

***Capital Market Development, Integration, Legal Systems, and the Value of
Corporate Diversification: A Cross-Country Analysis***

by

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Capital Market Development, Integration, Legal Systems, and the Value of Corporate Diversification: A Cross-Country Analysis

Abstract

Using a database of more than 8,000 companies from 35 countries, we find that the value of corporate diversification is related to the level of capital market development, integration, and legal systems. Among high-income countries, where capital markets are well developed and integrated, we find a significant diversification discount. By contrast, for the lower income and segmented countries, we find that there is either no diversification discount or a diversification premium. For these firms, the benefits of diversification appear to offset the agency costs of diversification. We also find that a country's legal system and the firm's ownership structure affects the value of corporate diversification among the various countries. In particular, we find that diversification discounts are largest among countries where the legal system is of English origin. We find smaller diversification discounts in countries where the legal system is of German, Scandinavian, or French origin. One interpretation of these results is that internal capital markets generated through corporate diversification are more valuable (or less costly) in countries where there is less shareholder protection and where firms find it more difficult to raise external capital. More generally, our results suggest that the financial, legal, and regulatory environment all have an important influence on the value of diversification, and that the optimal organizational structure and corporate governance may be very different for firms operating in emerging markets than it is for firms operating in more developed and integrated countries.

I. Introduction

The connection between corporate diversification and firm value continues to generate substantial interest among financial theorists and practitioners. Recent evidence suggests that diversified U.S. firms trade at discounts compared to firms that are more focused [e.g., Lang and Stulz (1994), Berger and Ofek (1995), John and Ofek (1995), and Comment and Jarrell (1995)].¹ One explanation for these findings is that diversified firms face higher agency costs as a consequence of their organizational form. For example, recent papers have argued that intra-firm coordination problems are likely to be more extensive for diversified firms, because of their need to allocate capital among their various disparate activities [e.g., Rajan and Zingales (1998) Scharfstein and Stein (2000), and Scharfstein (1998)].²

Despite the observed costs arising from corporate diversification, there is theoretical work that suggests that there may also be benefits from diversification. In particular, work by Williamson (1975), Gertner, Scharfstein, and Stein (1994), Harris and Raviv (1996), and Stein (1997) suggests that capital constrained firms may establish internal capital markets that are able to effectively allocate scarce capital within the firm.³ Recent empirical evidence documents that there are systematic patterns in the internal allocation of capital in diversified firms [e.g., Shin and Stulz (1998), Lamont (1997), Houston, James, and Marcus (1997), and Scharfstein (1998)], but it remains an open question whether this allocation works to increase or decrease shareholder value.

It also remains an open question whether or not the extant empirical evidence extends beyond the results reported for U.S. firms. While diversification may have limited value in a developed economy such as the U.S. where the institutional context enables smaller, stand-alone firms to raise capital, it may be more valuable for firms who find it

¹ These results are also consistent with the evidence that corporate spin-offs generally enhance shareholder value [see, for example, Hite and Owers (1983), Schipper and Smith (1983), and Kaplan and Weisbach (1992)].

² Denis, Denis, and Sarin (1997) argue that value-reducing diversification strategies are sustained over time because they benefit managers (at the expense of shareholders), but that a competitive corporate control market may spur many firms to increase their focus.

³ It is interesting to note, however, that Stein's model actually implies that internal capital markets may work best among firms that are more focused.

costly or impossible to raise external capital, either because of imperfect information or incomplete capital markets.⁴

We would expect that internal capital markets are most valuable among firms and economies where it is costly to obtain external capital. A firm's access to external capital depends on the extent to which capital markets are developed within the country where the firm operates and the extent to which that country/firm is able to attract foreign capital. Therefore, unless the agency costs accompanying diversification are significantly higher in these countries, we would expect that the benefits from diversification would be higher in countries where capital markets are less developed and integrated and in countries where the legal system provides limited protection to investors.⁵ If this conjecture is correct, it raises the possibility that the results indicating a diversification discount for the U.S. do not generalize to other countries where external capital is more costly and/or less available.⁶

To date, the international evidence regarding corporate diversification has been limited. One notable exception is the recent work by Lins and Servaes (1999, 2002). Looking at a sample of firms from Germany, Japan, and the United Kingdom in 1992 and 1994, Lins and Servaes (1999) report valuation discounts that are of similar magnitude to those reported for U.S. firms. Moreover, their estimated diversification discounts remain statistically significant for Japan and the United Kingdom even after controlling for firm characteristics. In Germany, after controlling for firm characteristics, they also report a diversification discount, but it is not statistically different from zero. In another paper,

⁴ The economic and legal environment in less developed markets may also make it more difficult to contract with other firms, and therefore, may provide an additional benefit to diversification. Another potentially important benefit from diversification is the relatively high level of political influence that conglomerates and business groups wield in less developed markets. These political connections can create differential access to resources and markets.

⁵ The net effect of benefits versus agency costs, however, is ultimately an empirical question. Recent evidence by Harvey, Lins, and Roper (2001), Lins (2002), and others suggests that agency costs across countries are not necessarily constant and are likely to be higher in emerging markets. Johnson, La Porta, Lopez-de-Silanes and Shleifer (2000), however, also suggest that even in developed countries, the diversion of corporate resources can be substantial.

⁶ This hypothesis also suggests that the value of diversification within a given country may decline over time as the country's capital markets become more developed and integrated. Hubbard and Palia (1999) have examined this issue by considering the value of diversification in the U.S. during the conglomerate wave of the 1960s.

Lins and Servaes (2002) use data from 1995 to investigate the value of corporate diversification for seven Asian emerging market countries, namely Hong Kong, India, Indonesia, Malaysia, Singapore, South Korea, and Thailand. Pooling together the countries in their sample, they find a significant diversification discount for firms that are a part of industrial groups and for firms with management ownership concentration between 10 and 30 percent.⁷ Lins and Servaes, however, do not directly examine the link between corporate diversification and capital market development, integration, and legal systems.

In contrast to Lins and Servaes (2002), Khanna and Palepu (2000) argue that diversification may be more valuable in emerging markets than in more developed economies. Khanna and Palepu's analysis focuses on diversified business groups within India. They find that larger diversified groups that are in a better position to tap external capital outperform smaller unaffiliated firms. Khanna and Palepu's study provides some indirect support for our hypothesis that the value of diversification depends critically on the level of capital market development and integration.

In this paper, we extend this line of research in two important ways. First, we use a significantly broader set of countries to more comprehensively examine the value of corporate diversification across countries. Second, we directly investigate the link between the value of corporate diversification and capital market development, integration and legal systems. More specifically, we assemble a large data set that consists of more than 8,000 firms from 35 countries over a five-year period between 1991 and 1995. Using the methodology employed by Berger and Ofek (1995) and Lins and Servaes (1999), we calculate the implied value gain or loss from diversification. We also test whether the gain or loss that results from diversification is systematically related to the level of a country's capital market development, integration, and legal system.

Our results provide evidence that the value of diversification is related to the degree of country's capital market development, integration, and legal system. In particular, after controlling for firm-specific factors such as firm size, capital structure, profitability, and ownership structure, we find that the value of diversification is

⁷ On a country basis, however, they do not find a statistically significant diversification discount for six of their seven countries; only for South Korea did they find a diversification discount that was statistically different from zero.

negatively related to various proxies for the level of capital market development and integration. Among high-income countries, where capital markets are well developed and integrated, we find a statistically significant diversification discount. This finding is consistent with the U.S. evidence and the international evidence presented by Lins and Servaes (1999). By contrast, for the countries where capital markets are less developed and segmented, we find that there is either a significant diversification premium or no diversification discount. For these firms, the benefits of diversification appear to offset the agency costs of diversification. These results are consistent with Khanna and Palepu's evidence from Indian business groups.

We also find that the diversification discount systematically varies with the legal system. LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (LLSV - 1997) document that the English legal system provides the most protection to capital providers. If this protection results in better access to external capital, the benefits of internal capital markets and corporate diversification may arguably be smaller in countries that operate under a legal system with English origin. Consistent with this argument, we find that diversification discounts are largest among countries where the legal system is of English origin. We find smaller diversification discounts in countries where the legal system is of a German, Scandinavian, or French origin.

The rest of the paper proceeds as follows. Section II describes our data and the various capital market development, integration, and legal systems proxies that we employ in our analysis for each of the 35 countries in our sample. In Section III, we describe the methodology used to calculate the value of corporate diversification, and we provide mean estimates of the value of corporate diversification by various country characteristics. Regression results regarding the value of diversification after controlling for firm-specific characteristics are presented in Section IV. Section V examines the links between the value of diversification and ownership structure. In Section VI, we provide a number of robustness tests, while Section VII provides a conclusion.

II. Data and Summary Statistics

A. Sample Construction

Our main data source is the Worldscope database.⁸ Worldscope has financial data and business segment data for more than 8,000 companies, located in 49 countries. The firms in the databank represent 86 percent of global market capitalization. The business segment data starts in 1991. For this reason, our sample period begins in 1991 and extends through 1995.⁹ We use the reported business segment data to classify the publicly traded firms as either single-segment (focused) or multi-segment (diversified). We classify firms as single-segment firms if they operate in only one two-digit SIC code industry. Firms are classified as multi-segment if they have more than one reported segment, and the largest segment has less than 90 percent of the total sales for the company.

Within each country, we exclude 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 classify the firm as a single-segment firm and use the firm's total sales.¹⁰ We also exclude firms whose *primary* business is financial services (i.e., where more than fifty percent of firm sales come from SICs in the 6000-6999 range). These firms are excluded because sales figures are irregularly reported and are difficult to interpret for financial institutions. Finally, we exclude firms where there are no pure play matches and corresponding segment sales exceed 25 percent of total sales. For 14 of the 49 countries, there were insufficient data to calculate the estimated value of diversification, leaving 35 countries with sufficient data.¹¹

⁸ This databank is also used by LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997, 1998), Lins and Servaes (1999), Claessens, Djankov, Fan and Lang (2000,2002), and LaPorta, Lopez-De-Silanes and Shleifer (1999).

⁹ We wish to thank Worldscope for providing us with machine-readable access to their databank, which has more complete coverage than the CD ROMS.

¹⁰ Due to data limitations, we are unable to disentangle firms that may be diversified, but only report one line of business.

¹¹ We also exclude firms where the actual value (imputed value) is more than four (one-fourth) times the imputed value (actual value). Firms are primarily excluded from our sample according to the following two screens: firms whose primary business is financial services and firms where the actual value (imputed

Our sampling procedure differs from Lins and Servaes' (1999) in three ways. First, they exclude service firms – the reason being that there were relatively few service firms in Germany, and they wanted to control for industry differences across the three countries that they were investigating. In our study, we have chosen to include the broadest possible sample of firms and countries. Second, Lins and Servaes also exclude firms that do not trade on the country's main exchange. Third, to keep the data collection process manageable, Lins and Servaes only use a random sample of 450 firms from Japan and the United Kingdom in 1992 and 1994, whereas we use all firms in the databank that meet our screens. While our sampling procedure is somewhat different, the estimated diversification discounts that we find for Japan, Germany, and the United Kingdom are quite similar to those reported by Lins and Servaes (1999).

B. Country-Level Factors Influencing the Value of Corporate Diversification

To test our main hypothesis, we use the following proxies to measure the degree of capital market development, integration, and the level of investor protection for each of the 35 countries in our sample.

1. The Level of Capital Market Development

Recent research demonstrates that there is a strong link between capital market development and economic development [see, for example, Bekaert, Harvey, and Lundblad (2001), Levine (1997), King and Levine (1993a, 1993b) and Rajan and Zingales (1998)]. While the causation may be unclear, countries with higher levels of economic development (on the basis of traditional measures such as per-capita GNP for instance) are likely to have a more extensive domestic capital markets and are also more likely and able to obtain foreign capital.¹² Arguably, the availability and cost of external capital depends not just on the level of economic development, but also on the level of country credit risk. Internal capital markets are also likely to be more valuable at higher

value) is more than four (one fourth) times the imputed value (actual value). These two screens account for 87 percent of the firms eliminated from our sample, while only 2 percent of the firms are excluded from our sample due to multi-segment firms that do not report sales at the individual segment level.

¹² Levine (1997) reviews the connection between finance development and economic growth. More recently, Stulz (2000) describes the various connections between financial structure, corporate finance, and economic growth.

costs of external capital. Consequently, we also use the Institutional Investor country credit rating as an additional variable to explain cross-country variations in the value of diversification.¹³

As a robustness check, we also consider some additional measures of capital market development from LLSV. These country-level measures include external market capitalization plus debt to GNP (MKTCAP + Debt/GNP), the ratio of the number of domestic firms listed in a given country to its population (Domestic Firms/Pop), and the ratio of the number of the initial public offerings of equity in a given country to its population (IPOs/Pop).¹⁴

2. *The Level of Capital Market Integration*

If capital markets are perfectly integrated worldwide, we would expect that firms would be able to access external capital at the global cost of capital, even if the financial sector is less developed in the country in which they operate.¹⁵ Therefore, a high level of integration should lead to a greater diversification discount all else equal. While capital markets have become more integrated, existing evidence suggests that markets are not completely integrated and that the level of integration varies across countries and over time [see, for instance, Jorion and Schwartz (1986), Cho, Eun and Senbet (1986), Wheatley (1988), Gultekin, Gultekin and Penati (1989), Mittoo (1992), Chen and Knez (1995), Bekaert and Harvey (1995), Naranjo and Protopapadakis (1997), Stulz (1999), Bekaert, Harvey, and Lumsdaine (2001), and Edison and Warnock (2001)].

Borrowing from Bekaert and Harvey (1995) and Edison and Warnock (2001), we employ two proxies for the level of capital market integration. In particular, we use Bekaert and Harvey's (1995) time varying integration dates and Edison and Warnock's

¹³ Recent papers by Bhattacharya and Daouk (2002), Bekaert and Harvey (2000), and Erb, Harvey, and Viskanta (1996) also use the country credit rating by the *Institutional Investor*. The country credit ratings come from semi-annual surveys of 75-100 bankers who rate each country on a scale from 0 to 100, with 100 representing the smallest default risk. We thank an anonymous referee for this point.

¹⁴ These data are obtained from LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997).

¹⁵ Foreign listings are also a mechanism for enhancing access to external capital markets [see, for instance, Lins, Strickland, and Zenner (2001)], and they can be viewed as firm-level liberalizations. Bekaert and Harvey (2000) and Bekaert, Harvey, and Lundblad (2001) provide detailed empirical evidence on the impact of countrywide liberalizations.

(2001) intensity of capital controls measure.¹⁶ Bekaert and Harvey's (1995) measure captures the time-varying nature of integration, whereas Edison and Warnock's (2001) measure provides information on the extent of initial openings as well as the evolution of liberalization over time. Edison and Warnock's measure also corresponds well with Bekaert and Harvey's (1995) measure and the liberalization dates of Bekaert and Harvey (2000) and Bekaert, Harvey, and Lumsdaine (2001). For the Bekaert and Harvey time varying capital market integration measure, we use a binary variable each year equal to 1 if the country is integrated and 0 if it is not integrated. For Edison and Warnock's integration measure, we use their intensity of capital controls measure in each year, but we convert it to one minus their measure so that its interpretation is consistent with Bekaert and Harvey's measure. That is, a maximum value of one implies complete integration (i.e., no foreign ownership restrictions), whereas a minimum value of zero implies that the country's capital markets are completely segmented (i.e., completely restricted).

3. The Legal System

We also control for the country's legal system to take into account the evidence by LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997, 1998), which documents a link between legal systems and the value of capital market development. LLSV classify countries into four different legal systems: those with English, French, German, and Scandinavian origin.¹⁷ Their evidence suggests that a country's legal system significantly affects the level of protection that is given to investors, which in turn affects the availability of external capital. In particular, they find that the English system, with its common law origin, provides investors with the strongest legal protection, while the French legal system provides the least protection. They also argue that countries whose legal system is of German or Scandinavian origin have a moderate level of investor protection, falling somewhere between the English and French systems. Controlling for agency costs and economic development, we would therefore expect that diversification

¹⁶ We thank an anonymous referee for this suggestion.

¹⁷ From LLSV, we also obtain the law and order tradition (Rule of Law) in each country.

discounts would be largest among countries with an English legal system, since firms in these countries are likely to have better access to external capital markets.

C. *Summary Statistics*

In Table I, we provide summary information on capital market integration, legal system classifications, the level of economic development, and country credit ratings for each of the 35 countries in our sample. We use the integration measures reported in Bekaert and Harvey (1995) and Edison and Warnock (2001), the legal classifications reported in LLSV, and the country credit ratings from the *Institutional Investor*. For the Bekaert and Harvey time varying capital market integration measure, a “yes” value in Table I indicates that the country was integrated in each year over our sample period for the respective country, while a “no” value indicates that it was not integrated in at least one year over our sample period. For Edison and Warnock’s integration measure, we provide the five-year arithmetic average, where the range is between 0 (complete segmentation) and 1 (complete integration). In the third column of Table I, we provide the World Bank Classification. Each year, the World Bank classifies countries into four categories: high income, upper-middle income, lower-middle income, and low income. As shown in Table I, this classification also largely coincides with per-capita GNP. The reported average per-capita GNP is the five-year arithmetic average over our sample period, 1991-1995. This measure ranges from \$316 in India to \$36,800 in Switzerland. In the last column of Table I, we report the five-year arithmetic average country credit rating for each country over our sample period.

III. **Estimating the Value of Corporate Diversification**

A. *Methodology*

To estimate the value of corporate diversification, we modify the approach originally used by Berger and Ofek (1995). In our analysis, we use the ratio of total-capital-to-sales to measure corporate performance, where total capital is calculated by adding the market value of equity to the book value of debt. Along with this measure, Berger and Ofek (1995) also consider two other ratios to measure performance: the ratio of total-capital-to-assets and the ratio of total-capital-to-earnings. Their qualitative

results are similar for each of the three performance measures. We are unable to use these alternative measures because there is very little business segment data regarding assets or earnings for the non-U.S. firms.¹⁸

We calculate the excess value of each firm by taking the difference between the firm's actual performance and its imputed performance. Actual performance is measured by the consolidated firm's capital-to-sales ratio. For single-segment firms, imputed value is calculated as the median capital-to-sales ratio among all pure-play (single-segment firms) within the same industry and same country. For multi-segment firms, imputed value is calculated by taking a weighted-average of the imputed values for each of the firm's segments, where the weights reflect the proportion of the overall firm's sales that come from each segment. Multi-segment firms have a positive excess value (i.e., a premium) if the overall company's value is greater than the "sum of the parts." By contrast, multi-segment firms have a negative excess value if their value is less than the imputed value that would be obtained by taking a portfolio of pure-play firms that operate in the same industries and country as the diversified firm.¹⁹

We define industries at the two-digit SIC code level.²⁰ In cases where there are no other two-digit pure-plays firms to match from, we calculate the imputed market capital-to-sales ratio using broader industry classifications defined by Campbell (1996).²¹ Finally, to avoid having the results driven by extreme values, we exclude firms where the actual value is more than four times the imputed value, or where the imputed value is more than four times the actual value.²²

¹⁸ For similar reasons, Lins and Servaes (1999) also use the capital-to-sales-ratio as their sole measure of performance.

¹⁹ The average number of pure-plays ranges from 1.30 in New Zealand to 29.44 in the U.S., while the average number of pure-plays in the less developed markets is 3.02. To further insure that our results are robust with respect to the control groups, we also increased the required minimum number of pure-play matches to three firms and obtained similar results, but with a considerably smaller sample.

²⁰ While this two-digit classification is somewhat coarse, it provides us with a larger number of pure play firms. Increasing the number of pure-plays is particularly important in the less developed markets. Lins and Servaes (1999) and others also use a similar approach.

²¹ The reported results are essentially the same if we eliminate firms from the sample that do not have a two-digit pure-play match.

²² Berger and Ofek (1995) and Lins and Servaes (1999) also use this screen. When we use a more conservative screen of excluding firms where the actual value (imputed value) exceeds the imputed value (actual value) by a factor of three, we obtain similar results.

B. The Value of Diversification

Table II reports the excess value estimates for the single and multi-segment firms in our sample. In Panels A-D, firms are classified according to their country's level of capital market integration, legal system, per-capita GNP, and country credit rating.

In Panel A, we classify firms into three levels of capital market integration based on Edison and Warnock's (2001) integration intensity measure.²³ The results suggest that the value of diversification varies negatively with the degree of capital market integration. In the first group, where countries are perfectly integrated (i.e., $INTEGRITY=1$), we find a mean diversification discount of 5.88 percent and a median discount of 5.03 percent. For firms who are headquartered in more segmented markets (i.e., $1.0 > INTEGRITY \geq 0.5$), the mean diversification discount drops to 0.56 percent and the median discount drops to 1.42 percent. In the most segmented group (i.e., $0.5 > INTEGRITY \geq 0.0$), we find a mean diversification premium of 1.69 percent and a median premium of 0.62 percent.

Panel B classifies firms according to their country's legal system. The results indicate that diversified firms trade at substantial discounts if they operate in a country with a legal system of English origin. Among these countries, the median discount is 8.57 percent. Among the other countries in our sample with French, German, and Scandinavian legal origin, we find no evidence of either a diversification discount or premium. These results complement the evidence reported by LLSV (1997). Their results suggest that the English legal system provides the most protection to external investors, which generally leads to more developed capital markets. Our results suggest that the value of internal capital markets is smallest when capital markets are most developed.

In Panel C, we classify firms into per-capita GNP groupings. The results suggest that the value of diversification varies with the level of economic development. Firms that operate in countries with a per-capita GNP in excess of \$15,000 have a mean diversification discount of 5.79 percent and a median discount of 5.78 percent. The results are also strikingly different for firms headquartered in the emerging market

²³ We also obtain similar results using Bekaert and Harvey's (1995) integration measure.

countries. Among these firms, we find a mean diversification premium of 8.41 percent and a median premium of 5.41 percent.

Finally, Panel D classifies firms into three groups by varying levels of country credit rating. Similar to the earlier groupings, the results suggest that the value of diversification varies with the level of a country's credit rating. Firms that operate in countries with a high credit rating (i.e., $CCR \geq 75.00$) have a mean diversification discount of 4.85 percent and a median discount of 3.06 percent. In contrast, for firms headquartered in countries with the lowest credit ratings (i.e., $50.00 > CCR \geq 0.00$), we find a mean diversification premium of 1.49 percent and a median premium of 2.16 percent.

IV. Regression Results

The results reported in Table II suggest that the degree of capital market integration, development, and investor protection affect the value of corporate diversification. While these results provide an overall depiction of the value of diversification among the various groupings, they do not control for individual firm characteristics, which may also affect the firm's market-to-sales ratio. These other characteristics include the firm's size, profitability, and future growth opportunities. To control for these factors, we estimate the following baseline regression model for each firm in our sample.²⁴

$$(1) \text{ Excess Value} = \alpha + \beta_1(\text{Level of Diversification}) + \beta_2(\text{Log Assets}) \\ + \beta_3(\text{Operating Income / Sales}) + \beta_4(\text{Capital Expenditures / Sales}) + e.$$

The baseline regressions also include various combinations of the country-level proxies measuring the level of capital market integration, development, and indicator variables representing the country's legal system. Excess value is defined to be the natural log of the ratio of the firm's market value to its imputed value. The level of diversification is measured in two ways. One approach is to use a diversification dummy (SEG) which is

²⁴ Lang and Stulz (1994), Berger and Ofek (1995), and Lins and Servaes (1999) also estimate similar models.

equal to one for multi-segment firms and is otherwise zero. The other approach is to calculate a sales-based Herfindahl index (HERF) that more completely captures the level of diversification among multi-segment firms. This measure is calculated as:

$$HERF = \sum_{i=1}^N \left(\frac{Sales_i}{Total\ Sales} \right)^2,$$

where $Sales_i$ corresponds to the sales for segment i , and segment sales are identified according to firm segment SIC codes. If any one segment accounts for 90% or more of total sales, then we set the herfindahl equal to 1, making the firm a single segment firm (i.e., focused). So that the results can be consistently interpreted across the two diversification measures (i.e., SEG versus HERF), we use (1-HERF) in our regression analysis.²⁵

Looking at the other firm-specific characteristics, the log of assets controls for potential firm size effects. The ratio of operating income-to-sales (OIS) provides a measure of firm profitability, while the ratio of capital expenditures-to-sales (CES) proxies for the level of growth opportunities. Controlling for the other factors, we would expect to see a positive link between excess value and both OIS and CES. Since our data covers five years (1991-1995), we also include separate year dummies in the regressions to control for intertemporal variations in market or economic conditions that may also affect the firm's market-to-sales ratio.

In Table III, the first four columns report results using the diversification dummy, SEG, as the measure of corporate diversification, while the last two columns report results where HERF is used as the measure of corporate diversification. In the first column, we present results using Edison and Warnock's integration measure, and we exclude Per-Capita GNP from the specification due its high correlation with the Institutional Investor's country credit rating (i.e., correlation of 0.84).²⁶ We report the full specification, including Per-Capita GNP, in the second column. The third column

²⁵ We also used the number of firm segments as an alternative diversification measure and obtained very similar results.

²⁶ The country credit rating has a correlation of 0.67 with the integration measures, while Per-Capita GNP has a correlation of 0.59 with the integration measures.

also reports results for the full specification, but Bekaert and Harvey's (1995) integration measure is used in place of Edison and Warnock's integration measure. The fourth column reports fixed effects estimates of the full specification. The last two columns also report results for the full specification, but (1-HERF) is used in place of SEG.

Looking across each of the columns in Table III, we see that the coefficients corresponding to the firm specific control variables (i.e., OIS, CES, and ASSETS) are highly significant and positive as predicted. The results across each of the columns, moreover, shows there is a statistically significant negative relation between the value of diversification and each integration measure, the country credit rating, and per-capita GNP. However, the country credit rating relation is only significant when we exclude Per-Capita GNP from the full specification. This result is likely due to the high correlation between Per-Capita GNP and the country credit rating. Turning to the legal system coefficient estimates, we see that they are also significantly different from zero, and the estimated coefficients have the predicted signs. In particular, we find that the estimated coefficients are positive for the French, German, and Scandinavian legal dummy variables, indicating that diversification provides greater benefits and/or fewer costs relative to firms that operate in a country with a legal system of English origin. Looking more closely at the estimated coefficient for the legal system dummy variables, we also see that the coefficient for the German legal system has the greatest magnitude. This result suggests that after controlling for the other relevant factors, the net costs of diversification are the smallest for firms that operate under the German legal system. All in all, both the SEG and HERF specifications provide similar results.²⁷

V. Ownership and the Value of Corporate Diversification

The results in Section IV suggest that corporate diversification is more beneficial/less costly for firms that are headquartered in countries where capital markets are more segmented, less developed, and where it is generally costly to obtain external capital. A potential problem with this conclusion is that, so far, we have not explicitly

²⁷ As a further robustness check, we also estimated the specifications on a year-by-year basis and obtained similar results. We also estimated group-level regressions based on the groupings in Table II, but controlling for firm characteristics. With this additional robustness check, we obtained conditional diversification discounts/premiums qualitatively similar to the unconditional results reported in Table II.

controlled for agency costs associated with ownership concentration. Indeed, several studies suggest that firm value is correlated with ownership structure [e.g., Demsetz and Lehn (1985), Morck, Shleifer and Vishny (1988), Holderness and Sheehan (2000), and McConnell and Servaes (1990)] and that ownership structure varies across countries and legal systems [e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998), LaPorta, Lopez-De-Silanes and Shleifer (1999), and Claessens, Djankov, Fan and Lang (2000, 2002)]. To the extent that ownership concentration affects firm value, it may also affect the estimated value of corporate diversification. This concern may be particularly relevant if there is a strong link between ownership concentration and firm value and if focused and diversified firms have significantly different levels of ownership concentration.

Worldscope provides firm level ownership data that consists of reported cases where an individual or institution holds at least five percent of a company's common stock. Summing up these reported holdings across all shareholders, we obtain a measure of ownership concentration for each firm.²⁸ While ownership data are available for a subset of firms in our sample, an important concern arises when using this data. In many cases, there is no clear distinction between firms where no individual or institution holds a five percent stake and firms that choose not to report any ownership data. This reporting bias also appears to be systematic – in that ownership data is reported much less regularly among firms headquartered in less developed countries.²⁹ To insure that this reporting bias does not affect the qualitative nature of our results, we also perform some robustness checks

²⁸ In addition to total ownership concentration, Lins and Servaes (2002) also separate ownership holdings into various detailed ownership categories and find their reported conclusions to be largely similar across the various measures of ownership concentration.

²⁹ Another potentially important problem with the reported ownership data is that in some countries, cross-ownership holdings and ownership pyramids are fairly common. La Porta, Lopez-de-Silanes and Shleifer (1999) study ownership concentration structures in considerable detail and estimate the magnitude of cross-holdings for the twenty largest publicly traded firms in various countries. As they point out, “the data on corporate ownership are often difficult to assemble.” Since following their approach for all of the firms in our sample is prohibitive, we are forced to rely on the numbers reported by Worldscope. In this regard, we follow the approach used by Lins and Servaes (2002) and Claessens, Djankov, Fan and Lang (2002). However, it is important to note that Worldscope provides only limited ownership data for several countries in our sample.

A. Regression Results Controlling for Ownership Concentration

Similar to Morck, Shleifer and Vishny (1988) and others, we also account for the nonlinear relation between ownership structure and firm value by creating three separate ownership concentration variables:³⁰

$$\begin{aligned} \text{OWN0to10} &= \text{total ownership} \quad \text{if total ownership} < 0.10, \\ &= 0.10 \quad \text{if total ownership} \geq 0.10; \end{aligned}$$

$$\begin{aligned} \text{OWN10to30} &= 0 \quad \text{if total ownership} < 0.10, \\ &= \text{total ownership minus } 0.10 \quad \text{if } 0.10 \leq \text{total ownership} < 0.30, \\ &= 0.20 \quad \text{if total ownership} \geq 0.30; \end{aligned}$$

$$\begin{aligned} \text{OWNover30} &= 0 \quad \text{if total ownership} < 0.30, \\ &= \text{total ownership minus } 0.30 \quad \text{if total ownership} \geq 0.30. \end{aligned}$$

This classification suggests that the marginal impact of increased ownership concentration varies depending on whether ownership concentration is less than 10 percent, between 10 and 30 percent, and greater than 30 percent. We also interact OWN10to30 and OWNover30 with the dummy variable SEG, which equals one if the firm has multiple segments, to assess the impact of ownership concentration on the value of corporate diversification.³¹

The firm level regression estimates that control for ownership concentration are reported in Table IV. The results confirm the findings reported in Table III concerning the significant negative relation between the value of corporate diversification and capital market integration, development, and a country's credit rating. The earlier findings with respect to the influence of a country's legal system on the value of corporate diversification are also confirmed. While it is not the primary focus of our analysis, the estimated coefficients on ownership concentration are also of considerable interest. First, for low levels of ownership concentration, there is a positive link between ownership concentration and excess value. This result, however, is likely a manifestation of the

³⁰ Morck, Shleifer and Vishny (MSV, 1988) use 5 percent and 25 percent as their breakpoints. Given that the Worldscope databank does not generally provide firm level ownership concentration values below 5 percent (aside from the unreported values), we use a 10 percent cut-off for the first breakpoint and 30 percent as the next breakpoint to be consistent with MSV's ownership ranges. As additional robustness checks, we also tried other breakpoints and used ownership concentration dummy variables for each of the breakpoints in place of the MSV variables. In both cases, we found that the reported conclusions were qualitatively unchanged.

³¹ Note that due to singularity, we do not include OWN0to10*SEG in our specification.

large portion of potentially unreported ownership observations that are classified as zeros. Second, for ownership concentration levels beyond ten percent, we generally find that increases in ownership concentration lead to a reduction in value for both focused and diversified firms. This result confirms the fact that there are both costs and benefits associated with increased ownership concentration. Finally, we see from the coefficients on the ownership concentration variables that are interacted with the diversification dummy ($OWN_{10to30} * SEG$ and $OWN_{over30} * SEG$), that the effects of ownership concentration are significantly different for focused and diversified firms. For ownership concentration levels between 10 and 30 percent, excess value is significantly lower for the diversified firms, suggesting that entrenchment problems and expropriation of minority shareholders is more of a concern for diversified firms. However, beyond 30 percent, excess value is significantly higher for diversified firms.

VI. Some Additional Robustness Tests

A. Additional Proxies for Capital Market Development and the Legal Environment

Up until now, we have primarily used per-capita GNP and legal origin indicator variables as proxies for capital market development and the legal environment. However, it is important that we also employ additional measures in order to insure that our results are robust. LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997) analyze several measures of capital market development and the legal environment across 49 countries. In particular, as measures of capital market development for each country, they consider the ratio of the stock market capitalization held by minorities to GNP (External Cap/GNP), the ratio of the sum of bank debt of the private sector and outstanding non-financial bonds to GNP (Debt/GNP), the ratio of the number of domestic firms listed in a given country to its population (Domestic Firms/Pop), and the ratio of the number of the initial public offerings of equity in a given country to its population (IPOs/Pop). LLSV also find that the law and order tradition (Rule of Law) in each country is an important determinant of external finance.

As a robustness check, we also ran regressions using the capital market development and legal environment proxies used by LLSV as alternative explanatory

variables.³² These (unreported) results suggest that the coefficient estimates on per-capita GNP, external market capitalization plus debt to GNP, and domestic firms to population are all negative and statistically significant, whereas the coefficient on IPOs to population is not statistically different from zero. We also find that the coefficient estimates on the legal origin indicator variables remain significant, while the coefficient on the Rule of Law variable is not statistically different from zero. It is also interesting to note that the fixed-effects estimates are consistent with the OLS results.

B. Accounting Issues

Throughout our analysis, we have used the market-to-sales ratio as a proxy for firm value. One concern is that our results may be biased by cross-country differences in the accounting practices that firms employ when they hold either a majority or minority stake in another firm.³³ For our purposes, these accounting biases are particularly important if the magnitude of the biases vary across countries and vary between focused and diversified firms. We find that for 5 of the 35 countries (Denmark, Hong Kong, Indonesia, Italy and Malaysia), diversified firms have a significantly higher proportion of minority interest income as a percentage of sales. The market-to-sales ratios for these countries tend to be biased downward more often for diversified firms, which would bias us towards finding a diversification discount in these countries. For 2 of the 35 countries (France and Switzerland), we find that focused firms have a significantly higher proportion of income from unconsolidated affiliates as a percentage of sales. The market-to-sales ratios for these countries tend to be biased upward more often for single segment firms, which would also bias us towards finding a diversification discount in these countries.

To insure that our results are not driven by these accounting biases, we eliminated from our sample firms where minority interest income is greater than 2% of sales and firms where investment income from unconsolidated affiliates is greater than 2% of sales.

³² Due to a lack of debt, IPO, and /or Rule of Law data, we lose Australia, China, Hong Kong, Pakistan, Switzerland, and Taiwan from the analysis. If we set the missing observations equal to zero, we obtain similar conclusions.

³³ For examples of the various accounting methods employed across countries, see *International Accounting and Auditing Trends* by the Center for International Financial Analysis & Research, Inc.

After eliminating these firms, the link between the country proxies and excess value is somewhat stronger and statistically more significant. Moreover, there still remains a strong link between the legal system dummies and excess value, although the dummy corresponding to the French legal system is marginally significant and the Scandinavian legal system dummy is no longer significant.

VIII. Conclusion

Using a large database of more than 8,000 companies from 35 countries, we analyze the link between the value of corporate diversification and capital market integration, development, and legal systems. We find evidence that the value of corporate diversification is negatively related to the level of capital market integration and development. Among firms in high-income countries where capital markets are well developed and integrated, we find that diversified firms trade at a significant discount relative to focused firms. This evidence is consistent with previous studies (Lang and Stulz (1994) and Berger and Ofek (1995)) that have documented a diversification discount for U.S. firms. In contrast, we find that there is either no diversification discount, or in some cases, a significant diversification *premium*, in countries whose capital markets are less developed and segmented. Consistent with the recent findings of LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997, 1998), we also find that the value of diversification depends in an important way on the legal system of the country in which the firm is established.

Overall, our results suggest that the financial, legal, and regulatory environment all have an important influence on the value of diversification, and that the optimal organizational structure for firms operating in emerging markets may be very different than that for firms operating in more developed countries. In this regard, our results provide support for the arguments made by Khanna and Palepu (2000), who find that diversified industry groups in India often outperform their stand-alone counterparts. Our results are also consistent with Lins and Servaes (1999) who find that diversified firms in Japan and the United Kingdom (countries that are considered to be developed) generally trade at discounts relative to focused firms.

While we argue that cross-country variations in the value of diversification vary with the level of capital market integration and development, our results can be interpreted more broadly. In addition to providing better access to capital markets, or limiting the need to access these markets, diversification may provide other important benefits – particularly in countries where the economic and legal system are less developed. If the economic and legal environments make it more difficult to contract with other firms, it may be more beneficial to merge related enterprises within the same organization than it is to have them operate on a separate, stand-alone basis. Diversified firms in these countries may also be better able to attract quality employees and better able to lobby or influence the political and regulatory process. Ultimately, each of these explanations may be applicable.

References

- Bekaert, Geert and Campbell Harvey (1995), "Time-Varying World Market Integration," *Journal of Finance*, 50, 403-444.
- Bekaert, Geert and Campbell Harvey (2000), "Foreign Speculators and Emerging Equity Markets," *Journal of Finance*, 55, 565-613.
- Bekaert, Geert, Harvey, Campbell and Robin Lumsdaine (2001), "Dating the Integration of World Equity Markets," Columbia University Working Paper.
- Bekaert, Geert, Harvey, Campbell and Christian Lundblad (2001), "Emerging Equity Markets and Economic Development," *Journal of Development Economics*, 66, 465-504.
- Berger, Philip and Eli Ofek (1995), "Diversification's Effect on Firm Value," *Journal of Financial Economics*, 37, 39-65.
- Bhattacharya, Utpal and Hazem Daouk (2002), "The World Price of Insider Trading," *Journal of Finance*, 57, 75-108.
- Campbell, John (1996), "Understanding Risk and Return," *Journal of Political Economy*, 104, 298-345.
- Chen, Zhiwu and Peter Knez (1995), "Measurement of Market Integration and Arbitrage," *Review of Financial Studies*, 8, 287-325.
- Cho, D. Chinyung, Eun, Cheol and Lemma Senbet (1986), "International Arbitrage Pricing Theory: An Empirical Investigation," *Journal of Finance*, 41, 313-329.
- Claessens, Stijn, Djankov, Simeon, Fan, Joseph and Larry Lang (2000), "The Separation of Ownership and Control in East Asian Corporations," *Journal of Financial Economics*, 58, 81-112.
- Claessens, Stijn, Djankov, Simeon, Fan, Joseph and Larry Lang (2002), "Disentangling the Incentive and Entrenchment Effects of Large Shareholdings," *Journal of Finance*, forthcoming.
- Comment, Robert and Gregg Jarrell (1995), "Corporate Focus and Stock Returns," *Journal of Financial Economics*, 37, 67-87.
- Demirguc-Kunt, Asli and Vojislav Maksimovic (1996), "Financial Constraints, Uses of Funds and Firm Growth: An International Comparison," University of Maryland Working Paper.
- Demsetz, Harold and Kenneth Lehn (1985), "The Structure of Corporate Ownership:

- Causes and Consequences,” *Journal of Political Economy*, 93, 1155-1177.
- Denis, David, Denis, Diane and Atulya Sarin (1997), “Agency problems, Equity Ownership, and Corporate Diversification,” *Journal of Finance*, 52, 135-160.
- Desai, Mihir (2000), “A Multinational Perspective on Capital Structure Choice and Internal Capital Markets,” Harvard University Working Paper.
- Edison, Hali and Francis Warnock (2001), “A Simple Measure of the Intensity of Capital Controls,” International Finance Discussion Working Paper.
- Erb, Claude, Harvey, Campbell and Tadas Viskanata (1996), “Expected Returns Volatility in 135 Countries,” *Journal of Portfolio Management*, 22, 46-58.
- Gertner, Robert, Scharfstein, David and Jeremy Stein (1994), “Internal versus External Capital Markets,” *Quarterly Journal of Economics*, 109, 1211-1230.
- Gultekin, Mustafa, Gultekin, N. Bulent and Alessandro Penati (1989), “Capital Controls and International Capital Market Segmentation: The Evidence from the Japanese and American Stock Markets,” *Journal of Finance*, 44, 849-869.
- Hadlock, Charles, Ryngaert, Michael and Shawn Thomas (2001), “Corporate Structure and Equity Offerings: Are there Benefits to Diversification?,” *Journal of Business*, 74, 613-635.
- Harris, Milton and Arthur Raviv (1996), “The Capital Budgeting Process, Incentives and Information,” *Journal of Finance*, 51, 1139-1174.
- Harvey, Campbell, Lins, Karl and Andrew Roper (2001), “The Effect of Capital Structure when Expected Agency Costs are Extreme,” Duke University Working Paper.
- Hite, Gailen and James Owers (1983), “Security Price Reactions Around Corporate Spin-off Announcements,” *Journal of Financial Economics*, 12, 409-436.
- Houston, Joel, James, Christopher and David Marcus (1997), “Capital Market Frictions and the Role of Internal Capital Markets in Banking,” *Journal of Financial Economics*, 46, 135-164.
- Holderness, Clifford and Dennis Sheehan (2000), “Constraints on Large-Block Shareholders,” *Concentrated Corporate Ownership* (National Bureau of Economic Research, University of Chicago Press).
- Hubbard, Glenn and Darius Palia (1999), “A Re-examination of the Conglomerate Wave in the 1960s: An Internal Capital Market View,” *Journal of Finance*, 54, 1131-1152.

- Jensen, Michael (1986), "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers," *American Economic Review*, 76, 323-329.
- Jensen, Michael (1991), "Corporate Control and the Politics of Finance," *Journal of Applied Corporate Finance*, 4, 13-33.
- Jensen, Michael (1993), "The Modern Industrial Revolution, Exit and the Failure of Internal Control Systems," *Journal of Finance*, 48, 831-880.
- John, Kose and Eli Ofek (1995), "Asset Sales and Increase in Focus," *Journal of Financial Economics*, 37, 105-126.
- Johnson, Simon, La Porta, Rafael, Lopez-de-Silanes, Florencio and Andrei Shleifer (2000), "Tunnelling," *American Economic Review (Papers and Proceedings)*.
- Jorion, Phillipe and Eduardo Schwartz (1986), "Integration versus Segmentation in the Canadian Stock Market," *Journal of Finance*, 41, 603-613.
- Kaplan, Steven and Michael Weisbach (1992), "The Success of Acquisitions: Evidence from Divestitures," *Journal of Finance*, 47, 107-138.
- Kim, E. Han and John McConnell (1977), "Corporate Mergers and the Co-insurance of Corporate Debt," *Journal of Finance*, 32, 349-365.
- Khanna, Tarun, and Krishna Palepu (2000), "Is Group Affiliation Profitable in Emerging Markets? An Analysis of Diversified Indian Business Groups," *Journal of Finance*, 55, 867-891.
- King, Robert and Ross Levine (1993a), "Finance and Growth: Schumpeter May be Right," *Quarterly Journal of Economics*, 108, 717-737.
- King, Robert and Ross Levine (1993b), "Finance, Entrepreneurship, and Growth: Theory and Evidence," *Journal of Monetary Economics*, 32, 513-542.
- Klein, Peter (2001), "Were the Acquisitive Conglomerates Inefficient?," *RAND Journal of Economics*, 32, 745-761.
- Lamont, Owen (1997), "Cash Flow and Investment: Evidence from Internal Capital Markets," *Journal of Finance*, 52, 83-109.
- Lang, Larry, and Rene Stulz (1994), "Tobin's q, Corporate Diversification and Firm Performance," *Journal of Political Economy*, 102, 1248-1280.
- La Porta, Rafael, Lopez-de-Silanes, Florencio, Shleifer, Andrei and Robert Vishny (1997), "Legal Determinants of External Finance," *Journal of Finance*, 52, 1131-1150.

- La Porta, Rafael, Lopez-de-Silanes, Florencio, Shleifer, Andrei and Robert Vishny (1998), "Law and Finance," *Journal of Political Economy*, 106 1115-1155.
- La Porta, Rafael, Lopez-de-Silanes, Florencio and Andrei Shleifer (1999), "Corporate Ownership Around the World," *Journal of Finance*, 54, 471-517.
- Levine, Ross (1997), "Financial Development and Economic Growth: Views and Agenda," *Journal of Economic Literature*, 35, 688-726.
- Lewellen, Wilbur (1971), "A Pure Financial Rationale for the Conglomerate Merger," *Journal of Finance*, 26, 521-537.
- Lins, Karl and Henri Servaes (1999), "International Evidence on the Value of Corporate Diversification," *Journal of Finance*, 54, 2215-2239.
- Lins, Karl and Henri Servaes (2002), "Is Corporate Diversification Beneficial in Emerging Markets?," *Financial Management*, 31, 5-31.
- Lins, Karl, Strickland, Deon and Marc Zenner (2001), "Do Non-U.S. Firms Issue Equity on U.S. Stock Exchanges to Relax Capital Constraints?," University of North Carolina Working Paper.
- Lins, Karl (2002), "Equity Ownership and Firm Value in Emerging Markets," University of Utah Working Paper.
- McConnell, John and Henri Servaes (1990), "Additional Evidence on Equity Ownership and Corporate Value," *Journal of Financial Economics*, 27, 595-612.
- Mittoo, Usha (1992), "Additional Evidence on Integration in the Canadian Stock Market," *Journal of Finance*, 47, 2035-2054.
- Morck, Randall, Shleifer, Andrei and Robert Vishny (1988), "Management Ownership and Market Valuation: An Empirical Analysis," *Journal of Financial Economics*, 20, 293-315.
- Naranjo, Andy and Aris Protopapadakis (1997), "Financial Market Integration Tests: An Investigation Using U.S. Equity Markets," *Journal of International Financial Markets, Institutions and Money*, 7, 93-135.
- Rajan, Raghuram and Luigi Zingales (1998), "Financial Dependence and Growth," *American Economic Review*, 88, 559-586.
- Rajan, Raghuram and Luigi Zingales (2000), "The Tyranny of the Inequality," *Journal of Public Economics*, 76, 521-558.

- Rajan, Raghuram and Luigi Zingales (2001), "The Great Reversals: The Politics of Financial Development in the 20th Century," *NBER Working Paper #8178*.
- Rajan, Raghuram, Servaes, Henri and Luigi Zingales (2000), "The Cost of Diversity: Diversification Discount and Inefficient Investment," *Journal of Finance*, 55,35-80.
- Scharfstein, David and Jeremy Stein (2000), "The Dark Side of Internal Capital Markets: Divisional Rent-Seeking and Inefficient Investment," *Journal of Finance*, 55, 2537-2564.
- Scharfstein, David (1998), "The Dark Side of Internal Capital Markets II: Evidence from Diversified Conglomerates," *NBER Working Paper #6352*.
- Schipper, Katherine and Abbie Smith (1983), "Effects of Recontracting on Shareholder Wealth: The Case of Voluntary Spin-offs," *Journal of Financial Economics*, 12, 437-467.
- Servaes, Henri (1996), "The Value of Diversification during the Conglomerate Merger Wave," *Journal of Finance*, 51, 1201-1225.
- Shin, Hyun-Han and Rene Stulz (1998), "Are Internal Capital Markets Efficient?," *Quarterly Journal of Economics*, 113, 531-552.
- Stein, Jeremy (1997), "Internal Capital Markets and the Competition for Corporate Resources," *Journal of Finance*, 52, 111-133.
- Stulz, Rene (1990), "Managerial Discretion and Optimal Financing Policies," *Journal of Financial Economics*, 26, 3-27.
- Stulz, Rene (1999), "Globalization, Corporate Finance, and the Cost of Capital," *Journal of Applied Corporate Finance*, 12, 8-25.
- Stulz, Rene (2000), "Financial Structure, Corporate Finance and Economic Growth," *International Review of Finance*, 1:1, 11-38.
- Wheatley, Simon (1988), "Some Tests of International Equity Integration," *Journal of Financial Economics*, 21, 177-212.
- Williamson, Oliver (1975), *Markets and Hierarchies, Analysis and Antitrust Implications: A Study in the Economics of Internal Organization* (Collier Macmillan Publishers, Inc., New York, NY).

Table I
Capital Market Integration, Legal System, Economic Development, and Country Risk Ranking Measures by Country: 1991 - 1995

Country	Capital Market Integration		Legal System Classification	World Bank Market Classification	Average Per-Capita GNP (US \$)	Average Country Credit Rating
	Average Intensity	Integrated: Time Varying				
Australia	1.00	Yes	English Origin	High Income	17,808	68.32
Austria	1.00	Yes	German Origin	High Income	23,666	85.14
Brazil	0.57	N/A	French Origin	Upper-Middle Income	3,134	29.02
Canada	1.00	Yes	English Origin	High Income	20,098	81.56
Chile	0.72	No	French Origin	Upper-Middle Income ^a	3,206	49.80
China	0.10	N/A	Other	Low Income	498	56.06
Denmark	1.00	Yes	Scandinavian Origin	High Income	26,936	76.04
Finland	1.00	Yes	Scandinavian Origin	High Income	21,090	70.94
France	1.00	Yes	French Origin	High Income	22,808	87.72
Germany	1.00	Yes	German Origin	High Income	24,188	90.00
Hong Kong	1.00	Yes	English Origin	High Income	18,588	65.48
India	0.23	No	English Origin	Low Income	316	40.14
Indonesia	0.42	N/A	French Origin	Lower-Middle Income ^a	792	51.18
Ireland	1.00	Yes	English Origin	High Income	13,070	69.90
Italy	1.00	Yes	French Origin	High Income	19,500	74.64
Japan	1.00	Yes	German Origin	High Income	32,232	91.56
South Korea	0.10	No	German Origin	Upper-Middle Income	7,830	69.20
Malaysia	0.78	No	English Origin	Upper-Middle Income ^a	3,180	65.18
Mexico	0.86	No	French Origin	Upper-Middle Income	3,530	43.98
Netherlands	1.00	Yes	French Origin	High Income	21,322	88.36
New Zealand	1.00	Yes	English Origin	High Income	13,030	64.80
Norway	1.00	Yes	Scandinavian Origin	High Income	26,812	78.38
Pakistan	0.39	N/A	English Origin	Low Income	432	28.46
Philippines	0.45	N/A	French Origin	Lower-Middle Income	878	29.20
Portugal	0.63	N/A	French Origin	High Income ^a	8,350	65.90
Singapore	1.00	Yes	English Origin	High Income	20,266	80.34
South Africa	0.96	N/A	English Origin	Upper-Middle Income ^a	2,890	39.50
Spain	1.00	Yes	French Origin	High Income	13,430	74.78
Sweden	1.00	Yes	Scandinavian Origin	High Income	24,960	75.58
Switzerland	1.00	Yes	German Origin	High Income	36,800	92.22
Taiwan	0.07	No	German Origin	High Income	10,874	78.28
Thailand	0.29	Yes	English Origin	Lower-Middle Income	2,110	62.06
Turkey	0.95	N/A	French Origin	Lower-Middle Income ^a	2,404	42.84
United Kingdom	1.00	Yes	English Origin	High Income	17,974	85.94
United States	1.00	Yes	English Origin	High Income	24,758	89.10

Table I continued

We use the integration measures reported in Bekaert and Harvey (1995) and Edison and Warnock (2001). Specifically, we use Bekaert and Harvey's (1995) time varying integration dates and Edison and Warnock's (2001) intensity of capital controls measure. For the Bekaert and Harvey time varying capital market integration measure, we use a binary variable each year equal to 1 if the country is integrated and 0 if it is not integrated. For Edison and Warnock's integration measure, we use their intensity of capital controls measure in each year, but we convert it to one minus their measure so that its interpretation is consistent with Bekaert and Harvey's measure. That is, a maximum value of one implies complete integration (i.e., no foreign ownership restrictions), whereas a minimum value of zero implies that the country's capital markets are completely segmented (i.e., the country has completely binding foreign ownership restrictions). For the Bekaert and Harvey time varying capital market integration measure, a "yes" value in Table I means that the country was integrated in each year over our sample period for the respective country, while a "no" value means that it was not integrated in at least one year over our sample period. For Edison and Warnock's integration measure, we provide the five-year arithmetic average, where the range is between 0 (complete segmentation) and 1 (complete integration). The legal system classification identifies the legal origin of the Company Law or Commercial Code of each country. The legal system classifications are obtained from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997). Average per-capita GNP (US \$) is the five year arithmetic average of per-capita GNP from 1991–1995, whereas average country credit rating is the five year arithmetic average of *Institutional Investor's* country credit rating from 1991–1995.

^a The World Bank classifications varied across years for the following countries: Chile (lower-middle income in 1991), Indonesia (low income in 1991), Malaysia (lower-middle income in 1991), Portugal (upper-middle income in 1991 and 1992), South Africa (lower-middle income in 1991), Turkey (upper-middle income in 1993).

Table II
Excess Values by Capital Market Integration, Legal Systems, Per-Capita GNP, and Country Credit Rating Groups for Single-Segment and Multi-Segment Firms: 1991 - 1995

Panel A: Excess Values by Capital Market Integration for Single-Segment and Multi-Segment Firms

Excess Values by Capital Market Integration	Single-Segment Firms			Multi-Segment Firms			Statistical Differences (p-values)	
	Median	Mean	# Obs	Median	Mean	# Obs	Median	Mean
INTEGRIT = 1.0	0.0000	0.0414	16,949	-0.0503	-0.0588	8,465	0.000	0.000
1.0 > INTEGRIT ≥ 0.5	0.0000	0.0077	1,078	-0.0142	-0.0056	280	0.339	0.486
0.5 > INTEGRIT ≥ 0.0	0.0000	0.0249	1,883	0.0062	0.0169	231	0.729	0.673

Panel B: Excess Values by Legal Systems for Single-Segment and Multi-Segment Firms

Excess Values by Legal Systems	Single-Segment Firms			Multi-Segment Firms			Statistical Differences (p-values)	
	Median	Mean	# Obs	Median	Mean	# Obs	Median	Mean
English Origin	0.0000	0.0088	14,931	-0.0857	-0.0817	6,207	0.000	0.000
French Origin	0.0000	0.0287	2,378	0.0027	0.0024	843	0.733	0.194
German Origin	0.0000	0.0322	2,108	0.0135	0.0277	1,290	0.658	0.796
Scandinavian Origin	0.0000	0.0050	683	-0.0340	-0.0080	368	0.210	0.678

Table II continued

Panel C: Excess Values by Per-Capita GNP for Single-Segment and Multi-Segment Firms

Excess Values by Per-Capita GNP	Single-Segment Firms			Multi-Segment Firms			Statistical Differences (p-values)	
	Median	Mean	# Obs	Median	Mean	# Obs	Median	Mean
Per-Capita GNP \geq \$15,000	0.0000	0.0211	16,543	-0.0578	-0.0579	8,072	0.000	0.000
\$15,000 > Per-Capita GNP > \$5,000	0.0000	-0.0026	1,069	-0.0542	-0.0281	164	0.136	0.488
\$5,000 \geq Per-Capita GNP > \$1,000	0.0000	0.0260	1,643	-0.0400	-0.0264	306	0.148	0.112
\$1,000 \geq Per-Capita GNP	0.0000	0.0068	967	0.0541	0.0841	122	0.101	0.014

Panel D: Excess Values by Country Credit Rating for Single-Segment and Multi-Segment Firms

Excess Values by Country Credit Rating	Single-Segment Firms			Multi-Segment Firms			Statistical Differences (p-values)	
	Median	Mean	# Obs	Median	Mean	# Obs	Median	Mean
CCR \geq 75.00	0.0000	0.0439	15,961	-0.0306	-0.0485	7,945	0.000	0.000
75.00 > CCR \geq 50.00	0.0000	0.0225	2,419	-0.0179	-0.0156	742	0.289	0.098
50.00 > CCR \geq 0.00	0.0000	0.0330	1,621	0.0216	0.0149	198	0.573	0.688

In Panel A, firms are classified each year based on Edison and Warnock's (2001) intensity of capital controls measure, where INTEGINT ranges from 0 to 1, with 1 indicating perfect integration (i.e., no restrictions) and 0 indicating complete segmentation (i.e., completely restricted). In Panel B, firms are classified by their country's legal system, while in Panel C firms are classified by per-capita GNP groups. In Panel D, firms are classified each year by their country's *Institutional Investor* credit rating. Excess value is defined as the natural logarithm of the ratio of a firm's market-to-sales ratio to its imputed market-to-sales ratio. Firms with excess values that are greater than four or less than one-fourth are eliminated from the sample. Single-segment firms are firms that operate in only one two-digit SIC code industry. Multi-segment firms are defined as firms that operate in two or more two-digit SIC code industries and no firm segment sales exceed 90% of total firm sales.

Table III
Firm Level Regression Estimates of Excess Values: 1991 - 1995

Variables	Multi-Segment Dummy (SEG)				Herfindahl (HERF)	
	OLS (1)	OLS (2)	OLS (3)	Fixed Effects (4)	OLS (5)	Fixed Effects (6)
Constant	-0.457** (-2.363)	-0.502** (-2.081)	-0.481** (-2.581)	—	-0.525*** (-4.126)	—
Multi-Segment Indicator (SEG or HERF)	-0.049** (-1.990)	-0.099* (-1.868)	-0.048** (-2.564)	-0.020 (-1.258)	-0.051 (-0.411)	-0.088 (-0.512)
Operating Income-to-Sales (OIS)	0.299*** (16.869)	0.298*** (16.854)	0.298*** (16.842)	0.302*** (17.045)	0.297*** (16.777)	0.299*** (16.890)
Capital Expenditures-to-Sales (CES)	0.157*** (11.938)	0.157*** (11.927)	0.157*** (11.908)	0.157*** (12.051)	0.156*** (11.949)	0.156*** (11.971)
Log of Total Assets (ASSETS)	0.015*** (5.099)	0.016*** (5.540)	0.015*** (5.321)	0.017*** (5.855)	0.017*** (5.878)	0.018*** (6.228)
Integration: Intensity (INTEGINT*SEG or HERF)	-0.116* (-1.684)	-0.180** (-2.494)	—	-0.095** (-1.985)	-0.293** (-2.002)	-0.214** (-2.457)
Integration: Time-Varying (INTEGTV*SEG or HERF)	—	—	-0.133* (-1.834)	—	—	—
Country Credit Rating (CRR*SEG or HERF)	-0.003** (-2.933)	-0.001 (-0.580)	-0.001 (-0.708)	-0.003 (-0.312)	-0.004 (-0.155)	-0.001 (-0.586)
Per-Capita GNP (GNPCAP*SEG or HERF) ^a	—	-0.559*** (-3.035)	-0.382** (-2.150)	-0.376** (-2.038)	-0.915** (-2.938)	-0.819** (-2.073)
French Legal System Dummy (FRENCH*SEG or HERF)	0.055** (2.326)	0.055** (2.321)	0.061** (2.557)	0.047** (2.363)	0.102** (2.010)	0.099** (1.955)
German Legal System Dummy (GERMAN*SEG or HERF)	0.098*** (4.097)	0.126*** (5.730)	0.108*** (5.266)	0.107*** (4.872)	0.250*** (5.334)	0.226*** (4.798)
Scandinavian Legal System Dummy (SCAND*SEG or HERF)	0.024 (0.691)	0.067* (1.813)	0.060 (1.569)	0.065* (1.801)	0.095 (1.293)	0.070 (0.958)
Adjusted R ²	0.042	0.043	0.032	0.044	0.037	0.039
Number of Observations	28,886	28,886	27,658	28,886	28,886	28,886

Significant at 1 percent (***), 5 percent (**), and 10 percent (*) levels. ^a coefficient estimate x 10⁻⁵.

Regression estimates are from 1991-1995. Excess value is defined as the natural logarithm of the ratio of a firm's market-to-sales ratio to its imputed market-to-sales ratio. Firms with excess values that are greater than four or less than one-fourth are eliminated from the sample. The diversification dummy, SEG, is equal to one for multi-segment firms and zero otherwise. Multi-segment firms are defined as firms that operate in two or more two-digit SIC code industries and no firm segment sales exceed 90% of total firm sales. HERF is defined as:

$$Herf = \sum_{i=1}^5 \left(\frac{Sales_i}{Total\ Sales} \right)^2, \text{ where } Sales_i \text{ corresponds to the sales for segment } i. \text{ If any one segment accounts for more than 90\% of total sales,}$$

then we set the herfindahl equal to 1, making the firm a single segment firm (i.e., focused). So that the results can be consistently interpreted across the two diversification measures (i.e., SEG versus HERF), we use (1-HERF) in our regression analysis. INTEGINT is based Edison and Warnock's (2001) intensity of capital controls measure, where INTEGINT ranges from 0 to 1, with 1 indicating perfect integration (i.e., no restrictions) and 0 indicating complete segmentation (i.e., completely restricted). INTEGTV is based on Bekaert and Harvey's (1995) time varying capital market integration measure. We use a binary variable each year equal to 1 if the country is integrated and 0 if it is not integrated. CRR is *Institutional Investor's* country credit rating, which ranges from 0 to 100, with 100 representing the smallest default risk. GNPCAP is the annual per-capita GNP of the country where the firm is headquartered. French, German, and Scandinavian are dummy variables corresponding to each legal system. The dummy variables are equal to one for each corresponding classification and zero otherwise. Each model specification also includes year dummies for 1992-1995.

Table IV**Firm Level Regression Estimates of Excess Values Controlling for Ownership Concentration: 1991 - 1995**

Variables	Multi-Segment Dummy (SEG)				Herfindahl (HERF)	
	OLS (1)	OLS (2)	OLS (3)	Fixed Effects (4)	OLS (5)	Fixed Effects (6)
Constant	-0.044 (-1.098)	-0.058* (-1.755)	-0.424** (-2.037)	—	-0.479** (-3.311)	—
Multi-Segment Indicator (SEG or HERF)	-0.060* (-1.742)	-0.078 (-0.942)	-0.013* (-1.829)	-0.016 (-1.597)	-0.051** (-2.322)	-0.023 (-1.318)
Operating Income-to-Sales (OIS)	0.300*** (16.981)	0.301*** (16.985)	0.301*** (16.997)	0.300*** (16.940)	0.298*** (16.839)	0.299*** (16.909)
Capital Expenditures-to-Sales (CES)	0.160*** (12.231)	0.161*** (12.263)	0.160*** (12.219)	0.159*** (12.176)	0.159*** (12.089)	0.159*** (12.189)
Log of Total Assets (ASSETS)	0.015*** (4.928)	0.014*** (5.0172)	0.015*** (4.879)	0.015*** (5.001)	0.016*** (5.283)	0.015*** (5.360)
Integration: Intensity (INTEGINT*SEG or HERF)	-0.123* (-1.798)	-0.128** (-1.981)	—	-0.173** (-2.342)	-0.242** (-2.617)	-0.298** (-2.006)
Integration: Time-Varying (INTEGTV*SEG or HERF)	—	—	-0.094* (-1.784)	—	—	—
Country Credit Rating (CRR*SEG or HERF)	-0.001 (-0.662)	-0.001 (-0.598)	-0.008 (-0.687)	-0.002 (-1.182)	-0.006* (-1.862)	-0.002 (-0.919)
Per-Capita GNP (GNPCAP*SEG or HERF) ^a	-0.425** (-2.298)	-0.438** (-2.358)	-0.285* (-1.723)	-0.459** (-2.443)	-0.587** (-2.458)	-0.485** (-2.479)
French Legal System Dummy (FRENCH*SEG or HERF)	0.063** (2.697)	0.060** (2.510)	0.063** (2.628)	0.069** (2.810)	0.160** (2.973)	0.137** (2.642)
German Legal System Dummy (GERMAN*SEG or HERF)	0.119*** (5.360)	0.115*** (5.121)	0.099*** (4.820)	0.123*** (5.429)	0.274*** (5.651)	0.253*** (5.279)
Scandinavian Legal System Dummy (SCAND*SEG or HERF)	0.070** (1.954)	0.073** (2.026)	0.067* (1.808)	0.064* (1.733)	0.060 (0.785)	0.094 (1.276)
Ownership Concentration < 10 (OWN0to10)	0.556*** (3.947)	0.541*** (3.840)	0.547*** (3.879)	0.547*** (3.873)	0.565*** (4.009)	0.548*** (3.890)
Ownership Concentration 10-30 (OWN10to30)	-0.305*** (-3.932)	-0.205** (-2.386)	-0.209** (-2.433)	-0.208** (-2.415)	-0.229** (-2.697)	-0.221** (-2.598)
Ownership Concentration > 30 (OWNover30)	-0.046* (-1.699)	-0.085* (-2.665)	-0.084** (-2.647)	-0.085** (-2.660)	-0.068** (-2.192)	-0.067** (-2.151)
Ownership Concentration 10-30 interacted (OWN10to30*SEG or HERF)	—	-0.301** (-2.689)	-0.285** (-2.555)	-0.290*** (-2.586)	-0.541** (-2.297)	-0.561** (-2.386)
Ownership Concentration > 30 interacted (OWNover30*SEG or HERF)	—	0.127** (2.155)	0.134** (2.289)	0.112* (1.889)	0.109 (0.864)	0.130 (1.040)
Adjusted R ²	0.038	0.041	0.037	0.043	0.037	0.038
Number of Observations	28,886	28,886	27,658	28,886	28,886	28,886

Significant at 1 percent (***), 5 percent (**), and 10 percent (*) levels. ^a coefficient estimate x 10⁻⁵.

Table IV continued

Regression estimates are from 1991-1995. Excess value is defined as the natural logarithm of the ratio of a firm's market-to-sales ratio to its imputed market-to-sales ratio. Firms with excess values that are greater than four or less than one-fourth are eliminated from the sample. The diversification dummy, SEG, is equal to one for multi-segment firms and zero otherwise. Multi-segment firms are defined as firms that operate in two or more two-digit SIC code industries and no firm segment sales exceed 90% of total firm sales. HERF is defined as:

$Herf = \sum_{i=1}^5 \left(\frac{Sales_i}{Total\ Sales} \right)^2$, where $Sales_i$ corresponds to the sales for segment i . If any one segment accounts for more than 90% of total sales,

then we set the herfindahl equal to 1, making the firm a single segment firm (i.e., focused). So that the results can be consistently interpreted across the two diversification measures (i.e., SEG versus HERF), we use (1-HERF) in our regression analysis. INTEGINT is based Edison and Warnock's (2001) intensity of capital controls measure, where INTEGINT ranges from 0 to 1, with 1 indicating perfect integration (i.e., no restrictions) and 0 indicating complete segmentation (i.e., completely restricted). INTEGTV is based on Bekaert and Harvey's (1995) time varying capital market integration measure. We use a binary variable each year equal to 1 if the country is integrated and 0 if it is not integrated. CRR is *Institutional Investor's* country credit rating, which ranges from 0 to 100, with 100 representing the smallest default risk. GNPCAP is the annual per-capita GNP of the country where the firm is headquartered. French, German, and Scandinavian are dummy variables corresponding to each legal system. The dummy variables are equal to one for each corresponding classification and zero otherwise. Worldscope provides firm level ownership data that consists of reported cases where an individual or institution holds at least five percent of a company's common stock. Summing up these reported holdings, we obtain ownership concentration. OWN0to10: = *total ownership* if total ownership < 0.10, = 0.10 if total ownership \geq 0.10; OWN10to30: = 0 if total ownership < 0.10, = *total ownership minus 0.10* if $0.10 \leq$ total ownership < 0.30, = 0.20 if total ownership \geq 0.30; OWNover30: = 0 if total ownership < 0.30, = *total ownership minus 0.30* if total ownership \geq 0.30. Each model specification also includes year dummies for 1992-1995.