

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

by

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Abstract

Using a database of more than 8,000 companies from 35 countries, we find that the value of corporate diversification is negatively related to the level of capital market development. Among high-income countries, where capital markets are well developed, we find a significant diversification discount. By contrast, for the lower income 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 the value of corporate diversification varies with legal systems. 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. 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.

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 (1996b) Scharfstein and Stein (1997), 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. On one level, the agency costs accompanying diversification may vary systematically across countries and legal systems. At the same time, Khanna and Palepu (2000) argue that the relative costs and benefits of corporate diversification depend critically on the “institutional context” in

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.

which the firm operates. The institutional context includes the financial, legal, and regulatory environment. In a similar vein, LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997) show that different legal systems provide investors with varying degrees of protection which, in turn, affect the level of economic and capital market development.⁴ These results also suggest that the value of corporate diversification is related to the legal system. 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 costly or impossible to raise external capital, either because of imperfect information or incomplete capital markets.⁵

A firm's access to external capital depends on its ability to obtain domestic and/or foreign capital. Consequently, the extent to which capital markets are developed within the country where the firm operates, and the extent to which that country is able and/or willing to attract foreign capital, will both have a strong influence on a firm's ability to raise capital. We would expect that internal capital markets are most valuable among firms and economies where it is costly to obtain external 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 where legal systems provide limited protection to investors. 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 markets are less developed.⁶ In particular, we would expect to see smaller

⁴ Demirgüç-Kunt and Maksimovic (1996) also find that legal systems affect growth rates and the ability to enter into long-term financial contracts. Desai (1997), moreover, finds that multinational firms employ internal capital markets to overcome the higher costs of external finance associated with weaker creditor rights in lesser developed markets.

⁵ 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.

⁶ This argument might also suggest that the value of diversification within a given country may decline over time as the country's capital markets become more developed. Servaes (1996), Klein (1998), and 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.

diversification discounts, and perhaps even diversification premiums, among firms that operate in less developed markets.

To date, the international evidence regarding corporate diversification has been limited. One notable exception is the recent work by Lins and Servaes (1999). Looking at a sample of firms from Germany, Japan, and the United Kingdom in 1992 and 1994, they 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.⁷

Also notable is the recent work by Khanna and Palepu (2000). They 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.

In this paper, we investigate the link between capital market development and the value of corporate diversification. To address this issue more extensively, we have assembled 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. In addition, we test whether the gain or loss that results from diversification is systematically related to the level of capital market development.

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

⁷ In a more recent paper, Lins and Servaes (1998) use data from 1995 to investigate the value of corporate diversification for Hong Kong, India, Indonesia, Malaysia, Singapore, South Korea, and Thailand. They find that for six of their seven countries, there is no statistically significant diversification discount -- only for South Korea did they find a diversification discount that was statistically different from zero.

varies with the degree of capital market development. Among high-income countries, where capital markets are well developed, 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 lower income countries, 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) 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.

Lastly, we find that our results are robust with respect to controlling for the agency costs associated with concentrated ownership, differences in accounting rules across countries, and various measures of capital market development and the legal environment.

The rest of the paper proceeds as follows. Section II reviews the connection between capital market development, economic development, and legal systems. We also describe the various economic development classifications and legal systems for each of the 35 countries in our sample. Section III describes our data and the methodology used to calculate the value of corporate diversification. The cross-country mean estimates of the value of corporate diversification are presented in Section IV. Regression results regarding the value of diversification after controlling for firm-specific characteristics are presented in Section V. In Section V, we also provide a number of robustness tests, including the effects of controlling for cross-firm and cross-country

differences in accounting practices. Section VI examines the links between the value of diversification and ownership structure, while Section VII provides a conclusion.

II. Corporate Diversification and Capital Market Development

One clear drawback of corporate diversification is that it creates another layer of potential agency problems within the firm. Internal politics and imperfect information within the firm may complicate the ability of senior managers to effectively allocate capital among the various lines of business that exist within a conglomerate [see, for instance, Rajan and Zingales (1996b), Scharfstein and Stein (1997), and Scharfstein (1998)]. Despite these costs, corporate diversification may still be beneficial. In some cases, combining different lines of business within the same organization may generate value-creating operating synergies. Diversification may also create financial synergies to the extent it reduces the cost of obtaining capital [see, for instance, Lewellen (1971), Stein (1997), Williamson (1975) and Hadlock, Ryngaert and Thomas (1998)].

The financial synergies arising from diversification are likely to vary with the level of capital market development. For example, Rajan and Zingales (1996a) suggest that there are important cross-country differences in access to capital markets. They demonstrate that the development of a country's financial sector reduces the cost of external finance. In demonstrating a link between financial development and economic growth, they show that firms operating in industries which are generally more reliant on external finance grow faster if they are established in a country that has a more developed financial system. These results are consistent with our main hypothesis that the value of diversification is greater in countries where capital markets are less developed.

At the same time, the agency costs of diversification are also likely to vary across firms and across countries. While it is difficult to directly measure these agency costs, a long-standing literature suggests that these costs (and therefore ultimately firm value) may be correlated with ownership structure [see, for example, Demsetz and Lehn (1985), Morck, Shleifer and Vishny (1988), Holderness and Sheehan (1988), and McConnell and Servaes (1990)]. Moreover, recent work by La Porta, Lopez-de-Silanes, and Shleifer (1999) and by Claessens, Djankov, Fan and Lang (1998, 2000) indicate that ownership structure as well as the correlation between ownership structure and firm value, vary

across countries and legal systems. While ownership concentration is likely to affect firm value, it remains an open question whether it also has an effect on the value of corporate diversification. In Section VI, we address the agency costs of diversification by explicitly controlling for ownership concentration among the subset of firms where these data are available.

Another factor that may attenuate the link between the value of corporate diversification and the degree of capital market development is the increased integration of global capital markets in recent years. Indeed, if capital markets are perfectly integrated, 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. Empirical studies on the degree of capital market integration performed for various markets and under varying assumptions have yielded mixed results [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), and Stulz (1999)]. Given these mixed results, the link between capital market development and the value of corporate diversification is ultimately an empirical question.

In order to test our main hypothesis, we need to measure capital market development across countries. Capital market development can be measured in a variety of ways including per-capita GNP, equity market capitalization relative to GNP, the number and dollar amount of per-capita initial public offerings, the ratio of public and private debt to GNP, and the relative size of the banking system.⁸ In our analysis, we rely on recent research which demonstrates that there is a strong link between capital market development and economic development [see, for example, Levine (1997), King and Levine (1993a, 1993b) and Rajan and Zingales (1996a)]. While the causation may be unclear, countries with higher levels of economic development (on the basis of traditional

⁸ King and Levine (1993a), Rajan and Zingales (1996a), and LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997) provide a more detailed discussion of these capital market development measures. The problem with many of these measures is a lack of comprehensive data. Furthermore, some of these other measures may provide a misleading depiction of the accessibility of external capital. For example, measures of equity market capitalization relative to GNP are typically low for many European countries, but most would argue that European firms have good access to external financial markets.

measures such as per-capita GNP) are likely to have a more extensive domestic capital markets and are also more likely or willing to obtain foreign capital.⁹

We primarily use two proxies to test whether capital market development influences the value of corporate diversification. First, relying on the link between capital market development and economic development, we use the World Bank's classification of economic development as a proxy for capital market development. Each year, the World Bank classifies countries into four categories: high income, upper-middle income, lower-middle income, and low income. This classification is largely based on the country's per-capita GNP. With this in mind, we also employ the country's per-capita GNP itself as a proxy for capital market development.¹⁰

In addition to these proxies, 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 capital market development. LLSV classify countries into four different legal systems: those with English, French, German, and Scandinavian origin.¹¹ 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

⁹ One potential problem with using per-capita GNP as a measure of capital market development is that some countries with vast natural resources may demonstrate high per-capita GNP, even though firms that operate in these markets have limited accessibility to external capital. None of the countries in our sample, however, fall into this category.

¹⁰ As additional measures of capital market development, we also use for each country the ratio of the stock market capitalization held by minorities plus the sum of bank debt of the private sector and outstanding non-financial bonds 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 ($IPOs/Pop$). These data are obtained from LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997). See Section V, sub-section C.

¹¹ From LLSV, we also obtain the law and order tradition (Rule of Law) in each country. See Section V, sub-section C.

diversification 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.

Table I summarizes the economic development and legal system classifications for each of the 35 countries in our sample. We use the legal classifications reported in LLSV. The 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. As indicated above, the World Bank classification largely coincides with per-capita GNP.

III. Data and Summary Statistics

A. Sample Construction

Our main data source is the Worldscope database.¹² Worldscope has complete 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 1995.¹³ 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.¹⁴ 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

¹² This databank is also used by LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997, 1998), Lins and Servaes (1999), Claessens, Djankov, Fan and Lang (1998, 2000), and LaPorta, Lopez-De-Silanes and Shleifer (1999).

¹³ We wish to thank Worldscope for providing us with machine-readable access to their databank.

¹⁴ Due to data limitations, we are unable to disentangle firms that may be diversified, but only report one line of business.

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.^{15,16}

B. Summary Statistics for the Single-segment and Multiple-segment Firms

Table II reports firm level summary statistics broken down by the level of economic development and the legal system in which the firm is headquartered. Panel A divides the firms according to their country's World Bank classification. Across the four classifications, diversified firms have a mean number of segments varying from just over 2.5 segments in the high-income countries to just under 3 segments in the upper-middle income countries. In virtually all cases, diversified firms are significantly larger than the focused firms in terms of both total assets and total capital. We also find that there is no consistent distinction in the leverage ratios between the single and multi-segment firms in our sample.¹⁷

Looking at the firm level characteristics for the high-income country group, we find that single-segment firms have a higher average market-to-sales ratio. This evidence is consistent with the results of Lang and Stulz (1994), Berger and Ofek (1995), and Lins

¹⁵ We also exclude firms where the actual value (imputed value) is more than four (one-fourth) times the imputed value (actual value) – see Section IV, sub-section A. 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 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.

¹⁶ 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).

¹⁷ Lins and Servaes (1999) also find no distinction in leverage ratios between focused and diversified firms, while Lewellen (1971), Kim and McConnell (1977), Comment and Jarrell (1995), and Berger and Ofek (1995) find that diversified U.S. firms have higher debt ratios.

and Servaes (1999), and provides broad evidence suggesting that single-segment firms are valued more highly than diversified firms. However, this result does not generalize to the lesser-developed countries. In two of the other three classifications (upper-middle and low-income), the diversified firms have a median market-to-sales ratio that is higher than that found for the focused firms. For the other two ratios, operating income-to-sales and capital expenditure-to-sales, there is no significant distinction between the single and multi-segment firms.

In Panel B, the firms are divided according to the legal system of the country in which they are headquartered. Once again, the results indicate that diversified firms are generally larger, although this difference does not appear to be significant for countries with a French legal system. Consistent with the results reported earlier, diversified firms generally have a lower market-to-sales ratio, which again provides indirect evidence that diversified firms trade at a discount relative to focused firms. We address this issue more completely in the next section where we directly estimate the value of diversification.

IV. 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

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

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

B. The Value of Diversification

Table III reports the excess value estimates for the single and multi-segment firms in our sample. Once again, the firms are classified according to each country's legal system and the World Bank's classification of economic development for each country.

The results in Panel A, where the firms are divided according to the World Bank classification, strongly suggest that the value of diversification is negatively correlated with the degree of economic development. Diversified firms in the most developed

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.

nations trade at a significant discount relative to focused firms. The median discount for the high-income group is 5.76 percent. By contrast, diversified firms in the low-income group trade at a significant *premium* of 3.80 percent relative to focused firms. This finding suggests that diversification may create net benefits among firms that operate in countries whose capital markets are not fully developed, which is consistent with the evidence from Indian business groups reported by Khanna and Palepu (2000).

One potential concern with the World Bank classification is that there are relatively few firms (particularly diversified firms) within the lower income groupings, and these firms come from a relatively small number of countries. For example, there are only three countries in our sample that are in the low-income group – China, India, and Pakistan. A concern that arises is that it may be difficult to sort out whether any demonstrated effects for this group are due to its low-level development, or to other country-specific factors. While we control for these effects more completely in the subsequent regression analysis, another way to get at this issue is to broaden the categories of economic development. Thus, in Panel B, we report similar excess values, but the countries are divided more broadly according to their per-capita GNP. In this classification, the lowest grouping also includes firms operating in Indonesia and the Philippines.

In Panel B, the mean and median excess values, using the broader per-capita GNP groupings, are very similar to statistics reported in Panel A using the World Bank classifications. Once again, 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 countries. Among these firms, we find a mean diversification premium of 8.41 percent and a median premium of 5.41 percent. The similarity between Panels A and Panel B confirms that the World Bank classifications are largely driven by differences in per-capita GNP.

In Panel C, we classify 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.

V. Regression Results

The results reported in Table III suggest that the degree of capital market development affects the value of corporate diversification. While these results provide an overall depiction of the value of diversification among various countries, 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 regression model for each of the thirty-five individual countries in our sample:²³

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

Excess value is defined to be the natural log of the ratio of the firm's market value to its imputed value. The diversification dummy (SEG) is equal to one for multi-segment firms and is otherwise zero. 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.

²³ Lang and Stulz (1994), Berger and Ofek (1995), and Lins and Servaes (1999) also estimate similar models.

A. Regression Results for the Individual Countries

The regression results for the individual countries are reported in Table IV. In 23 of the 35 countries, the estimated coefficient on the diversification dummy variable is negative. In 11 of these 23 countries, the coefficient is statistically significant, suggesting a diversification discount. In 12 of the 35 countries the coefficient is positive. In 4 of the 12 cases (Hong Kong, Norway, Pakistan and Singapore), this coefficient is positive and statistically significant, suggesting that there is a diversification premium for these countries, after controlling for firm-level characteristics.

As expected, we find that the estimated coefficients on the OIS (Operating Income/Sales) and CES (Capital Expenditures/Sales) variables are generally positive and frequently significant. These results confirm that firms that are more profitable and that have greater growth opportunities typically have higher market-to-sales ratios. The signs on the estimated coefficients for the log of asset variable vary considerably across the different countries. The previous evidence on this variable is also 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 relation. Although not reported, the annual dummy coefficients indicate that there is little time variation in the excess values, after controlling for firm characteristics.

The estimated coefficients on the diversification dummy appear to be reasonable and are generally well within the ranges found in earlier studies. Among U.S. firms, we find a diversification discount of 13.2 percent, which is similar to the 14.4 percent found by Berger and Ofek (1995) over an earlier time period 1986-1991. For Germany, we find no evidence of a statistically significant diversification discount or premium, confirming the conclusions reached by Lins and Servaes (1999). Lins and Servaes also found a diversification discount for Japan of roughly 10 percent for both 1992 and 1994. Looking at a broader set of firms, we find a statistically significant diversification discount for Japan of 4 percent, which is smaller than their estimate.²⁴ Likewise, for the United Kingdom, Lins and Servaes (1999) found a 15 percent discount. Looking at a

²⁴ Lins and Servaes' (1999) estimates for Japan did not include CES because many Japanese firms did not report CES. We obtain results that are more similar to Lins and Servaes when we also eliminate the CES criterion.

significantly larger sample, we also find a discount for the United Kingdom. Our estimated discount of 7 percent is smaller, but it remains highly significant.

As indicated above, most of the other diversification coefficients appear to be of a similar magnitude to those reported for the United States, Japan, Germany and the United Kingdom. However, the point estimates for a couple of countries do stand out. For example, the diversification discount in Turkey is relatively large and marginally statistically significant, while in Spain the discount is both relatively large and significant at the 1 percent level. At the other extreme, we find a large diversification premium in both Pakistan and the Philippines, although the premium for the Philippines is not statistically different from zero. While in each of these cases the magnitude of the estimates appears to be large, the existence of a diversification discount or premium is generally consistent with our predictions.

When we pool the firms in our sample along two dimensions related to the capital market development of the country in which the firms are headquartered (the World Bank's classification of development and the country's legal system), we find that there is a significant diversification discount of 8.2 percent among the high-income countries.²⁵ Interestingly, however, there is no evidence of a significant diversification discount or premium for the firms that are not headquartered in a high-income country. For these firms, it appears that the benefits of diversification (operating synergies and the establishment of internal capital markets) roughly offset the costs of diversification. These findings suggest that while corporate focus generally makes sense in highly developed countries, its value may not extend worldwide in cases where external capital markets are less developed. In this regard, our results lend support to the conclusions reached by Khanna and Palepu (2000).

From the pooled legal system results (also not reported), we find that there is a strong relation between the legal system and the value of corporate diversification. In particular, the observed relations are consistent with our priors and are also consistent with the evidence found by LLSV (1997, 1998). We find that diversification

²⁵ This result is consistent with the findings of Berger and Ofek (1995), Lang and Stulz (1994), and Lins and Servaes (1999), and also reaffirms the summary statistics reported in Table III. This coefficient is highly significant with a t-statistic of -10.726.

significantly reduces value in countries that have a legal system with English, French, or Scandinavian origin. As expected, the value of diversification is most negative for firms that operate in countries with an English legal system. Finally, controlling for OIS, CES, size, and annual variations, we find neither a diversification discount nor premium among the firms that operate in markets with a German legal system.

B. Firm-level Regression Results

To further test the link between capital market development and the value of diversification, we also estimate firm-level regressions that include all of the firms from each country and for each year of our sample period. In each case, the dependent variable is the firm's excess value. These regressions, reported in Table V, control for the firm-level characteristics outlined above (OIS, CES, and firm size). The regressions also include variables reflecting (1) the level of economic development of the country in which the firm is headquartered as measured by the country's World Bank classification or per-capita GNP; (2) the country's legal system; (3) year dummies to take into account time variation in the value of diversification.

The OLS regression estimates reported in columns (1) – (3) of Table V and the fixed-effects estimates reported in column (4) are for the full sample of firms (single-segment and multi-segment firms), where the dummy variable, SEG, equals 1 if the firm has multiple segments and equals 0 otherwise. The coefficient on SEG, therefore, indicates the value of diversification after controlling for the firm-specific, time-specific, and country-specific factors. The regression specification reported in the first column only controls for the firm-specific and time-specific factors. This specification is the same one estimated for the country-level regressions reported in Table IV. The second specification, reported in column (2), also includes dummy variables corresponding to the World Bank classification of economic development and the legal system of the country in which the firm is headquartered. In column (3), the regression specification includes the legal system dummy variables and the level of the country's per-capita GNP as a continuous variable alternative to the discrete World Bank classification dummy variables. Column (4) provides fixed-effects estimates of the third specification.

The results indicate that across all firms, diversification has a negative impact on firm value.²⁶ In column (1), the estimated diversification discount for the full sample of firms is 7.8 percent. When we control for economic development and the legal system with dummy variables, in column (2), the diversification discount for high-income countries with an English legal system is 9.6 percent. Looking at the estimates in column (2), we also see that excess value is significantly higher (at the 5 percent level) if the firm is from a country that is classified as low-income by the World Bank (G1*SEG). In column (3), we also see that the value of diversification is negatively related to per-capita GNP, in that there is a statistically significant negative relation (at the 1 percent level) between excess value and the variable which interacts per-capita GNP with the diversification dummy, SEG. In terms of economic significance, the estimated per-capita GNP coefficient in column (3) implies a discount for the U.S. of 10.5 percent ($-0.426 \times 10^{-5} \times 24,758$).²⁷

The legal system dummies 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 is the most positive. 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.

²⁶ In each case, the adjusted R²'s are somewhat lower than those of the individual country estimates in Table IV. While there are clear benefits to pooling the countries, there is also more noise introduced.

²⁷ As an additional robustness check, we also estimated the regression models corresponding to columns (1) – (4) using only the multi-segment firms. For the multi-segment firm regressions, we included as our measure of diversification the number of segments, SEGN, as an additional explanatory variable in place of SEG. Similarly, in these regressions, each of the interacted variables was interacted with the number of segments (as opposed to interacting with SEG). The results were very similar to those reported for the entire sample. In particular, in all cases there was a significant negative correlation between excess value and the number of segments. We also found that the value of diversification was negatively related to per-capita GNP and that the estimated coefficients interacting the diversification variable with the World Bank income group dummies and with the legal system dummies had the same signs, and were generally even more significant than the results reported for the entire sample.

As a robustness check, we also estimate the third specification using fixed-effects.²⁸ These results are reported in column (4). Similar to the OLS estimates, we find that for the diversified firms there is a statistically significant negative link (at the 1 percent level) between per-capita GNP and excess value. We also find that the German legal system provides the smallest diversification costs. As a further robustness check, we also estimated columns (1)-(3) on a year-by-year basis. Once again, the estimates (not reported) confirm the negative link between per-capita GNP and excess value and the variation of excess value across legal systems.²⁹

C. 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.

²⁸ The fixed-effects estimates for the first specification in column (1) are similar to those reported for the OLS estimates. For the second specification in column (2), several of the coefficients can not be estimated using fixed-effects due to singularity of the data. The singularity arises from the inclusion of discrete dummy variables for development and the legal system that persist over time.

²⁹ The development and legal system results are significant in 1992-1994. In 1995, the results are marginally significant. In 1991, the results are largely insignificant because there are too few low-income country firm observations to get precise estimates.

In our regression analysis, we also employ the capital market development and legal environment proxies used by LLSV.³⁰ These results are shown in Table VI. In the first column, we provide firm level OLS regression estimates using the additional proxies, while the second column provides fixed-effects estimates. Interestingly, we find 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 reported in the second column are consistent with the OLS results shown in the first column.

Due to the high correlation between per-capita GNP and Rule of Law (0.76), we eliminate per-capita GNP from the specification shown in the third column. In this instance, the Rule of Law becomes highly significant, while the remaining coefficient estimates are similar to those reported in the first column. The fixed-effects estimates reported in the fourth column are also consistent with the OLS results where per-capita GNP is eliminated from the specification. All in all, we find that value of corporate diversification varies with the level of capital market development and legal environment.

D. 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.³¹

Whenever a parent company owns a majority stake in another firm, the market value of the consolidated firm includes the value of its ownership stake in the subsidiary. However, depending on the accounting practices employed, the sales of the subsidiary

³⁰ 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.

³¹ 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.

may or may not be fully included as part of the company's consolidated sales. For firms that have a controlling stake in another firm, there are two basic methods of preparing consolidated financial statements. Under the proportional method, consolidated sales include only that portion of the subsidiary's sales that reflects the parent's ownership percentage in the subsidiary.³² In this case, the market-to-sales ratio is not biased. Alternatively, under the full consolidation method, consolidated sales include all of the subsidiary's sales, regardless of the parent's ownership percentage. Clearly, this accounting practice biases downward the market-to-sales ratio. In these circumstances, the net income earned by the minority shareholders is subtracted out of the consolidated firm's total income in order to arrive at consolidated net income. Consequently, whenever the minority shareholders' share of subsidiary sales is a significant portion of consolidated sales, we would expect that the market-to-sales ratio would be biased downward under the full consolidation method.

Another potential problem arises when a company (Company A) owns a minority interest in another company (Company B), but does not choose to include its proportion of Company B's sales on its (Company A's) income statement.³³ In these circumstances, Company A's market-to-sales ratio would be biased upward, since the effects of its ownership in Company B would be included in its market value but not in its sales. In this situation, Company A's income from Company B would show up as investment income from unconsolidated affiliates. Therefore, whenever investment income from unconsolidated affiliates is a significant portion of net income, the market-to-sales ratio is likely to be upward biased.

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

³² When this approach is used, the remainder of the subsidiary's sales is attributed to the minority interest shareholders.

³³ When a company owns a 20%-50% stake in another company, it may have the option to include its proportion of the sales on its income statements. This approach is referred to as the "proportional method." Alternatively, under the "equity method," the company does not include the sales on its income statement and instead treats it as an investment in an unconsolidated affiliate. The "cost method" is generally used when a company has a stake that is less than 20%. The ability to select a particular accounting treatment varies across countries and across industries. We thank the referee and Chuck McDonald for bringing these issues to our attention.

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. After eliminating these firms, the link between per-capita GNP 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.

VI. Ownership and the Value of Corporate Diversification

The results discussed in Section V suggest that corporate diversification is less costly/more beneficial for firms that are headquartered in countries where capital markets are less developed. A potential problem with this conclusion is that, so far, we have not explicitly 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 (1988), and McConnell and Servaes (1990)] and that ownership structure varies across countries and legal systems [e.g., La Porta, Lopez-de-Silanes and Shleifer (1997, 1998), LaPorta, Lopez-De-Silanes and Shleifer (1999), and Claessens, Djankov, Fan and Lang (1998, 2000)]. 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.

The exact link between ownership structure and firm value, however, is not entirely clear. On one hand, it is widely acknowledged that concentrated ownership is likely to reduce the conflicts that arise when there is a separation between managers and stockholders. This link suggests a positive relation between firm value and ownership concentration. On the other hand, concentrated ownership provides large investors with opportunities to exploit minority shareholders, thereby suggesting at least for some range of values a negative relation between firm value and ownership concentration. In a recent study, Holderness and Sheehan (1998) conclude that in the United States, legal constraints often effectively limit the actions of majority shareholders – but it is not clear to what extent their conclusions extend outside the U.S. Indeed, La Porta, Lopez-de-Silanes and Shleifer (1999) suggest that the costs of concentrated ownership may be particularly meaningful in less developed countries where the legal protection provided to minority shareholders is often quite limited.

An additional concern is that even if ownership concentration levels are similar for both focused and diversified firms, ownership concentration may still be important if it has a differential effect on the value of focused and diversified firms. This concern is particularly relevant if the costs associated with ownership concentration are lower for diversified firms in less developed capital markets. If this scenario is correct, it raises the possibility that cross-country variations in the value of corporate diversification can be explained by differences in capital market development as well as by differences in ownership structure. For example, smaller diversification discounts (or premiums) in less developed countries may be due to the fact that diversification is more beneficial in these markets because capital markets are less developed, enhancing the value of internal capital markets. Alternatively, smaller diversification discounts (or premiums) in less developed countries may reflect the fact that ownership concentration is generally higher in these countries, resulting in potentially lower agency costs associated with corporate diversification. Clearly, these two interpretations are not necessarily mutually exclusive, but they do again suggest the need to control for ownership concentration when calculating the value of corporate diversification.

A. *Ownership Data*

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.³⁴ 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.³⁵ To insure that this reporting bias does not affect the qualitative nature of our results, we use two different methods to classify the unreported ownership data. In the first method, we treat the unreported observations as missing values. Since many of these missing observations are likely to be for firms without significant ownership concentration, this approach creates an upward bias in the level of ownership concentration. In the second method, we assign a zero value to the unreported observations. Using this method, the reported levels of ownership concentration are downward biased.

The descriptive statistics on ownership concentration are summarized in Table VII. The results in Panel A treat the unreported observations as missing values, while the results in Panel B treat the unreported observations as zero values. It follows that the average ownership concentration levels reported in Panel B are systematically lower than those reported in Panel A.

³⁴ In addition to total ownership concentration, Lins and Servaes (1998) 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.

³⁵ 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 (1998) and Claessens, Djankov, Fan and Lang (1998). However, it is important to note that Worldscope provides only limited ownership data for several countries in our sample.

Three major conclusions emerge from Table VII. First, there does appear to be an ownership reporting bias in the Worldscope data. For example, in the low-income countries, concentrated ownership is reported for only 14% of the firms, whereas this number is 65% for the firms in the high-income countries and 78% for the firms in the upper-middle income countries. Second, consistent with previous papers, we do find that average ownership concentration does vary across countries and legal systems. Generally, we find ownership concentration is higher in less developed markets and in markets where the legal system tends to provide less protection to investors.³⁶ Third, we find that while ownership concentration varies across regions and legal systems, within each region and legal system, unconditional ownership concentration levels are similar for diversified and focused firms.³⁷ This result tends to suggest that our earlier results on the effects of capital market development on the value of corporate diversification are not driven solely by differences in ownership concentration. Nevertheless, in order to more clearly disentangle the corresponding sources of any diversification discounts or premiums, we need to control for ownership concentration in our regression analysis.

B. 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:³⁸

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

³⁶ Putting these two conclusions together also leads us to suspect that among the 35% of firms in the high income category where ownership data is not reported, a relatively high percentage of these firms may truly have disparate ownership and that ownership data is truly missing for only a small subset of these firms. Alternatively, when we consider the 86% of low income firms with no reported ownership data, we would suspect that a higher percentage of these observations are truly missing.

³⁷ Statistical tests for differences in the average level of ownership concentration between the focused and diversified firms are not statistically significant from zero for any of the groups.

³⁸ 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.

$$\begin{aligned} \text{OWN}_{10\text{to}30} &= 0 \text{ if total ownership} < 0.10, \\ &= \text{total ownership} \text{ minus } 0.10 \text{ if } 0.10 \leq \text{total ownership} < 0.30, \\ &= 0.20 \text{ if total ownership} \geq 0.30; \end{aligned}$$

$$\begin{aligned} \text{OWN}_{\text{over}30} &= 0 \text{ if total ownership} < 0.30, \\ &= \text{total ownership} \text{ minus } 0.30 \text{ if total ownership} \geq 0.30. \end{aligned}$$

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 $\text{OWN}_{10\text{to}30}$ and $\text{OWN}_{\text{over}30}$ 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.³⁹ Generally, we would expect a positive link between firm value and $\text{OWN}_{0\text{to}10}$. Within this range, increases in ownership concentration are likely to improve managerial incentives without dramatically increasing the risks of managerial entrenchment and expropriation. For ownership concentration levels beyond ten percent, the expected results are less clear. For these firms, the benefits of increased ownership may be more than offset by the costs resulting from increased managerial entrenchment and by the potential for the expropriation of minority shareholders. Consequently, the link between $\text{OWN}_{10\text{to}30}$ and $\text{OWN}_{\text{over}30}$ and firm value is less clear.

The firm level regression estimates that control for ownership concentration are reported in Table VIII. The first three columns [(1) - (3)] contain the results where the unreported observations for ownership concentration are treated as missing. In the last three columns [(4) - (6)], these observations are treated as zeros. The most striking conclusion that emerges from the results in Table VIII is that even after controlling for ownership concentration, there is still a strong link between the value of corporate diversification and both the legal system dummies and per-capita GNP. Moreover, the sign and magnitudes of the estimated coefficients are quite similar to those reported earlier in Tables V and VI.

While it is not the primary focus of our analysis, the estimated coefficients on ownership concentration are still of considerable interest. The estimated coefficients vary somewhat depending on the treatment of the unreported ownership observations.

³⁹ Note that due to singularity, we do not include $\text{OWN}_{0\text{to}10} * \text{SEG}$ in our specification.

Nevertheless, a few basic conclusions emerge. First, for low levels of ownership concentration, there is a positive link between ownership concentration and excess value, although this link is significant only for the cases where we treat the unreported ownership observations 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, in columns (5) and (6), 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. It is notable, however, that these results do not hold up in columns (2) and (3), where the unreported ownership observations are treated as zeros.

All in all, the results suggest that there is a link between ownership concentration and excess value, and that this link may be somewhat different for focused and diversified firms. However, the exact nature of these links depends critically on the specification and on the treatment of the unreported ownership observations. It is also important to reiterate that regardless of the specification, there is strong evidence that the value of corporate diversification varies depending on the legal system and the level of capital market development.

VIII. Conclusion

Using a large database of more than 8,000 companies from 35 countries, we analyze the link between capital market development and the value of corporate diversification. We find evidence that the value of corporate diversification is negatively related to the level of capital market development. Among high-income countries where capital markets are well developed, 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. 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 have argued that cross-country variations in the value of diversification vary with the level of capital market 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.

Finally, while we do not address this issue directly, our results indirectly suggest that global capital markets are not perfectly integrated. Firms in countries that have less developed capital markets appear to face a higher cost of external capital. One way to

mitigate these higher costs is to adjust the optimal organizational structure. More specifically, for these firms, the establishment of an internal capital market within a diversified firm may more than offset the costs of corporate diversification. Clearly, however, there may be other ways to address these distortions. For example, Lins and Servaes (1999) stress the importance of concentrated ownership. Other alternatives may include the establishment of private banking relationships and/or the establishment of the type of interconnected business groups described by Khanna and Palepu (2000). These issues await future research.

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Table I
Economic Development and Legal System Measures by Country: 1991 - 1995

Country	Average Per-Capita GNP (US \$)	World Bank Market Classification	Legal System Classification
Australia	17,808	High Income	English Origin
Austria	23,666	High Income	German Origin
Brazil	3,134	Upper-Middle Income	French Origin
Canada	20,098	High Income	English Origin
Chile	3,206	Upper-Middle Income ^a	French Origin
China	498	Low Income	Other
Denmark	26,936	High Income	Scandinavian Origin
Finland	21,090	High Income	Scandinavian Origin
France	22,808	High Income	French Origin
Germany	24,188	High Income	German Origin
Hong Kong	18,588	High Income	English Origin
India	316	Low Income	English Origin
Indonesia	792	Lower-Middle Income ^a	French Origin
Ireland	13,070	High Income	English Origin
Italy	19,500	High Income	French Origin
Japan	32,232	High Income	German Origin
South Korea	7,830	Upper-Middle Income	German Origin
Malaysia	3,180	Upper-Middle Income ^a	English Origin
Mexico	3,530	Upper-Middle Income	French Origin
Netherlands	21,322	High Income	French Origin
New Zealand	13,030	High Income	English Origin
Norway	26,812	High Income	Scandinavian Origin
Pakistan	432	Low Income	English Origin
Philippines	878	Lower-Middle Income	French Origin
Portugal	8,350	High Income ^a	French Origin
Singapore	20,266	High Income	English Origin
South Africa	2,890	Upper-Middle Income ^a	English Origin
Spain	13,430	High Income	French Origin
Sweden	24,960	High Income	Scandinavian Origin
Switzerland	36,800	High Income	German Origin
Taiwan	10,874	High Income	German Origin
Thailand	2,110	Lower-Middle Income	English Origin
Turkey	2,404	Lower-Middle Income ^a	French Origin
United Kingdom	17,974	High Income	English Origin
United States	24,758	High Income	English Origin

Average per-capita GNP (US \$) is the five year arithmetic average of per-capita GNP from 1991–1995. The World Bank income classifications are obtained from the *World Tables*. 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).

^a The World Bank income 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
Firm Level Summary Statistics by Development Classifications and Legal System for
Single-Segment and Multi-Segment Firms: 1991 - 1995

Panel A: Firm Level Characteristics by World Bank Market Classifications

Firm Level Characteristics by Development Classifications	Single-Segment Firms		Multi-Segment Firms		Statistical Differences (p-values)	
	Median	Mean	Median	Mean	Median	Mean
High Income						
Number of Segments	1.000	1.000	2.000	2.554	0.000	0.000
Total Assets (mil \$)	276	1755	641	1906	0.000	0.015
Total Capital (mil \$)	180	1727	380	1844	0.000	0.126
Leverage Ratio	0.265	0.326	0.287	0.374	0.714	0.633
Operating Income/Sales	0.117	0.134	0.104	0.115	0.608	0.527
Capital Expenditure/Sales	0.049	0.111	0.046	0.078	0.872	0.389
Market/Sales	1.042	1.738	0.844	1.211	0.073	0.054
Observations	17,366	17,366	8,159	8,159		
Upper-Middle Income						
Number of Segments	1.000	1.000	3.000	2.958	0.000	0.000
Total Assets (mil \$)	435	1620	931	2513	0.000	0.000
Total Capital (mil \$)	460	1453	664	1776	0.047	0.000
Leverage Ratio	0.149	0.217	0.180	0.225	0.526	0.782
Operating Income/Sales	0.148	0.167	0.145	0.166	0.813	0.938
Capital Expenditure/Sales	0.083	0.172	0.090	0.167	0.726	0.739
Market/Sales	1.385	2.348	1.575	1.732	0.107	0.061
Observations	1,209	1,209	336	336		
Lower-Middle Income						
Number of Segments	1.000	1.000	3.000	2.684	0.000	0.000
Total Assets (mil \$)	329	1769	610	2571	0.013	0.000
Total Capital (mil \$)	209	1571	412	1531	0.000	0.562
Leverage Ratio	0.174	0.268	0.199	0.231	0.732	0.824
Operating Income/Sales	0.185	0.195	0.190	0.205	0.824	0.879
Capital Expenditure/Sales	0.101	0.227	0.067	0.255	0.213	0.307
Market/Sales	1.595	2.459	1.295	2.371	0.114	0.331
Observations	937	937	79	79		
Low Income						
Number of Segments	1.000	1.000	3.000	2.833	0.000	0.000
Total Assets (mil \$)	284	1452	838	2480	0.000	0.000
Total Capital (mil \$)	174	1101	545	1659	0.000	0.000
Leverage Ratio	0.352	0.388	0.425	0.393	0.431	0.917
Operating Income/Sales	0.149	0.172	0.127	0.142	0.267	0.169
Capital Expenditure/Sales	0.075	0.168	0.084	0.188	0.698	0.544
Market/Sales	1.402	1.948	1.414	1.711	0.329	0.122
Observations	710	710	90	90		

Table II continued

Panel B: Firm Level Characteristics by Legal Systems

Firm Level Characteristics by Legal Systems	Single-Segment Firms		Multi-Segment Firms		Statistical Difference (p-values)	
	Median	Mean	Median	Mean	Median	Mean
	English Origin					
Number of Segments	1.000	1.000	2.000	2.553	0.000	0.000
Total Assets (mil \$)	218	1441	380	2480	0.018	0.000
Total Capital (mil \$)	148	931	249	1447	0.038	0.000
Leverage Ratio	0.264	0.334	0.283	0.392	0.411	0.231
Operating Income/Sales	0.129	0.148	0.115	0.128	0.483	0.525
Capital Expenditure/Sales	0.050	0.122	0.046	0.086	0.629	0.362
Market/Sales	1.181	1.937	0.962	1.468	0.107	0.049
Observations	14,931	14,931	6,207	6,207		
French Origin						
Number of Segments	1.000	1.000	2.000	2.687	0.000	0.000
Total Assets (mil \$)	433	1780	467	3415	0.183	0.000
Total Capital (mil \$)	269	1252	210	1486	0.216	0.064
Leverage Ratio	0.191	0.240	0.249	0.266	0.189	0.502
Operating Income/Sales	0.128	0.125	0.099	0.109	0.232	0.471
Capital Expenditure/Sales	0.058	0.140	0.047	0.078	0.398	0.106
Market/Sales	0.874	2.096	0.630	0.863	0.153	0.000
Observations	2,378	2,378	843	843		
German Origin						
Number of Segments	1.000	1.000	2.000	2.534	0.000	0.000
Total Assets (mil \$)	409	2370	759	5241	0.052	0.000
Total Capital (mil \$)	272	1479	573	2373	0.000	0.000
Leverage Ratio	0.279	0.313	0.310	0.330	0.191	0.572
Operating Income/Sales	0.087	0.098	0.074	0.075	0.517	0.449
Capital Expenditure/Sales	0.059	0.096	0.054	0.074	0.836	0.524
Market/Sales	0.845	1.375	0.708	0.895	0.121	0.051
Observations	2,108	2,108	1,290	1,290		
Scandinavian Origin						
Number of Segments	1.000	1.000	3.000	2.804	0.000	0.000
Total Assets (mil \$)	185	1198	343	2184	0.039	0.000
Total Capital (mil \$)	160	607	260	1503	0.057	0.000
Leverage Ratio	0.331	0.362	0.349	0.353	0.467	0.682
Operating Income/Sales	0.115	0.127	0.101	0.113	0.735	0.647
Capital Expenditure/Sales	0.058	0.140	0.054	0.111	0.698	0.416
Market/Sales	0.891	1.319	0.747	1.021	0.247	0.126
Observations	683	683	368	368		

In Panel A, firms are classified each year by their country's World Bank market classification, while in Panel B firms are classified by their country's legal system. 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. The leverage ratio is defined as book value of debt divided by total assets. Market-to-sales is defined as the ratio of a firm's market value of equity plus book value of debt to its total sales.

Table III
Excess Values by Development Groups, Broader Per-Capita GNP Groups and Legal Systems for Single-Segment and Multi-Segment Firms: 1991 - 1995

Panel A: Excess Values by World Bank Market Classification for Single-Segment and Multi-Segment Firms

Excess Values by Development Classification	Single-Segment Firms			Multi-Segment Firms			Statistical Differences (p-values)	
	Median	Mean	# Obs	Median	Mean	# Obs	Median	Mean
High Income	0.0000	0.0199	17,366	-0.0576	-0.0584	8,159	0.000	0.000
Upper-Middle Income	0.0000	0.0070	1,209	-0.0722	-0.0181	336	0.051	0.398
Lower-Middle Income	0.0000	0.0330	937	0.0863	0.0543	79	0.032	0.721
Low Income	0.0000	0.0100	710	0.0380	0.0945	90	0.161	0.005

Panel B: 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

Table III continued

Panel C: 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

In Panel A, firms are classified each year by their country's World Bank market classification, while in Panel B firms are classified by broader per-capita GNP groups.. In Panel C, firms are classified by their country's legal system. 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 IV
Country Level Regression Estimates of Excess Values: 1991 - 1995

Country	Constant	SEG	OIS	CES	ASSETS	Adj R ²	Obs
Australia	-0.520* (-1.810)	-0.152*** (-3.021)	0.192* (1.859)	0.328*** (4.236)	0.022 (1.464)	0.059	596
Austria	0.666 (0.942)	-0.211** (-1.970)	0.661** (2.163)	0.074 (0.252)	-0.035 (-1.063)	0.058	129
Brazil	-1.447*** (-4.417)	-0.075 (-0.700)	0.141 (0.730)	-0.031 (-1.511)	0.124*** (4.601)	0.080	245
Canada	-1.468*** (-7.616)	-0.059* (-1.665)	0.027 (0.430)	0.192*** (5.701)	0.073*** (7.413)	0.062	1,315
Chile	-1.128* (-1.830)	-0.289 (-1.300)	-0.016 (-0.534)	0.048*** (2.533)	0.053** (2.225)	0.091	118
China	0.392 (0.307)	0.221 (0.447)	0.065 (0.158)	0.275 (1.366)	-0.019 (-0.323)	0.000	78
Denmark	-0.165 (-0.398)	-0.063 (-0.937)	2.016*** (5.432)	0.619*** (3.925)	-0.003 (-0.163)	0.137	270
Finland	-0.356 (-1.291)	-0.016 (-0.282)	0.881*** (2.939)	0.448** (2.119)	0.012 (0.828)	0.075	209
France	-0.953*** (-4.924)	-0.085*** (-2.502)	-0.004 (-0.539)	0.052 (1.378)	0.052*** (5.821)	0.038	1,131
Germany	0.212 (1.270)	-0.050 (-1.568)	0.807*** (7.054)	0.223*** (3.370)	-0.009 (-1.094)	0.039	1,296
Hong Kong	-0.235 (-0.574)	0.145*** (2.786)	0.214 (1.176)	0.065 (0.838)	0.005 (0.271)	0.021	374
India	-1.940*** (-5.355)	-0.011 (-0.175)	2.184*** (9.863)	0.260*** (3.491)	0.080*** (5.335)	0.235	553
Indonesia	-1.927*** (-2.715)	-0.104 (-1.011)	0.400 (1.381)	0.236*** (2.892)	0.082*** (2.896)	0.117	218

Table IV continued

Country	Constant	SEG	OIS	CES	ASSETS	Adj R ²	Obs
Ireland	-1.646*** (-4.148)	-0.003 (-0.037)	0.377*** (2.543)	0.074*** (2.585)	0.084*** (3.858)	0.116	179
Italy	1.101* (1.917)	0.073 (1.099)	0.322 (0.948)	0.293 (0.978)	-0.041* (-1.935)	0.015	259
Japan	2.658*** (11.772)	-0.039* (-1.635)	2.908*** (12.204)	-0.697*** (-2.760)	-0.108*** (-12.588)	0.237	1,137
Malaysia	0.864** (2.484)	0.063 (1.274)	1.172*** (6.343)	0.121* (1.690)	-0.046*** (-2.583)	0.103	527
Mexico	-0.342 (-0.439)	-0.102 (-1.029)	0.168 (0.530)	0.412 (1.289)	0.007 (0.201)	0.021	108
Netherlands	-0.787*** (-2.819)	-0.040 (-0.798)	1.406*** (4.446)	-0.165 (-0.668)	0.039*** (2.839)	0.067	388
New Zealand	0.773 (1.408)	-0.214* (-1.942)	0.756** (2.511)	-0.584 (-0.549)	-0.446 (-1.579)	0.035	101
Norway	0.377 (0.757)	0.172** (2.145)	0.544*** (2.793)	0.347*** (4.889)	-0.023 (-0.945)	0.137	235
Pakistan	-0.269 (-0.380)	0.606*** (3.188)	0.868*** (2.694)	0.021 (0.083)	0.013 (0.406)	0.153	134
Philippines	-0.478 (-0.598)	0.430 (1.297)	0.064 (0.430)	0.116 (1.068)	0.021 (0.556)	0.000	97
Portugal	-1.205 (-1.166)	0.031 (0.094)	0.774* (1.902)	0.353 (0.886)	0.044 (1.057)	0.013	84
Singapore	-0.323 (-0.906)	0.132*** (2.570)	0.561*** (2.987)	0.110 (1.019)	0.004 (0.224)	0.064	368
South Korea	1.349** (2.011)	0.066 (1.057)	0.324 (1.000)	0.643*** (3.613)	-0.052** (-2.052)	0.053	264

Table IV continued

Country	Constant	SEG	OIS	CES	ASSETS	Adj R ²	Obs
South Africa	0.178 (0.423)	-0.072 (-1.032)	1.860*** (7.221)	0.411*** (4.710)	-0.030 (-1.452)	0.184	305
Spain	-0.393 (-0.800)	-0.307*** (-3.206)	0.327** (2.171)	0.104 (0.654)	0.013 (0.620)	0.043	320
Sweden	-0.963*** (-2.784)	-0.174*** (-3.066)	1.327*** (3.509)	-0.174 (-1.040)	0.048*** (3.093)	0.111	337
Switzerland	-1.067*** (-3.104)	0.016 (0.313)	1.180*** (4.623)	0.239 (1.144)	0.048*** (2.881)	0.107	358
Taiwan	0.697 (1.104)	0.170 (1.239)	0.743*** (3.521)	0.096 (0.566)	-0.032 (-1.208)	0.064	214
Thailand	-0.325 (-0.774)	-0.094 (-0.659)	0.069 (1.245)	0.126** (2.506)	0.021 (1.055)	0.022	460
Turkey	-1.114 (-0.901)	-0.688* (-1.653)	-0.201 (-0.531)	1.520*** (4.037)	0.033 (0.772)	0.247	67
United Kingdom	-0.572*** (-6.744)	-0.067*** (-3.734)	0.251*** (6.470)	0.575*** (10.742)	0.029*** (6.221)	0.056	4,951
United States	-0.250*** (-3.827)	-0.132*** (-10.548)	0.393*** (13.216)	0.596*** (15.383)	0.008** (2.475)	0.059	11,461

Significant at 1 percent (***), 5 percent (**), and 10 percent (*) levels.

We estimate the following regression model from 1991-1995 for each of the thirty-five individual countries in our sample:

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

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. OIS is defined as the firm's operating income-to-sales, while CES is the firm's capital expenditures-to-sales. Assets are defined as the natural logarithm of the firm's total assets. The regressions also include year dummies for 1992-1995.

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

Variables	OLS (1)	OLS (2)	OLS (3)	Fixed Effects (4)
Constant	-0.270*** (-10.677)	-0.232*** (-8.726)	-0.240*** (-9.040)	—
Multi-Segment Dummy (SEG)	-0.078*** (-10.748)	-0.096*** (-11.584)	-0.004 (-0.201)	0.037 (1.048)
Operating Income-to-Sales (OIS)	0.042*** (6.540)	0.043*** (6.702)	0.043*** (6.701)	-0.006 (-0.372)
Capital Expenditures-to-Sales (CES)	0.226*** (18.982)	0.226*** (18.982)	0.225*** (18.898)	0.144*** (11.733)
Log of Total Assets (ASSETS)	0.014*** (11.424)	0.012*** (9.343)	0.012*** (9.565)	-0.027*** (-5.571)
Per-Capita GNP (GNPCAP*SEG) ^a	—	—	-0.426*** (-4.252)	-0.682*** (-4.423)
Low Income Dummy (G1*SEG)	—	0.142** (2.398)	—	—
Lower-Middle Income Dummy (G2*SEG)	—	0.036 (0.564)	—	—
Upper-Middle Income Dummy (G3*SEG)	—	0.002 (0.063)	—	—
French Legal System Dummy (FRENCH*SEG)	—	0.052*** (2.509)	0.047** (2.268)	-0.033 (-0.703)
German Legal System Dummy (GERMAN*SEG)	—	0.072*** (4.030)	0.099*** (5.170)	0.111*** (2.763)
Scandinavian Legal System Dummy (SCAND*SEG)	—	0.044 (1.449)	0.058* (1.919)	0.013 (0.226)
Adjusted R ²	0.025	0.025	0.026	0.027
Number of Observations	28,886	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. SEGN is the number of firm segments defined at the two-digit SIC code level. GNPCAP is the annual per-capita GNP of the country where the firm is headquartered. G1-G3 are dummy variables corresponding to each of the World Bank income groups. 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. Per-capita GNP, the World Bank income group dummies, and the legal system dummies are interacted with the multi-segment dummy (SEG) for the all firms panel and the number of segments (SEGN) for the multi-segment firms panel. Models 1-3 are estimated over 1991-1995 using ordinary least squares. Column (4) provides fixed-effects estimates (within-firm estimates) of Model 3. Each model specification also includes year dummies for 1992-1995.

Table VI**Firm Level Regression Estimates of Excess Values using Additional Proxies for Capital Market Development and the Legal Environment: 1991 - 1995**

Variables	OLS (1)	Fixed Effects (2)	OLS (3)	Fixed Effects (4)
Constant	-0.237*** (-8.665)	—	-0.226*** (-8.435)	—
Multi-Segment Dummy (SEG)	-0.164** (-1.942)	-0.156 (-1.404)	-0.063** (-2.099)	-0.103* (-1.725)
Operating Income-to-Sales (OIS)	0.042*** (6.636)	0.011* (1.688)	0.042*** (6.645)	0.010* (1.657)
Capital Expenditures-to-Sales (CES)	0.223*** (18.769)	0.260*** (11.673)	0.224*** (18.804)	0.260*** (11.664)
Log of Total Assets (ASSETS)	0.012*** (9.279)	0.007*** (3.136)	0.012*** (9.086)	0.007*** (3.234)
Per-Capita GNP (GNPCAP*SEG) ^a	-0.420** (-2.131)	-0.467** (-2.099)	—	—
[(MKTCAP + Debt)/GNP]*SEG	-0.054** (-1.976)	-0.069* (-1.684)	-0.054** (-2.352)	-0.056** (-2.031)
(Domestic Firms/Pop)*SEG	-0.002*** (-3.150)	-0.002** (-2.404)	-0.002*** (-2.743)	-0.003** (-1.983)
(IPOs/Pop)*SEG	0.013 (1.083)	0.005 (0.639)	0.016 (1.345)	0.003 (0.537)
French Legal System Dummy (FRENCH*SEG)	0.066*** (4.779)	0.035** (2.341)	0.058*** (4.574)	0.040** (2.185)
German Legal System Dummy (GERMAN*SEG)	0.082*** (5.284)	0.042** (2.347)	0.061*** (4.893)	0.059*** (2.991)
Scandinavian Legal System Dummy (SCAND*SEG)	0.034*** (3.679)	0.041** (2.254)	0.033*** (3.633)	0.031** (2.010)
(Rule of Law)*SEG	-0.005 (-0.464)	-0.024 (-1.422)	-0.025*** (-4.017)	-0.016** (-2.322)
Adjusted R ²	0.027	0.040	0.026	0.038
Number of Observations	27,132	27,132	27,132	27,132

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. 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. From LaPorta, Lopez-De-Silanes, Shleifer, and Vishny (1997), we obtain for each country the ratio of the stock market capitalization held by minorities plus the sum of bank debt of the private sector and outstanding non-financial bonds 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). From LLSV, we also obtain the law and order tradition (Rule of Law) in each country. Columns 1 and 3 provide OLS estimates over 1991-1995, while columns 2 and 4 provide fixed-effects estimates (within-firm estimates). Each specification also includes year dummies for 1992-1995.

Table VII
Descriptive Statistics on Ownership Concentration by Economic Development and Legal System: 1991 - 1995

Panel A: Ownership Concentration for Subset of Firms Reporting Ownership Holdings Greater or Equal to 5%

Groups	Total		Single-Segment Firms		Multi-Segment Firms		% of Total Sample Reporting Ownership
	Mean	Median	Mean	Median	Mean	Median	
Economic Development:							
High Income	0.40	0.38	0.41	0.39	0.38	0.34	65%
Upper-Middle Income	0.52	0.54	0.54	0.57	0.46	0.46	78%
Lower-Middle Income	0.63	0.65	0.64	0.66	0.61	0.61	34%
Low Income	0.59	0.60	0.58	0.60	0.65	0.69	14%
Legal System:							
English	0.39	0.36	0.40	0.38	0.36	0.32	61%
French	0.58	0.60	0.59	0.61	0.55	0.56	64%
German	0.43	0.38	0.44	0.42	0.40	0.35	72%
Scandinavian	0.44	0.44	0.45	0.46	0.42	0.40	73%

Panel B: Ownership Concentration Set Equal to Zero where Not Reported

Groups	Total		Single-Segment Firms		Multi-Segment Firms	
	Mean	Median	Mean	Median	Mean	Median
Economic Development:						
High Income	0.32	0.29	0.33	0.31	0.30	0.26
Upper-Middle Income	0.43	0.48	0.44	0.51	0.41	0.44
Lower-Middle Income	0.22	0.00	0.21	0.00	0.41	0.00
Low Income	0.08	0.00	0.08	0.00	0.11	0.00
Legal System:						
English	0.29	0.27	0.30	0.28	0.28	0.24
French	0.44	0.51	0.43	0.51	0.47	0.51
German	0.33	0.24	0.33	0.22	0.32	0.24
Scandinavian	0.39	0.39	0.41	0.42	0.37	0.36

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. We use two different methods to classify the unreported ownership data. In the first method (Panel A), we treat the unreported observations as missing values. In the second method (Panel B), we treat the unreported observations as zero values.

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

Variables	Subset of Firms Reporting Ownership Concentration Greater or Equal to 5%			Ownership Concentration Set Equal to Zero where Not Reported		
	OLS (1)	OLS (2)	Fixed Effects (3)	OLS (4)	OLS (5)	Fixed Effects (6)
Constant	-0.073 (-1.223)	-0.065 (-1.088)	—	-0.126*** (-4.078)	-0.134*** (-4.341)	—
Multi-Segment Dummy (SEG)	-0.041 (-1.504)	-0.085** (-2.392)	-0.084** (-2.400)	-0.026 (-1.137)	-0.007 (-0.258)	-0.006 (-0.249)
Operating Income-to-Sales (OIS)	0.350*** (16.700)	0.349*** (16.662)	0.351*** (16.718)	0.303*** (17.138)	0.303*** (17.142)	0.304*** (17.185)
Capital Expenditures-to-Sales (CES)	0.213*** (13.287)	0.213*** (13.302)	0.212*** (13.309)	0.160*** (12.224)	0.160*** (12.254)	0.161*** (12.250)
Log of Total Assets (ASSETS)	0.005*** (3.438)	0.006*** (3.632)	0.006*** (3.646)	0.006*** (4.368)	0.006*** (4.450)	0.006*** (4.466)
Per-Capita GNP (GNPCAP*SEG) ^a	-0.378*** (-3.072)	-0.327*** (-2.619)	-0.329*** (-2.644)	-0.336*** (-3.237)	-0.331*** (-3.175)	-0.331*** (-3.200)
French Legal System Dummy (FRENCH*SEG)	0.086*** (3.358)	0.072*** (2.747)	0.072*** (2.735)	0.067*** (2.887)	0.063*** (2.670)	0.063*** (2.656)
German Legal System Dummy (GERMAN*SEG)	0.136*** (5.935)	0.128*** (5.528)	0.129*** (5.573)	0.107*** (5.292)	0.102*** (4.999)	0.103*** (5.039)
Scandinavian Legal System Dummy (SCAND*SEG)	0.097** (2.712)	0.089*** (2.492)	0.088*** (2.493)	0.079** (2.439)	0.080*** (2.469)	0.080*** (2.468)
Ownership Concentration < 10 (OWN0to10)	0.079 (0.145)	0.055 (0.102)	0.051 (0.094)	0.550*** (3.915)	0.537*** (3.815)	0.533*** (3.788)
Ownership Concentration 10-30 (OWN10to30)	-0.289*** (-3.387)	-0.336*** (-3.416)	-0.344*** (-3.500)	-0.313*** (-4.033)	-0.213*** (-2.479)	-0.219*** (-2.556)
Ownership Concentration > 30 (OWNover30)	-0.054** (-1.968)	-0.077** (-2.373)	-0.068** (-2.129)	-0.043 (-1.590)	-0.083*** (-2.613)	-0.074** (-2.364)
Ownership Concentration 10-30 interacted with SEG (OWN10to30*SEG)	—	0.142 (0.950)	0.155 (1.040)	—	-0.300*** (-2.689)	-0.289*** (-2.599)
Ownership Concentration > 30 interacted with SEG (OWNover30*SEG)	—	0.089 (1.468)	0.081 (1.343)	—	0.132** (2.248)	0.124** (2.129)
Adjusted R ²	0.040	0.041	0.042	0.035	0.035	0.036
Number of Observations	18,225	18,225	18,225	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. 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. We use two different methods to classify unreported the ownership data. In the first method (columns 1-3), we treat the unreported observations as missing values. In the second method (columns 4-6), we treat the unreported observations as zero values. OWN0to10: = *total ownership* if total ownership < 0.10, = 0.10 if total ownership ≥ 0.10; OWN10to30: = 0 if total ownership < 0.10, = *total ownership minus 0.10* if 0.10 ≤ total ownership < 0.30, = 0.20 if total ownership ≥ 0.30; OWNover30: = 0 if total ownership < 0.30, = *total ownership minus 0.30* if total ownership ≥ 0.30. Column (3) and (6) provide fixed-effects estimates (within-firm estimates) of Model 2. Each model specification also includes year dummies for 1992-1995.