Received 18 December 2012
Revised 21 May 2013
24 July 2013
Accepted 22 September 2013

Corporate diversification and firm value: evidence from emerging markets

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Abstract

Purpose – The purpose of this paper is to investigate the impact of corporate diversification on firm value in a sample of nine emerging markets including Brazil, Chile, Indonesia, Malaysia, Philippines, Poland, South Africa, Thailand, and Turkey. For the purpose of this study, a company is classified as diversified when it is operating in two or more lines of business defined by the two-digit SIC codes.

Design/methodology/approach – Employing panel data from 1,568 companies for the period 2005-2010, this paper estimates both a fixed effects model and a dynamic generalized method of moments model. Data are collected both at company level and segment level within each firm.

Findings – Overall, analysis results suggest that, for the period from 2005 to 2010, diversified firms in emerging markets are valued more compared to single-segment firms operating in similar industries, providing support for diversification premium.

Originality/value – The effect of diversification on company value in emerging markets is an important managerial and public policy concern. Although the literature on developed country diversified firms is rich, only a few studies have examined diversification-value relationship in the context of developing countries. Furthermore, most previous research on the value effects of corporate diversification in emerging markets has taken the form of case studies within countries and concentrated on the 1990s. This paper tries to fill these gaps by using a larger sample and more recent data and methodology.

Keywords Emerging markets, Firm value, Corporate diversification, Diversification discount and premium

Paper type Research paper

1. Introduction

Corporate diversification, in its broadest sense, can be defined as the entry of an existing company into a new business activity involving new products and markets (Brost and Kleiner, 1995). While diversification continues to be a growth strategy for firms, little consensus exists on the relationship between diversification and firm value. Despite the substantial number of studies on the subject, no theoretical or empirical agreement exists among researchers (Palich *et al.*, 2000).

The objective of the present paper is to investigate the impact of corporate diversification on firm value in a sample of emerging markets. The results are expected to be significant since the effect of diversification on company value in emerging markets is an important managerial and public policy concern. The diversification trend which dominated strategies in the developed countries during the period 1950-1980 has been replaced by a trend of refocussing. However, the business environment in emerging economies continues to be dominated by large conglomerates which may account for up to 80 percent of the total sales and asset base of the private sector in some countries (Purkayastha *et al.*, 2012). Although the literature on developed country diversified firms is rich, only a few studies have examined diversification-value relationship in the context of developing countries. To date, most recommendations to developing country firms were based on experience and knowledge gained in the developed world, and these may

International Journal of Emerging Markets
Vol. 10 No. 3, 2015
pp. 294-310

1746-8809
DOI 10.1108/IJoEM-12-2012-0180

not be appropriate for emerging country firms (Khanna and Palepu, 1997; Khanna and Rivkin, 2001).

Furthermore, with some exceptions, most previous research on the value effects of corporate diversification in emerging markets has taken the form of detailed case studies within countries or between pairs of countries. Hence, the present study is significant in the sense that it is expected this contribute to this body of research by extending evidence for the diversification-value link across a large sample of emerging market firms. In addition, most empirical studies on emerging markets concentrate on the 1990s. However, many changes have taken place all over the world since then. Hence, it is important to find out whether conglomerates trade at a discount or a premium in the 2000s.

The remainder of the paper is organized as follows. Section 2 synthesizes the literature on the motives, benefits, and costs of diversification, and reviews empirical evidence. Section 3 presents the data and the methodology. Section 4 presents the analysis results while Section 5 concludes.

2. Literature review

In perfect capital markets, diversification should be irrelevant to firm value. If stockholders wish to reduce unsystematic risk, they can diversify their own portfolio directly (Erdorf *et al.*, 2011). However, many firms operate in more than one industry. In finance literature, several theories on benefits and costs associated with diversification have been developed.

The first benefit of diversification, which gives rise to diversification premium, involves the creation of internal capital markets in which divisions with high cash flows but limited investment opportunities can finance divisions with low cash flows but promising investment opportunities (Williamson, 1975; Stein, 1997). Second, diversification may benefit firms by a coinsurance effect derived from combining businesses with imperfectly correlated earnings. This effect reduces firms' unsystematic risk and thus increases value (Bhide, 1990; Lewellen, 1971; Shleifer and Vishny, 1992). Third, diversification creates a tax advantage by allowing the losses of some segments to be offset by the profits of others (Majd and Myers, 1987). In addition, the resource-based theory suggests that diversified companies may share resources among divisions and thus benefit from economies of scope (Teece, 1980, 1982). Finally, diversified firms can create and exploit market power advantages by using some anticompetitive tools that are unavailable to focussed companies, such as predatory pricing, collusion, or reciprocal buying (Scherer, 1980; Saloner, 1987; Villalonga, 2000).

On the other hand, there are costs to corporate diversification, which give rise to diversification discount. The first cost of diversification is related to agency theory, which considers diversification as an activity that managers undertake for their own benefit, at the expense of shareholders. Diversification may benefit managers because of the power and prestige associated with managing a larger firm (Jensen, 1986), because managerial compensation is related to firm size (Jensen and Murphy, 1990), or because diversification reduces the risk of managers' undiversified personal portfolios (Amihud and Lev, 1981). Another cost of diversification is related to overinvestment problem and internal capital markets. If managers have a general tendency to overinvest, then access to an internal market for capital in a diversified firm simply provides a greater opportunity to overinvest in negative NPV projects (Jensen, 1986). Similarly, diversified firms can provide cross-subsidies to unprofitable lines of business (Meyer *et al.*, 1992). Finally, corporate diversification might be value destroying for some firms due to inefficient allocation of capital among different segments, which may result from information asymmetry between central managers and divisional managers (Harris *et al.*, 1982; Wulf, 1998).

To sum up, there are both benefits and costs to diversification, with the average net effect being an empirical question. The answer to this question depends on the time period, geographic location, data, and statistical methods used for estimation (Kuppuswamy and Villalonga, 2010).

Most of the empirical studies on the value effects of corporate diversification have been conducted for developed economies and the majority of these developed country studies, especially the earlier ones, concluded that diversification destroys value. In other words, diversified firms were found to trade at an average discount relative to a portfolio of single-segment firms, which has come to be known as "the diversification discount" (Martin and Sayrak, 2003).

In one of the first papers on diversification discount, Wernerfelt and Montgomery (1988) estimated the effects of diversification, industry structure, and market share in determining the performance of US firms. They found that diversification has a negative impact on firm value, as measured by Tobin's *q*.

In finance literature, the seminal papers on diversification discount are Lang and Stulz (1994) and Berger and Ofek (1995). Preceding work on conglomerates had compared *ex post* performance of diversified firms to the performance of single-segment firms. By contrast, Lang and Stulz (1994) and Berger and Ofek (1995) decomposed diversified firms into their segments and then valued these segments using benchmark companies. Lang and Stulz (1994) found that diversified firms trade at lower Tobin's *q* than comparable single-segment firms over the period 1978-1990. Berger and Ofek (1995) were able to confirm the results of Lang and Stulz (1994) for the period 1986-1991. In their paper, the authors used assets, sales or earnings multiples instead of Tobin's *q*. Both Lang and Stulz (1994) and Berger and Ofek (1995) related their empirical findings to overinvestment and cross-subsidization theories.

Later on, Servaes (1996) studied data for US firms covering the period from 1961 to 1976 and documented a large diversification discount during the 1960s, but this discount declined to zero during the 1970s. The author argued that agency problems which manifest themselves as higher insider ownership may explain the higher discount in diversified firms. Denis *et al.* (1997) and Anderson *et al.* (2000) were also able to confirm evidence of a value loss from diversification for US firms.

A second group of studies questioned the previous evidence that diversification destroys value. The findings of these studies suggest that diversification, in itself, does not destroy value. But, they argue that factors different from diversification are responsible for the documented diversification discount. Once these factors are controlled for, the diversification discount may decrease or disappear.

Within this strand of literature, Campa and Kedia (2002) argued that, several studies fail to control for endogeneity. Using instrumental variables to control for exogenous characteristics that affect the decision to diversify, the authors found that the diversification discount either decreases or disappears entirely. Similarly, Villalonga (2004a) argued that conglomerates are different prior to beginning their diversification program, and caused the diversification discount to disappear using econometric methods of causal inference.

In another study, Mansi and Reeb (2002) offered the risk reduction efforts by diversified firms as an explanation for diversification discount. The authors found that measures of firm value based on book values of debt instead of market values systematically undervalue diversified firms relative to single-segment firms. Using a contingent claim framework and controlling for risk effects, the authors found that diversification does not destroy value, but rather results in a wealth transfer from shareholders to bondholders.

In a recent study, Hoechle *et al.* (2012) found that diversification discount decreases or even disappears using a dynamic panel generalized method of moments (GMM) estimator to control for endogeneity and controlling for corporate governance.

The studies in the second group do not contest the finding that diversified firms sell at a discount. Instead, they argue that the discount is not due to diversification itself but is a result of a given firm selling at a discount prior to diversifying. There is also a third group of studies which question the existence of the diversification discount phenomenon itself and argue that diversified firms may trade at a premium. Differences in these and previous results are attributed to the use of sample selection bias, different measures, time periods, or databases (Erdorf *et al.*, 2011).

One issue emphasized within this strand of literature is a possible sample selection bias (Erdorf *et al.*, 2011). The studies documenting a diversification discount implicitly assume that single-segment firms are a valid benchmark for valuing divisions of conglomerates. If this assumption is invalid the documented discount may decrease of disappear. For instance, Hyland and Diltz (2002) found positive abnormal returns for diversifying acquisitions for the 1980s and 1990s. In a study using plant-level data, Maksimovic and Phillips (2002) found that single-segment firms have significantly higher productivity than diversified firms.

In their study, Miller (2006) created a measure of technological diversity based on citation-weighted patents and found a positive relationship between diversification and market-based measures of performance. In another study, Whited (2001) caused the discount to disappear by employing a measurement-error consistent estimator of Tobin's q.

Villalonga (2004b) hypothesized that the diversification discount could be due to the inappropriateness of the segment data from Compustat used in most previous studies. She used Business Information Tracking Series data and documented a diversification premium.

Finally, He (2009) argued the diversification discount documented in earlier studies can be an artifact of the pre-1997 data. Using post-1997 data, the author documented a significant diversification premium.

Non-US studies show that discount exists in some countries whereas others have a premium. For instance, Fleming *et al.* (2003) found that Australian firms traded at a discount between 1988 and 1998. In another study, Lins and Servaes (1999) found that a discount existed in Japan and UK, whereas no discount was found in Germany. Their results showed that corporate governance structures play a role in diversification discount. In a later study, Lins and Servaes (2002) documented a diversification discount in seven emerging markets for the year 1995, and offered the agency theory explanation for their findings. In another study, Singh *et al.* (2007) found that diversified firms in India perform significantly worse than focussed firms for the years 1998-2000.

However, the rest of the empirical research in emerging countries offers a different picture. Based on data between the 1970s and the early 1990s, studies in China (Li and Wong, 2003; Yiu *et al.*, 2005), India (Khanna and Palepu, 2000a; Ramaswamy *et al.*, 2004), South Korea (Lee *et al.*, 2008), and Chile (Khanna and Palepu, 2000b) report that most conglomerates enjoy higher value than focussed firms. Mishra and Akbar (2007) also found that diversification through group affiliation is beneficial for Indian companies and that these benefits are more pronounced in case of related diversification. The success of diversified business groups in India is mostly explained by a better access to capital markets and closer relationships with bureaucracy (Khanna and Palepu, 2000a).

Khanna and Rivkin (2001) and Nachum (2004) were able to confirm the existence of a diversification premium in a sample of 14 and 22 emerging markets, respectively. In a comparative study, Fauver *et al.* (2003) have used databases from 35 countries. The authors

documented a significant diversification discount among high-income countries. By contrast, for lower income countries, they found that there is either no diversification discount or a diversification premium. The authors offered two theoretical explanations for their empirical findings: better access to funds through internal capital firms may be more valuable lower income countries. Also, diversified firms may be able to attract better employees and better influence the regulatory process in developing countries.

As it becomes clear from the preceding discussion, the majority of empirical evidence on diversification was based on US firms. Diversification could have two opposite effects for developing country firms: internal capital markets may lead to higher value for diversified companies due to greater market imperfections in these economies. On the contrary, greater information asymmetry in developing country firms may lead to a diversification discount through agency costs (Lins and Servaes, 2002). The paper will attempt to investigate which effect dominates. Moreover, both studies conducted with US firms and international studies provided mixed evidence on the value effects of diversification. In addition, most empirical studies, especially the ones conducted on emerging market firms, concentrate on the 1990s. However, many new corporate reforms have taken place all over the world since then. Hence, it remains an open question whether the existing empirical evidence extends to 2000s. The present study attempts to fill these gaps in the literature.

3. Data and methodology

3.1 Sample construction

To collect the data for this study, Worldscope database was used. The countries in our sample are Brazil, Chile, Indonesia, Malaysia, Philippines, Poland, South Africa, Thailand, and Turkey. To select the firms to be included, we followed the sample selection procedure of Lins and Servaes (1999, 2002). We started with the entire universe of firms listed on the database. Since we need market values for the companies in our study, we excluded private companies from the analysis. We also eliminated firms that are not listed on the country's major stock exchange. We then excluded firms whose primary business is financial services (SIC codes between 6000 and 6999), because we cannot construct meaningful ratios of their market value to their sales level.

We classified a firm as diversified when it reports sales in two or more industries which are defined at the two-digit SIC code level. Diversification is defined at two-digit level since USA evidence shows that there are no penalties for related diversification (Berger and Ofek, 1995). In some cases, the segment description in the financial statements differs from the industry SIC codes. Whenever this occurs, we corrected the SIC code to reflect the industry segment description. Within each country, we excluded multi-segment firms from the sample if the company does not report sales at the individual segment level. However, in cases where individual segment sales are not reported and there is only one primary reported SIC, we classified the firm as a single-segment firm and used the firm's total sales in the analysis. Finally, following Fauver *et al.* (2003) we excluded firms for which there are no pure-play matches and corresponding segment sales exceed 25 percent of total sales.

Table I lists the number of companies at the start of sample selection procedure and the number of remaining firms after applying the above mentioned screens to the data, while Table II describes the final sample in terms of reported segments.

Thailand has the largest representation (357 companies), followed by Indonesia (249 companies) and Turkey (193 companies). As can be seen from Table II, Chile has the highest average rate of diversification (55 percent) and Philippines have the lowest rate (15 percent). However, it should be noted that these rates of diversification may be

	Brazil	Chile	Indonesia	Malaysia	Poland
Companies listed on the major stock exchange of the country	354	199	431	828	271
Exclude: companies in the financial sector (SIC code 6XXX)	160	99	159	716	65
Companies remaining	194	100	272	112	206
Exclude: companies classified as diversified which do not report segment data	26	17	23	0	14
Companies remaining	168	83	249	112	192
Exclude: companies for which no benchmarks can be found	2	3	0	3	0
Final sample	166	80	249	109	192
Number of diversified companies (%)	57 (34%)	44 (55%)	100 (40%)	56 (51%)	73 (39%)

	Philippines	South Africa	Thailand	Turkey	Total
Companies listed on the major stock exchange of the country	251	332	545	326	3,537
Exclude: companies in the financial sector (SIC code 6XXX)	137	185	163	109	1,793
Companies remaining	114	147	382	217	1,744
Exclude: companies classified as diversified which do not report segment data	16	19	25	24	164
Companies remaining	98	128	357	193	1,580
Exclude: companies for which no benchmarks can be found	3	1	0	0	12
Final sample	95	127	357	193	1,568
Number of diversified companies (%)	14 (15%)	57 (45%)	87 (24%)	60 (31%)	550 (35%)

Table I.
Sample construction

Number of segments	Brazil	Chile	Indonesia	Malaysia	Poland
1	109 (66%)	36 (45%)	149 (60%)	53 (49%)	117 (61%)
2	13 (8%)	12 (15%)	34 (14%)	14 (13%)	15 (8%)
3	16 (10%)	12 (25%)	36 (14%)	18 (17%)	20 (10%)
> 3	28 (17%)	20 (25%)	30 (12%)	24 (22%)	40 (21%)

Number of segments	Philippines	South Africa	Thailand	Turkey	Total
1	81 (85%)	70 (55%)	270 (66%)	133 (69%)	1018 (65%)
2	5 (5%)	13 (10%)	24 (9%)	13 (7%)	143 (9%)
3	6 (6%)	14 (11%)	32 (12%)	22 (11%)	176 (11%)
> 3	3 (3%)	30 (24%)	31 (12%)	25 (13%)	231 (13%)

Table II.
Number of segments

understated because we did not consider firms that are diversified into financial services or that lack data on segment sales.

The total sample consists of 1,568 firms. The period of analysis is from 2005 to 2010. Therefore the data set corresponds to 9,408 firm years without considering missing data. On the average, 65 percent of the firms in the sample are single segment and 35 percent are diversified (as of the end of 2010). In all, 9 percent of the firms are operating in two segments, 11 percent is operating in three segments, and 13 percent are operating in four or more segments.

3.2 Variables

To estimate the value of corporate diversification, we employed the excess value measure originally used by Berger and Ofek (1995) as the dependent variable in our analyses. This measure represents the difference between a firm's actual value and its imputed value. Actual value is calculated as the sum of market value of equity and book value of debt. To calculate imputed value, we first assign each segment a benchmark company. The benchmark company is defined as the company with the median value-to-sales ratio among all single-segment firms within the same two-digit SIC code industry and same country. We then multiply the level of sales in each segment of a diversified firm by its corresponding industry median value-to-sales ratio. Then, the total imputed value of the firm is calculated as the sum of each segment's imputed value.

Thus, excess value is given by the following equations:

$$EV_{it} = \ln\left(V_{it}/ImpV_{it}\right) \tag{1}$$

$$ImpV_{it} = \sum_{j=1}^{N} \left(w_j \ S_j\right) \tag{2}$$

where EV_{it} is the excess value measure of firm i at time t; V_{it} the firm i's actual value measured as market value of common equity plus book value of debt at time t; $ImpV_{it}$ the imputed value of the firm i at time t; w_j the segment j's multiplier, measured as the benchmark firm's ratio of value-to-sales in the same industry; S_j the segment j's sales; and N the number of segments.

Diversified firms have a positive excess value if the overall company's value is greater than the "sum of the parts." By contrast, diversified firms have a negative excess value if their actual value is less than their imputed value.

In cases where there are no other two-digit single-segment firms to match from, we calculated the imputed value-to-sales ratio using broader industry classifications defined by Campbell (1996) to minimize loss of observations. In order to correctly compare single-segment and diversified firms, we also computed the excess value measure for firms that operate in only one segment.

Along with total value-to-sales ratio, Berger and Ofek (1995) also consider two other ratios to measure performance: the ratio of total value to total assets and the ratio of total value to EBIT. Their qualitative results are similar for each of the three measures. For similar reasons, Lins and Servaes (1999, 2002) also use the total value-to-sales-ratio as their only measure of performance.

To measure diversification, two different measures were used in order to check the robustness of the results. First, following Berger and Ofek (1995), a dummy variable (D) was employed, which takes the value of "1" if the firm reports sales in more than one business segment, and "0" otherwise. Second, following Lang and Stulz (1994) we employed a more informative measure taking into consideration the relative importance of each segment. This second measure of diversification (DH) is based on a Herfindahl index calculated from segment sales according to the following formula:

$$DH = 1\text{–}H \tag{3}$$

$$H = \sum_{j=1}^{N} \left(S_j/S_t\right)^2 \tag{4}$$

where S_j is the jth business segment's sales; N the number of segments; S_t the firm's total sales; H the Herfindahl index; and DH the total diversification.

The Herfindahl index can take values between 0 and 1, and is inversely related to diversification. It takes the value of one for firms specialized in a single industry and approaches toward zero as a firm diversifies across many industries. Smaller levels of the Herfindahl index correspond to less industry focus and greater diversification. The higher the index H, the lower is the level of total diversification. Total diversification (DH) is defined as one minus the Herfindahl index. Therefore, DH also takes values between 0 and 1. But, the higher DH, the more diversified the firm is.

A number of other factors related to value were included in our model as control variables. The majority of the previous papers on diversification controlled for firm size, profitability, and growth opportunities (Berger and Ofek, 1995; Lang and Stulz, 1994; Lins and Servaes, 1999, 2002; Servaes, 1996; among others). Consequently, we included firm size measured by the natural logarithm of total assets converted to US dollars, profitability measured by the ratio of operating income to sales, and growth opportunities measured by the ratio of capital expenditures to sales, as control variables in our regression equations. Based on the previous diversification literature, we anticipate a positive impact of profitability and growth opportunities on excess value. However, previous evidence on the effect of the size variable has been mixed: Berger and Ofek (1995) find a positive link between firm size and firm value while Lang and Stulz (1994) and Lins and Servaes (1999) find a negative relationship.

We also included the ratio of total debt to total assets to capture the degree of financial slack available to the firm (Campa and Kedia, 2002). We expect a positive impact of this variable on excess value. Finally, we controlled for international sales because Errunza and Senbet (1981, 1984) and Morck and Yeung (1991) find evidence of a positive relation between internationalization and firm value while Denis *et al.* (2002) find evidence that international diversification leads to a decrease in firm value. The internationalization is measured by a dummy variable equal to "1" if the firm obtains some of its sales from abroad, and "0" otherwise.

The variables are summarized on Table III that follows.

3.3 Descriptive statistics

Table IV describes average excess values for the single-business and diversified firms in the sample of this study (2005-2010). The significance of the difference between the means is assessed using the t-statistic.

Variable	Symbol	Definition
Excess value	*EV*	Actual value/imputed value
Diversification	*D*	Dummy variable equal to 1 if the firm operates in more than one segment, 0 otherwise
	DH	Herfindahl-based measure of diversification
Firm size	*SIZE*	Log of total assets
Profitability	*EBITSA*	Operating income/total sales
Growth opportunities	*CAPEXSA*	Capital expenditures/total sales
Leverage	*LEV*	Total debt/total assets
International sales	*INT*	Dummy variable equal to 1 if the firm obtains some of its revenues from abroad, 0 otherwise

Table III.
Variable definitions

There are 8,742 firm years in total. In all, 3,180 of the firm years belong to diversified firms while 5,562 belong to single-segment firms. The data constitute an unbalanced panel. In all, 120 diversified and 546 single-business firm-year observations were lost due to missing data on market values.

Diversified firms in the sample have a mean excess value of 11.57 percent, indicating that multi-business firms are valued at a premium compared to single-segment firms to which they are benchmarked, without considering the effect of control variables. Single-segment firms in the sample have a mean excess value of −4.88 percent. The difference in excess values of diversified and single-segment firms is statistically significant at the 1 percent level of significance.

Table V provides the descriptive statistics on the independent variables used.

As can be seen on Table V, 35 percent of the companies in our sample are diversified and the mean Herfindahl index-based diversification score is 0.21. Firm size, determined as the natural logarithm of total assets, has a mean of 4.89. The mean profitability measured by the ratio of EBIT to sales is 0.09. Growth opportunities are measured as the ratio of capital expenditures to sales and show a mean of 0.07. Leverage, given as the ratio of total debt to total assets, registers a mean value of 0.23. Finally, 36 percent of the companies in our sample are internationally diversified, i.e. derive portion of their sales from abroad.

3.4 Estimation

Using the variables presented in the previous section, two separate regression equations will be estimated: the first one will use a dummy variable to measure diversification while the second one will use the Herfindahl index-based measure explained above. We do not include country dummies in the regressions because we compute the excess value measures within each country. Thus, if there are differences across countries in market-to-sales ratios because of institutional differences, these will be normalized as part of our excess value computations

Table IV.
Excess value

	Mean	*n*
Diversified firms	0.1157***	3,180
Single-segment firms	−0.0488	5,562
Total sample	0.0798	8,742

Note: ***Significantly different from single-segment firms at 1 percent

Table V.
Descriptive statistics on independent variables

	Mean	SD	*n*
D	0.35	0.48	9,408
DH	0.21	0.35	9,408
SALES (mn $)	688.64	2,824.01	9,294
ASSETS (mn $)	852.34	4,198.70	9,176
SIZE	4.89	1.90	9,288
EBITSA	0.09	0.61	8,916
CAPEXSA	0.07	0.11	8,932
LEV	0.23	0.37	8,976
INT	0.36	0.36	9,396

since they are expected to affect diversified companies and benchmark companies in a similar manner.

Before starting the estimation, we excluded observations with extreme excess values, above 1.386 or below −1.386 from the analysis following Berger and Ofek (2005). These outliers correspond to situations where actual value is more than four times the imputed value and less than one-fourth the imputed value, respectively. We removed 23 firm years from the sample after applying these cut-offs. The two equations to be estimated are as follows:

$$EV_{it} = b_0 + b_1 D_{it} + b_2 X_{it} + e_{it} \quad (5)$$

$$EV_{it} = b_0 + b_1 DH_{it} + b_2 X_{it} + e_{it} \quad (6)$$

where EV_{it} is the excess value of the firm i in year t; D_{it} a dummy variable equal to 1 if firm i is diversified in year t, 0 otherwise; DH_{it} the Herfindahl index-based measure of diversification; X_{it} the set of exogenous characteristics of the firm i included as control variables; b_0, b_1, b_2 are parameters to be estimated; and e_{it} the error term.

One issue that arises when estimating Equations (1) and (2) is the endogeneity of the diversification decision. In other words, it might be the case that firms that chose to diversify are not a random sample but there are some firm-specific characteristics that affect both the decision to diversify and excess value. In that case, the OLS estimate of b_1 will be biased. To deal with this issue, we use two methodologies. First, following Campa and Kedia (2002) and Villalonga (2004a), we introduce firm fixed effects to control for time invariant firm characteristics which have an impact on the diversification decision. Recent studies also argued that endogenous relations between diversification and value could be dynamic (Hoechle *et al.*, 2012). To control for such as dynamic endogeneity, we use the dynamic panel system GMM estimator suggested by Arellano and Bover (1995) and Blundell and Bond (1998). First, the equation is rewritten as a dynamic model which includes the lagged value of the dependent variable as regressor. Then, all variables are first differenced and the model is estimated by GMM using lagged values of right-hand side variables as instruments.

Finally, to merge both approaches, we perform a panel Granger causality test for excess value and diversification to trace possible bi-directional relationships. To test whether diversification Granger causes excess value, excess value is regressed on its own lags and on lags of diversification and the regression equation is estimated using system GMM. Granger causality will be verified based on Wald test. Other papers used a similar approach to test for Granger causality in a panel framework (e.g. Hartwig, 2010; Holtz-Eakin *et al.*, 1988; Podrecca and Carmeci, 2001). Granger causality running from excess value to diversification will be tested in the same manner.

4. Results

4.1 Fixed effects and GMM results

Columns 1 and 2 of Table VI display the results for fixed effects estimation employing the dummy variable and the Herfindahl index-based measures of diversification, respectively. The results of dynamic GMM estimation are reported on Columns 3 and 4.

In fixed effects regressions, the *F*-statistic is significant at the 1 percent level, indicating that there is statistically significant relationship between the dependent and explanatory variables. Adjusted R^2, which equal 0.23 for the first model and 0.22 for the

Variable	Fixed effects Coef.	t	Sign.	Fixed effects Coef.	t	Sign.	GMM Coef.	z	Sign.	GMM Coef.	z	Sign.
EV(−1)							0.015	0.77		0.018	0.97	
D	0.214	5.20	***				0.121	2.09	**			
DH				0.139	3.38	***				0.204	3.64	***
SIZE	0.010	1.79	*	0.008	1.89	*	0.017	2.33	**	0.016	2.23	**
EBITSA	0.010	2.81	***	0.011	2.88	***	0.012	2.66	***	0.012	2.66	***
CAPEXSA	0.004	3.86	***	0.004	3.92	***	0.003	2.64	***	0.003	2.65	***
LEV	0.082	3.28	***	0.081	3.21	***	0.073	2.18	**	0.072	2.13	**
INT	−0.001	−0.90		−0.001	−1.01		−0.001	−0.72		−0.001	−0.61	
No. of observations	8,286			8,286			6,510			6,510		
No. of firms	1,568			1,568			1,546			1,546		
Adjusted R^2	0.23			0.22								
F-statistic (p-value)	0.00			0.00								
Wald χ^2 (p-value)							0.00			0.00		
Sargan test (p-value)							0.22			0.21		
AR(2) test (p-value)							0.39			0.36		

Table VI.
Estimation results

Notes: *,**,***Significant at 10, 5, and 1 percent, respectively

second model are in line with values obtained in previous literature (e.g. Lins and Servaes, 2002; Fauver *et al.*, 2003).

In the first regression, where a dummy variable *D* is used to measure diversification, we find a diversification premium of 21.4 percent, significant at the 1 percent level. Since we have a log-linear specification, this means that the ratio of actual value to imputed value in diversified firms is 21.4 percent higher compared to the same ratio in single-segment firms. In other words, diversification raises shareholder value by 21.4 percent. The significant and positive coefficient on *DH* which equals 0.139 in the second regression also corroborates the positive relationship between diversification and excess value.

In both models, the coefficients on most control variables are significant. Profitability, growth opportunities, and leverage are positively related to excess value and significant at the 1 percent level. These results are consistent with previous literature (e.g. Berger and Ofek, 1995; Lang and Stulz, 1994; Lins and Servaes, 1999, 2002; Servaes, 1996). Firm size is also marginally significant and has a positive effect on excess value, consistent with Berger and Ofek (1995). But the coefficient estimate for the variable *INT* is not statistically significant, meaning that internationalization does not affect excess value. This finding contradicts previous literature (e.g. Errunza and Senbet, 1981, 1984; Morck and Yeung, 1991; Denis *et al.*, 2002).

GMM estimation results display significant χ^2 values, showing an overall significance. In both estimations, the Sargan test statistic cannot reject the null hypothesis that the instruments as a group are exogenous and the test for AR(2) accepts the null hypothesis of no autocorrelation in the disturbances of the first differenced equation. When we check the individual coefficients, we see that the results are consistent with foregoing findings. The coefficient of the diversification variable is positive and significant for both measures.

Overall, our regression results suggest that, in the sample of emerging markets analyzed in this study, corporate diversification increases company value for the period between 2005 and 2010. Diversified companies in our sample are valued more compared to their single-segment benchmarks, providing support for weak-form diversification premium (Villalonga, 2003).

4.2 Granger causality test results

Before proceeding with Granger causality test, as in Hartwig (2010), the optimal lag length was chosen based on Schwartz information criterion which is minimized at the level of two. To test for Granger causality running from diversification to excess value, the following regression equation is estimated and the significance of Wald statistic is checked:

$$EV_{it} = b_0 + b_1 EV_{it-1} + b_2 EV_{it-2} + b_3 D_{it-1} + b_4 D_{it-2} + e_{it} \quad (7)$$

where EV_{it} denotes the excess value of the firm i in year t; D_{it} a dummy variable equal to 1 if firm i is diversified in year t, 0 otherwise; and e_{it} the error term.

Equation (7) is also estimated using the Herfindahl index-based measure of diversification (*DH*). Granger causality running from excess value to diversification is tested in the same way. Results are presented on Table VII that follows.

As shown on Table VII, the first two Wald χ^2 statistics, testing the null hypothesis that diversification, as measured by *D* or *DH*, does not Granger cause excess value, are statistically significant. Hence, it can be concluded that diversification Granger causes excess value. Diversified firms are more likely to experience higher excess values in future periods. However, the null hypothesis of non-Granger causality from excess value to diversification cannot be rejected using either measure of diversification.

5. Summary and concluding remarks

The objective of this paper was to examine the value of corporate diversification in nine emerging markets. Overall, analysis results suggest that, for the period from 2005 to 2010, diversified firms in our sample are valued more compared to single-segment firms operating in similar industries, providing support for diversification premium. In addition, it was found that a firm's diversification status Granger causes its value relative to benchmark companies. According to our empirical results, the optimal organizational structure for firms operating in emerging markets seem to be different than that for firms operating in more developed countries since a diversification premium is observed in our sample, contrary to many developed country studies which document a diversification discount.

Our results are specific to emerging markets and several explanations based on unique features of these countries may be proposed to explain our findings: first, emerging markets are usually characterized by small and illiquid external capital markets. As a result, the benefits of diversification created through internal capital markets may outweigh its costs. In this regard, our results provide support for the institution-based view of diversification (Khanna and Palepu, 1997; Peng and Delios, 2006; Lee *et al.*, 2008). According to this view, different institutional environments significantly affect companies' optimal diversification strategy. In institutionally weak environments that are present in most emerging markets, the benefits associated with diversification may outweigh the costs, because diversified firms can imitate the beneficial functions of various market institutions that are present

Null hypothesis	Wald χ^2	df
D does not Granger cause *EV*	22.19***	4
DH does not Granger cause *EV*	24.81***	4
EV does not Granger cause *D*	5.42	4
EV does not Granger cause *DH*	6.31	4

Note: ***Significant at 1 percent

Table VII. Granger causality test results

in developed countries but not in emerging economies. Companies in emerging markets can overcome "institutional voids" by diversifying at the firm level (Lins and Servaes, 2002). Conglomerates in these countries may also be better able to attract quality employees and better able to lobby or influence the political and regulatory process (Fauver *et al.*, 2003). However, it should be kept in mind that an empirical check of these possible explanations would be revealing to strengthen our arguments.

Our results may also explain why industrial groups are so common in many emerging markets. These groups consisting of companies held together with informal ties or common ownership are similar to unrelatedly diversified companies (Kock and Guillen, 2001). In our sample countries, *grupos* in Brazil and Chile, family holdings in Turkey would be relevant examples (Kock and Guillen, 2001). Morever, groups dominated by a given family or ethnic group are very common occurences in Indonesia, Malaysia, South Africa, and Thailand (Khanna and Yafeh, 2007). Although the present paper focussed on diversification at the firm level, these groups may also be considered similar to diversified firms in the sense that they can share resources and risk among themelves. Further research including the interaction of firm-level diversification and group membership might be revealing.

Our results have important implications. For managers, optimal strategic actions in given country and time period may not be appropriate in other countries or different time periods in the same country. According to the results of this study, focus strategy often advised by consultants from developed countries does not seem appropriate for developing country firms. Thus, managers from emerging or less developed countries should not mistakenly narrow the scope of their operations upon advice from developed country consultants (Khanna and Palepu, 1997; Khanna and Rivkin, 2001).

The present study suffers from the following limitations: first, it does not distinguish between related and unrelated diversification. Several studies in the previous literature found that while unrelated diversification has an effect on firm value, related diversification does not. This hypothesis could not be tested in this study due to inability of finding suitable benchmark companies in emerging markets. Moreover, the excess value measure used as the dependent variable in the cross-sectional analysis was only calculated based on sales. Asset or earnings based measures commonly used in the literature could not be employed since there is very little business segment data regarding these variables for emerging market firms. In addition to addressing these limitations, future research can also investigate the role of agency costs and corporate governance in emerging markets for the relationship between diversification and firm value since firms' diversification strategies are often related to corporate governance structures (Singh, 2012). Finally, the results could be cross-checked using methods that permit the control of a possible sample selection bias such as plant-level data or event studies (Hyland and Diltz, 2001; Maksimovic and Phillips, 2002).

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