (BO). The dependent variable is the log of the ratio of total market value to imputed value using median industry multiplier (Excess Value). DCY is a dummy variable that takes the value of 1 when the firm operates in multi-segments and zero otherwise. Log TA is the natural logarithm of total assets, CAPX/SALES is the ratio of capital expenditures to total sales, EBIT/SALES is the ratio of earnings before interest and taxes to total sales, LEV is the ratio of total debt to total assets and ASS2 is the square of the log of total assets. Log TA lag 1 (lag2), CAPX/SALES lag 1 (lag 2) and EBIT/SALES lag 1 (lag 2) are one (two) lag values of Log TA lag, CAPX/SALES and EBIT/SALES, respectively. The t-statistics are reported in parenthesis below the coefficient. *, ** and *** indicates 10%, 5%, and 1% level of significance, respectively.

	BO 1998-2008 (1)	Extended BO 1998-2008 (2)	BO 1998-2008 (3)	Extended BO 1998-2008 (4)
	Full Sample		Excluding Refocusing Firms	
Const.	-0.446*** (-43.95)	-0.969*** (-37.31)	-0.489*** (-37.81)	-1.001*** (-29.63)
DCY	-0.085*** (-12.98)	-0.080*** (-12.61)	-0.077*** (-8.17)	-0.068*** (-7.42)
Log TA	0.069*** (41.88)	0.546*** (46.08)	0.080*** (36.33)	0.580*** (38.35)
CAPX/SALES	0.234*** (20.63)	0.124*** (10.98)	0.192*** (15.84)	0.089*** (7.38)
EBIT/SALES	-0.012 (1.27)	-0.040*** (-3.91)	-0.000 (-0.02)	-0.051*** (-4.38)
Log TA lag1		-0.176*** (-13.94)		-0.196*** (-12.94)
CAPX/SALES lag1		0.002* (1.78)		0.001 (1.55)
EBIT/SALES lag1		0.000 (0.76)		0.000 (0.58)
Log TA lag2		-0.129*** (-17.32)		-0.128*** (-14.57)
CAPX/SALES lag2		0.000* (1.87)		0.000* (1.91)
EBIT/SALES lag2		-0.000 (-0.34)		-0.000 (-0.15)
LEV		-0.002 (-0.19)		-0.016 (-1.39)
ASS2		-0.013*** (-20.80)		-0.014*** (-15.84)
No of observations	39,134	39,134	25,996	25,996
Adjusted R^2	0.0625	0.116	0.065	0.123

Table 4

Time-series analysis of the impact of diversification on firm value

This table displays coefficient estimates of the extended Berger and Ofek (1995) regressions as in Campa and Kedia (2002). The dependent variable is the log of the ratio of total market value to imputed value using median industry multiplier (Excess Value). DC is a dummy variable that takes the value of 1 when the firm diversifies and zero otherwise. The before DC dummy variable equals 1 before a firm diversifies and zero otherwise. The after DC dummy variable equals 1 after a firm diversifies and zero otherwise. The t-stat reported at the bottom, tests the null hypothesis that the after diversification dummy equals the before diversification dummy. Diversified firms are those that have diversified at least one-time and never refocused during the sample period. Cat. #1 firms diversify one-time from one-segment to multiple-segments, Cat. #2 firms diversify one-time from multiple-segments to multiple-segments, and Cat. #3 firms diversify multiple-times. ADC is a dummy variable that equals 1 for multiple-segment firms that do not change the number of segments and zero otherwise. Control variables are based on the extended model of Campa and Kedia (2002). Firms that both diversify and refocus are excluded from the sample. The t-statistics are reported in parenthesis below the coefficient. *, ** and *** indicates 10%, 5%, and 1% level of significance, respectively.

	Extended BO 1998 – 2008 (1)	Extended BO 1998 – 2008 (2)	Extended BO 1998 – 2008 (3)	Extended BO 1998 – 2008 (4)
Constant	-0.970*** (-15.28)	-0.965*** (-15.24)	-0.964*** (-15.22)	-0.190*** (-5.26)
DC	-0.038** (-2.16)			
Before DC		0.014 (0.64)		
After DC		-0.077*** (-3.62)		
Before Cat. #1			0.034 (1.22)	0.022* (1.78)
After Cat. #1			-0.097*** (-2.97)	-0.047** (-2.73)
Before Cat. #2			-0.018 (-0.42)	-0.013 (-0.60)
After Cat. #2			-0.083** (-2.28)	-0.021 (-1.38)
Before Cat. #3			-0.022 (-0.55)	-0.046** (2.58)
After Cat. #3			-0.052 (-1.47)	0.006 (0.37)
ADC		-0.033 (-0.80)	-0.034 (-0.82)	0.033 (1.63)
Control variables	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Lag 1 Excess Value	No	No	No	Yes
Lag 2 Excess Value	No	No	No	Yes
Difference Before DC – After DC		-0.092*** (-3.61)		
Difference Before Cat. #1 – After Cat. #1			-0.131*** (-3.61)	-0.069*** (-3.36)
Difference Before Cat. #2 – After Cat. #2			-0.065 (-1.38)	-0.007 (-0.31)
Difference Before Cat. #3 – After Cat. #3			-0.031 (-0.69)	0.052** (2.27)
No of observations	25,996	25,996	25,996	21,544
R^2	0.127	0.128	0.128	0.584