# Is Group Affiliation Profitable in Emerging Markets? An Analysis of Diversified Indian Business Groups

TARUN KHANNA and KRISHNA PALEPU*

## ABSTRACT

Emerging markets like India have poorly functioning institutions, leading to severe agency and information problems. Business groups in these markets have the potential both to offer benefits to member firms, and to destroy value. We analyze the performance of affiliates of diversified Indian business groups relative to unaffiliated firms. We find that accounting and stock market measures of firm performance initially decline with group diversification and subsequently increase once group diversification exceeds a certain level. Unlike U.S. conglomerates' lines of business, and similar to the affiliates of U.S. LBO associations, affiliates of the most diversified business groups outperform unaffiliated firms.

DIVERSIFIED BUSINESS GROUPS DOMINATE PRIVATE SECTOR activity in most emerging markets around the world. We compare the performance of firms affiliated with diversified Indian business groups with the performance of unaffiliated firms in India.

Indian business groups are collections of publicly traded firms in a wide variety of industries, with a significant amount of common ownership and control, usually by a family. The finance and industrial organization literature has documented that businesses affiliated with diversified U.S. firms underperform their focused competitors. Among the reasons cited for the underperformance of diversified corporations are inappropriate allocation of decision rights, inefficient allocation of capital, and poor internal gover-

nance.[1] In contrast, there is ample evidence that LBO associations, despite their diversification, create value because of their superior governance structure.[2] Indian business groups have features of both conglomerates and LBO associations. The objective of our study is to examine whether affiliation with diversified business groups is associated with inferior or superior performance.

There are several reasons to posit that group affiliation is potentially beneficial in an emerging market context. The transaction cost theory proposed by Coase (1937) and Williamson (1985) suggests that the optimal structure of a firm depends on its institutional context. In the United States the institutional context is characterized by well-functioning capital, labor, and product markets. In contrast, in emerging markets, such as India, China, or Brazil, there are a variety of market failures, caused by information and agency problems. For example, the financial markets are characterized by inadequate disclosure and weak corporate governance and control. Intermediaries such as financial analysts, mutual funds, investment bankers, venture capitalists, and the financial press are not fully evolved. Finally, securities regulations are generally weak and their enforcement is erratic. Similar problems abound in product markets and labor markets, once again because of the absence of intermediaries. (See the Appendix for a comparison of the institutional context in India with that in the United States and Japan.)

The absence of intermediary institutions makes it costly for emerging market firms to acquire necessary inputs such as finance, technology, and management talent. Market imperfections also make it costly to establish a quality brand image in product markets, and to establish contractual relationships with international joint venture partners. In this context, an enterprise may be most profitably pursued as part of a large diversified business group that can act as an intermediary between individual entrepreneurs and imperfect markets. For example, groups can use their track record and reputation in their established lines of business to gain credibility for new ventures among suppliers and customers. More generally, the scale and scope of groups could allow business groups to internally replicate the functions provided by stand-alone intermediary institutions in advanced economies. Firms affiliated with business groups, therefore, can benefit from access to these internal institutions to mitigate external market failures.

Group structures also have the capacity to reduce the costs of diversification. Though groups themselves are often highly diversified, individual firms in each group are typically focused. Because Indian business groups are

---

[1] Recent studies include Berger and Ofek (1995), Comment and Jarrell (1994), and Shin and Stulz (1998) in the finance literature; a review by Montgomery (1994) of the industrial organization and finance literature; and reviews by Ramanujam and Varadarajan (1989) and Hoskisson and Hitt (1990) of the strategy literature.

[2] See, for example, Baker and Smith (1998) for a discussion of how LBO associations create value, and Baker and Montgomery (1994) for a comparison between conglomerates and LBO associations.

collections of public companies, a group's ability to use "internal capital markets" to fund the ongoing activities of one group company from the cash flows of the other affiliates is limited. Therefore, the most important role of the group's internal capital market is to launch new ventures, in which both the family and the other group affiliates might acquire ownership stakes. On an ongoing basis, the role of the group headquarters is usually related to performance monitoring through board memberships and family connections, recruiting management talent, and interfacing with the national government. In this respect, Indian business groups are closer to LBO associations than to the diversified public corporations in the United States.

Even though group affiliation can be potentially beneficial, there are several reasons why the costs of group affiliation may exceed the potential benefits. Membership in diversified groups can be associated with conflicts of interest between controlling family shareholders and minority shareholders. Common family ownership may result, for example, in misallocation of capital, with the cash flow generated by profitable group firms being invested in unprofitable ventures, even though this may not be in the interest of public shareholders. Further, diversified groups can pursue inefficient compensation schemes across group companies for internal equity reasons. Finally, because of the difficulty of acquiring expertise in a variety of industries at the same time, the central office of a diversified group can also make suboptimal decisions. The problems associated with affiliation with a diversified organization may be exacerbated in emerging markets because of weak disclosure requirements, ineffective governance mechanisms, and a poorly developed market for corporate control (see La Porta et al. (1997, 1998) for related discussions). Whether affiliation with a diversified business group creates or destroys value in emerging markets is, therefore, an open empirical question.

Our analysis compares the performance of group affiliates with the performance of unaffiliated firms. Using Tobin's $q$ as a performance measure, univariate comparisons show that firms affiliated with the most diversified business groups outperform unaffiliated firms. Univariate comparisons also suggest a quadratic relationship between firm performance (using ROA and Tobin's $q$ measures) and affiliated group diversification. Multivariate regression analysis (using ROA and Tobin's $q$ measures) reveals that, as group diversification increases, the performance of group affiliates declines relative to that of unaffiliated firms until the group reaches a threshold diversification level. Beyond this threshold, marginal increases in group diversification result in incremental performance improvements. Multivariate regression analysis also shows that the Tobin's $q$ of affiliates of the most diversified groups is greater than that of focused, unaffiliated firms. Finally, a comparison of group level performance with the performance of industry-matched unaffiliated firms reveals no evidence of a "group discount."

We examine three potential sources of performance effects of group affiliation: the degree of access to international investors and joint venture partners, monitoring/entrenchment by inside owners, and financing through

internal capital markets. We find that group-affiliated firms have dispro-portionately good access to international sources of capital. The evidence from the joint venture data is more mixed, however. On average, providers of technology appear reluctant to deal with groups, though there is some evidence that larger groups appear to facilitate members' access to inter-national joint venture markets. Though insider ownership is positively re-lated to the performance of group affiliates, this is also true for unaffiliated firms. Finally, there is no evidence that internal capital markets play a dif-ferent role in group affiliates than they do in unaffiliated firms.

We discuss the data we use to analyze the performance of business groups in Section I. The results of our empirical analysis are presented in Sec-tion II, and a number of tests are presented at the end of that section to check the robustness of our results. In Section III we examine possible sources of costs and benefits of group affiliation. We conclude in Section IV with a summary and a discussion of potential avenues for future research.

## I. Data and Institutional Details

### A. *Data Sources and Sample Selection*

For our study of diversified business groups in emerging markets, we fo-cus our attention on Indian business groups because India offers several advantages as an experimental setting. First, the Indian economy has sev-eral hundred business groups, lending itself to large sample statistical analy-sis. Second, detailed data are available on individual lines of business of diversified business groups in India because the lines of business are typi-cally organized as separate legal entities and are required to publish a set of financial statements. Third, unlike in several other emerging markets (Stra-chan (1976), Goto (1982)), firms in India are typically members of only one group, making it possible to identify the group affiliation of each sample firm cleanly. Fourth, accounting statements in India are prepared according to well-established accounting standards that are similar to those followed in ad-vanced economies. This increases our confidence in the reliability of the data.

The data for our study are obtained primarily from a publicly available database maintained by CMIE, the Centre for Monitoring the Indian Econ-omy. The data set we use in our analysis consists of all nongroup- and group-affiliated Indian private sector firms listed on the Bombay Stock Exchange (BSE) with the required data. We confine our analysis in this paper to BSE firms because we use stock price data, which are only available for BSE firms, in our tests. We analyze data from 1993 because it is the year for which we have the most coverage in the database. There are 1309 firms in our final sample, of which 655 firms are affiliated with diversified business groups and 654 are focused firms unaffiliated with any business group. In our analysis of potential benefits of group affiliation we also supplement the CMIE data with a variety of publicly available information sources and some privately collected data. These are described at the appropriate junctures.

For identifying group affiliation, we adopt CMIE's classification of firms into groups.[3] The largest groups are very diversified (typically across businesses that are unrelated in a product market sense),[4] employ hundreds of thousands of people, and appear very complex to manage.[5] Firms in Indian groups are tied by common ownership of a significant block of shares in group companies, often by a family. Informal relationships, mostly through common family ownership between group firms, exist at all stages of a group's evolution. However, large diversified groups also install formal systems of coordination among group companies. Though the degree of autonomy of group firms varies across groups, to a first approximation we conceive of each firm as primarily responsible to its own shareholders, and then reaping the consequences, positive or negative, of group affiliation.

Indian business groups are similar to Japanese keiretsu in some respects, but there are also some important differences between the two. The main bank in the keiretsu has been likened to a central office in a large firm, "providing capital and managerial support, in exchange for . . . an ownership stake in the firm and some say in how it is run" (Hoshi et al. (1991)), though the keiretsu firms have weaker links than do divisions of a U.S. firm. Like the keiretsu, firms in an Indian group are legally separate entities, have their own shareholders, and publish their own statements. By regulatory fiat, however, there is no group-specific bank to coordinate group activities in India. Instead, coordination of actions among group members is orchestrated through common board members and through the involvement of a family in each group.

## B. *Performance Measures*

We use stock market and accounting measures of performance to determine the effects of group membership. We construct a proxy for Tobin's $q$, which we define as (market value of equity + book value of preferred stock +

---

[3] Though a group is not a legal construct, CMIE uses a variety of sources to classify firms into groups. This classification is based on a combination of (historical) reports published by the government for antitrust purposes, tracking the announcement of new corporate ventures and public listings as well as other filings made by firms, and tracking public announcements made by individual companies and by groups. We subject the CMIE classification to a series of checks to ensure data accuracy.

[4] Comparisons of the number of two-digit SIC equivalent industries in which the largest 100 Indian groups operate with the number of two-digit SIC industries in which the 100 largest publicly traded U.S. corporations operate indicates a much greater level of diversification for the Indian groups. Similar results obtain using more elaborate measures of diversification (Herfindahl index, for example).

[5] The largest Indian group, the Tata Group, has sales of only approximately $2 billion, but this number is misleading when it comes to appreciating the complexity of these organizations. Employees of the Tata Group number 242,000 in 1993, a number quite comparable to that of the largest U.S. firm by 1993 sales (General Motors, $135 billion) with 710,000 employees, or by 1993 assets (General Electric, $252 billion) with 222,000 employees. For a detailed description of three Indian business groups, see Ghemawat (1996), Khanna (1996), and Khanna, Palepu, and Wu (1998).

book value of debt)/(book value of assets), where the market value of equity is calculated using closing stock prices on the last trading day of the year. Our second performance measure is the firm's return on assets, ROA, defined as (net income + interest $* (1 -$ tax rate))/(total assets), where an average tax rate is estimated for each firm. We compute this second measure, similar to that used by Berger and Ofek (1995) in their study of diversification in the United States, because there is some ambiguity about whether ROA or Tobin's $q$ is a better measure in our case.[6]

Our analysis focuses primarily on the performance of individual firms, rather than on group performance. We think it is sensible to run our estimations using firm level performance measures rather than group level measures for several reasons. First, each firm is a publicly traded entity responsible to its own shareholders. Second, a lot of variation in performance would be lost if we aggregated firm performance measures into group measures. Indeed, industry-adjusted performance varies substantially across the members of a group. Third, groups differ in the extent to which firms are bound together by social and economic ties. Using group level performance measures implicitly assumes that the extent of interlock is similar across groups. Instead, we use an estimation approach to explicitly recognize that there are group level unobservables that cause the error term in our specifications to be correlated across members of a particular group.

## C. Diversification Measures

Virtually all entry into new lines of business by existing firms in India is carried out through floating a new firm. In contrast, individual firms within a group appear to be remarkably undiversified. Checking detailed product line descriptions of random samples of 100 group affiliates and 100 non-group affiliates reveals that more than 80 percent of them are in single lines of business, and the remainder are in no more than two; equally important, there is no difference between the diversification (at the firm level) of non-group affiliates and group affiliates.

Unlike in U.S. data, there is no ready-made industry classification of firms in the CMIE database. We are, therefore, required to first identify an industry for each firm. The CMIE database provides a list of major industries in India. We assign numeric values (industry numbers 1–25) to each of these industries by matching them with their closest two-digit SIC industry in the United States. Next, we assign to each firm the SIC-equivalent number of the industry that most closely represents that firm's area of activity, based on a description of the firm's product range. Then we are able to construct for each group a variety of measures of diversification based on the distribution of group firms across these industries.

---

[6] ROA suffers from business cycle effects, does not consider differences in systematic risk, and is not forward looking (Benston (1985)). Tobin's $q$ mitigates these problems but makes the problematic assumption, given the illiquidity and untimely disclosure problems of the Indian capital market, that stock prices appropriately reflect the benefits and costs of diversification.

The simplest measure is just a count of the number of industries, INDCNT, in which the group is involved (note that this is not synonymous with the number of firms in the group because there are often multiple firms within a group in the same two-digit SIC-equivalent industry category). By definition, nongroup firms have an INDCNT value of one. We also repeat our analysis using the Herfindahl index, the entropy measure used by Jacquemin and Berry (1979) and Palepu (1985), and the concentric measure used by Caves et al. (1980). The three measures take into account the number of industries in which the group operates, the distribution of sales across these industries, and the degree of relatedness among product segments within each industry.

## II. Relative Performance of Group-Affiliated Firms

### A. Summary Statistics

We report in Table I, Panel A, some summary statistics for a variety of attributes of group-affiliated and unaffiliated firms. The group affiliates' mean (median) sales in 1993 are 848 (401) million Indian rupees, and mean (median) assets are 1035 (415) million rupees (in 1993, one U.S. dollar was equal to approximately 30 rupees). The mean (median) age of a group affiliate is 24 (17) years. Relative to the group affiliates, unaffiliated firms are significantly smaller in terms of both sales and assets, and are significantly younger. In 1993, the mean (median) unaffiliated firm has 208 (114) million rupees in sales, 281 (130) million rupees in assets, and is 15 (10) years old.

Panel B of Table I shows summary statistics on the ownership structure for the smaller sample for which we have reliable data (567 group affiliates and 437 unaffiliated firms). We report means and medians by group and nongroup categories for: domestic (state-run) institutional ownership, foreign institutional ownership (including ownership by foreign corporations as well as by foreign financial intermediaries), insider ownership (including the stakes held by the family associated with the firm, which, in the case of groups, may be held through other group firms), directors' ownership (including nonfamily directors), and top-50 ownership (for the 50 largest shareholders who do not fall into the above categories), with the excluded category being dispersed ownership. Both means and medians are typically statistically significantly different across group and nongroup categories; however, the magnitude of these differences is typically small.[7]

---

[7] The insider ownership number is the most difficult to interpret since it appears to capture different things for the group and nongroup firms. The magnitude of the difference in mean and median across different ownership categories appears large only for "insider ownership." However, the sums of these family insiders and the nonfamily insiders (coded as "directors' ownership") have small differences between their means and medians, even though the differences are statistically significant.

## Descriptive Statistics

The table reports descriptive statistics of firms affiliated with diversified Indian business groups relative to those firms that are not thus affiliated. The data consist of all Indian private sector firms that are publicly traded on the Bombay Stock Exchange in 1993, and are obtained from the Centre for Monitoring the Indian Economy (CMIE). Tobin's $q$ is approximated by (market value of equity + book value of preferred stock + book value of debt)/(book value of assets). ROA is defined as (net income + (1 − tax rate) ∗ interest)/(total assets), where an average tax rate is calculated for each firm. Age reflects the number of years since incorporation. Sales and assets are in rupees millions ($1 = Rs. 30). Number of industries is the simplest of several measures of group diversification that we explore. It is obtained by first constructing an SIC-equivalent classification for Indian firms, since no such classification exists, then assigning a two-digit SIC category to each firm, and finally creating the diversification measure for a group as a function of the primary industries of each of its member firms. Domestic institutional ownership measures the ownership stake of all state-run financial institutions. Foreign institutional ownership includes ownership by foreign corporations as well as by foreign financial intermediaries. Insider ownership includes the stake held by the family associated with the firm (for groups, this stake may be held through other group firms). Directors' ownership includes the stakes held by all nonfamily directors. Top-50 ownership includes the stakes of the 50 largest individual shareholders in the firm, other than those that fall in the above categories. The missing category is dispersed ownership. The first two columns report means for group affiliates and nongroup firms; significance levels are based on two-tailed difference of means $t$-tests. The last two columns report medians of group affiliates and nongroup firms; significance levels are based on Wilcoxon signed-rank tests of the difference of medians.

| | Mean | | Median | |
|---|---|---|---|---|
| | Group Affiliates | Nongroup Firms | Group Affiliates | Nongroup Firms |
| *Panel A: Summary Statistics* | | | | |
| Number of industries | 655 | 654 | 655 | 654 |
| Sales (in rupees millions) | 848.20 | 208.52*** | 400.95 | 114.02*** |
| Assets (in rupees millions) | 1,035.75 | 281.02*** | 415.34 | 130.29*** |
| Age (years) | 24.11 | 15.15*** | 17.00 | 10.00*** |
| ROA | 8.68% | 8.38% | 9.05% | 8.90% |
| Tobin's $q$ | 1.40 | 1.38 | 1.14 | 1.07** |
| *Panel B: Ownership Structure* | | | | |
| Domestic institutional ownership | 15.60% | 11.30%** | 13.30% | 6.50%** |
| Foreign institutional ownership | 10.10% | 7.40%*** | 2.30% | 0.90%*** |
| Insider ownership | 31.90% | 20.80%*** | 31.30% | 17.10%*** |
| Directors' ownership | 5.70% | 14.20%** | 1.10% | 10.70%** |
| Top-50 ownership (excluding above) | 4.90% | 7.60%** | 3.20% | 5.00%** |

*** and ** denote significance at the 1 and 5 percent levels, respectively.

Despite the differences in size, age, and ownership structure of group and nongroup firms, there is generally no significant difference in the average performance of the two types of firms. The mean (median) return on assets (ROA) and the mean (median) Tobin's $q$ for the affiliated firms are 8.68

percent (9.05 percent) and 1.40 (1.14) respectively. The comparable figures for unaffiliated firms are 8.38 percent (8.90 percent) and 1.38 (1.07). Only the median Tobin's $q$ for group affiliates statistically significantly exceeds the median Tobin's $q$ for unaffiliated firms. The rest of the differences are not statistically significant.

Table II, Panel A, shows summary statistics for four measures of group diversification. The mean and median values of INDCNT for group affiliates are 3.8 and 3.0 industries respectively. Panel B shows that all the measures are highly correlated. For brevity, we report only the results from specifications using INDCNT. All our conclusions remain qualitatively unchanged when we use the other three measures of diversification.

### B. Univariate Analysis

For analyzing the effect of group scope, we divide groups into three diversification categories: least diversified (groups with 1–4 industries), intermediate diversified (groups with 5–7 industries), and most diversified (groups with more than 7 industries). For analyzing the effect of group size, we divide groups into three size categories: small size (those with fewer than 8 affiliates), intermediate size (groups with 8–17 affiliates), and large size (groups with more than 17 affiliates). Table III reports summary statistics of Tobin's $q$ and ROA by group diversification category in Panel A, and by group size category in Panel B. For comparison, the two panels also report the performance statistics for the sample as a whole and for the subsample of nongroup firms.

Results in Panel A suggest that the performance of group firms relative to nongroup firms differs systematically across diversification categories. Firms belonging to groups with the least amount of diversification have a mean Tobin's $q$ of 1.40, not significantly different from the mean Tobin's $q$ of 1.38 for nongroup firms. Firms affiliated with groups with intermediate diversification have a mean Tobin's $q$ of only 1.26, significantly *lower* than the mean Tobin's $q$ for the nongroup firms. In contrast, firms affiliated with most diversified groups have an average Tobin's $q$ of 1.66, significantly *greater* than the mean $q$ for the nongroup firms. Note that only 63 of 655 group affiliates (10 percent of number of group affiliates) outperform unaffiliated firms. However, this category accounts for 19 percent of the group assets in the sample.

The differences in median Tobin's $q$ of different diversification categories, and the median Tobin's $q$ of nongroup firms reinforce this conclusion. A similar quadratic pattern holds for the median and mean values of ROA.

The performance of group firms belonging to different group size categories, reported in Panel B, shows similar but less statistically significant differences relative to nongroup firms. Because the different categorizations of group diversification and group size are somewhat arbitrary, we investigated the robustness of these results to a number of perturbations of these classifications. We found no qualitative difference in results. We also con-

## Table II
## Diversification Measures

This table reports several measures of group diversification. Since there is no numeric classification of industries in India, we first create an SIC-equivalent classification system for Indian firms. Starting with a description of each firm's product range provided by the Centre for Monitoring the Indian Economy (CMIE), we first assign a dominant two-digit SIC category that most closely represents that firm's primary area of activity. Then for each group we construct measures of group diversification as a function of the primary areas of activity of all the firms affiliated with that group. The simplest measure, INDCNT, is a count of industries represented within the group. ENTROPY is calculated as the sum of an entropy index of related diversification and an entropy index of unrelated diversification following Palepu (1985). The index of related diversification is based on the various firms within a group that operate within the same two-digit SIC equivalent industry, and is calculated as a function of all such instances within the group. The index of unrelated diversification is a function of different firms within the group operating in different two-digit SIC equivalent industries. Each index is a weighted average of the ratio of firm sales to group sales in that two-digit category (for related diversification) or a weighted average of the ratio of sales within a particular two-digit industry to total group sales (for unrelated diversification), with the weights given by the logarithm of the reciprocal of the ratio. HERFINDAHL is calculated as the sum of the squares of each industry's sales as a proportion of total group sales. Sales in an industry is the sum of sales in that industry for all group firms in that industry. CONCENTRIC is a weighted average of each firm's share of group sales, following Caves et al. (1980). The weight includes the contribution of the shares of group sales of all other firms in the group, and accounts for whether or not the firms are in the same two-digit SIC equivalent industry. Panel A reports summary statistics for each measure of diversification for the sample of group affiliates, and a column separately giving the value that the diversification measure takes for unaffiliated firms. Panel B reports pairwise Pearson correlation coefficients for the group diversification measures.

| Panel A: Summary Statistics | | | | | |
|---|---|---|---|---|---|
| | Group Affiliates | | | | Nongroup |
| Diversification Measure | Mean | Median | Min | Max | Firms Value |
| Number of different industries in group: INDCNT | 3.76 | 3.00 | 1.00 | 13.00 | 1.00 |
| Total entropy measure of diversification: ENTROPY | 1.20 | 1.20 | 0.00 | 2.37 | 0.00 |
| Concentric measure of diversification: CONCENTRIC | 0.92 | 0.95 | 0.00 | 1.71 | 0.00 |
| Herfindahl measure of diversification: HERFINDAHL | 0.62 | 0.57 | 0.15 | 1.00 | 1.00 |

Panel B: Pearson's Correlation Coefficients for Diversification
Measures for All Group Affiliates***

| | INDCNT | ENTROPY | CONCENTRIC | HERFINDAHL |
|---|---|---|---|---|
| INDCNT | 1.00 | | | |
| ENTROPY | 0.75 | 1.00 | | |
| CONCENTRIC | 0.72 | 0.97 | 1.00 | |
| HERFINDAHL | −0.75 | −0.83 | −0.93 | 1.00 |

*** denotes that all pairwise correlations are significant at the 1 percent level.

**Table III**

## Tobin's *q* and ROA by Group Diversification and Group Size Categories

The table reports unadjusted means, unadjusted medians, and test statistics for differences of means and medians for the Tobin's *q* and ROA performance measures by categories of group size and group diversification. Tobin's *q* is approximated by (market value of equity + book value of preferred stock + book value of debt)/(book value of assets). ROA is calculated as (net income + (1 − tax rate) ∗ interest)/(total assets), with a tax rate estimated for each firm. The diversification buckets are based on our simplest measure of diversification, the number of two-digit SIC-equivalent industries represented in the group. These are constructed by first creating the equivalent of an SIC system for Indian publicly traded firms. From the CMIE (Center for Monitoring the Indian Economy), our primary data source, we assign a two-digit SIC code to indicate each firm's primary area of activity based on descriptions of its product range. The least diversified category refers to groups in 1–4 industries, the intermediate diversified category refers to groups in 5–7 industries, and the most diversified category to groups in >7 industries. The group size buckets are based on our simplest measure of group size, the number of companies in the group. The smallest category corresponds to 1–7 firms, the intermediate-sized category to 8–17 firms, and the largest category to more than 17 firms. The number of groups column reports the number of groups across which the firms in the particular group diversification or group size category are distributed. The percentage of sample assets is the percentage of total assets in the sample accounted for by the firms in the particular group size or group diversification category, or in the group versus nongroup categories. All significance levels refer to comparisons of group affiliates of different group diversification and group size categories to nongroup firms. Two-tailed *t*-tests are used for the pairwise comparisons of means, and Wilcoxon signed-rank tests are used for the pairwise comparisons of medians.

| Affiliation | Number of Firms | Number of Groups | Percentage of Sample Assets | Mean Tobin's *q* | Median Tobin's *q* | Mean ROA | Median ROA |
|---|---|---|---|---|---|---|---|
| Panel A: By Group Diversification Buckets (number of industries) | | | | | | | |
| Full sample | 1309 | | 100.00% | 1.392 | 1.099 | 0.0853 | 0.0900 |
| Nongroup | 654 | | 21.31% | 1.382 | 1.066 | 0.0838 | 0.0890 |
| All groups | 655 | 272 | 78.68% | 1.401 | 1.139** | 0.0868 | 0.0915 |
| Least diversified | 469 | 241 | 45.88% | 1.405 | 1.132* | 0.0897 | 0.0940* |
| Intermediate diversified | 123 | 24 | 18.04% | 1.255** | 1.070 | 0.0724* | 0.0770** |
| Most diversified | 63 | 7 | 14.77% | 1.655** | 1.393*** | 0.0937 | 0.0960 |
| Panel B: By Group Size Buckets (number of companies) | | | | | | | |
| Full sample | 1309 | | 100.00% | 1.392 | 1.099 | 0.0853 | 0.0900 |
| Nongroup | 654 | | 21.31% | 1.382 | 1.066 | 0.0838 | 0.0890 |
| All groups | 655 | 272 | 78.68% | 1.401 | 1.139** | 0.0868 | 0.0915 |
| Smallest | 507 | 253 | 49.70% | 1.409 | 1.124** | 0.0872 | 0.0920 |
| Intermediate sized | 100 | 15 | 16.25% | 1.272 | 1.153 | 0.0835 | 0.0860 |
| Largest | 48 | 4 | 12.73% | 1.590 | 1.293** | 0.0894 | 0.0945 |

***, **, and * denote significant difference from nongroup category at the 1, 5, and 10 percent levels, respectively.

ducted these analyses (and similar perturbations) with other group diversification and other group size measures (group sales and group assets, both highly correlated with the number of companies)) with qualitatively similar results to those reported in Table III.

## C. Multiple Regression Analysis

This section reports the results of regression analysis to investigate the relationship between firm performance and group membership, after controlling for a number of other firm characteristics such as firm size, age, and industry affiliation.

The general form of the equation estimated is:

$$\pi_i = \log(\text{firmsize}_i) + \text{age}_i + (\text{group covariates})_j \\ + (\text{industry dummies})_i + \epsilon_i \tag{1}$$

where $\pi_i$ is a measure of the performance of firm $i$, and the (group covariates)$_j$ are either a group dummy or controls for group diversification and group size (adjusted as described below for nongroup affiliates).

Using OLS for these estimations implicitly assumes that the error term is uncorrelated across the firms in a group. However, this assumption may be unwarranted. Following Moulton (1990), we note that observations sharing an observable characteristic like group membership may also share unobservable characteristics that may cause the error terms to be correlated. This would cause the standard errors obtained using OLS to be understated, leading to potentially spurious claims of statistical significance, with the problem being more acute the greater the extent of within-group unobservable correlations (Moulton (1986)). Accordingly, we use an estimation approach which assumes that observations are independent across groups, but which relaxes the independence assumption within groups. Additionally, the standard errors reported are also corrected for heteroskedasticity.

The results of our regression analysis are reported in Table IV. Panel A reports three different specifications, all using Tobin's $q$ as the performance measure. Panel B reports the same three specifications, all using ROA as the performance measure.

### C.1. Tobin's q Regressions

Specification (i) of Table IV, Panel A, regresses Tobin's $q$ on a simple collection of firm-specific variables and a collection of 14 industry dummies (with textiles forming the reference group). The firm-specific variables include firm size measured through the logarithm of sales, the age of the firm (expressed in the number of years since the year of incorporation), and a dummy variable that indicates whether the firm is a member of a group.

The regression, significant at the 1 percent level, is carried out on the 1,308 observations for which we are able to construct the approximation to Tobin's $q$. Tobin's $q$ is a negative function of age of incorporation and appears to depend on the industry (though we do not report the coefficient estimates for the industry dummies). The group dummy is positive though not significant at conventional levels. This regression specification suggests that firms affiliated with diversified groups do not underperform focused nonaffiliates. Using different measures of firm size (such as sales or assets, or logarithm of assets) does not change any of these results qualitatively.

The remaining two specifications in Panel A explore the effects of different degrees of group diversification. Specification (ii) in Panel A uses dummy variables to differentiate between the effects of groups that are in the most diversified, intermediate diversified, and least diversified categories (as defined for Table III). Each dummy variable measures the effect of group affiliation relative to focused unaffiliated firms. We find that the point estimate on the most diversified group dummy is 0.29, or 22 percent of the mean value of Tobin's $q$ in our sample. The point estimate is significant at the 1 percent level. The point estimate on the intermediate diversified group is $-0.15$, with a $p$-value of 0.14. The point estimate on the least diversified group is close to zero and not statistically significant. These results, consistent with the univariate statistics in Table III, suggest that affiliates of the most diversified groups outperform focused unaffiliated firms.

The functional form for Panel A, specification (iii) is motivated by the results in Table III, which suggest a quadratic relationship between group diversification and firm performance, and a linear relationship between group size and firm performance.[8] The group-related regressors include INDCNT, INDCNT$^2$, and a control for group size. This specification uses number of firms as a measure of group size. This variable is set to zero if the firm is not group affiliated, and to the number of firms in the group other than the firm in question if the firm is group affiliated. Both INDCNT and INDCNT$^2$ are significant at the 5 percent levels; the group size term is not significant at conventional levels. The point estimates on the diversification measures indicate that firms that are affiliates of groups with INDCNT of six industries turn in the worst performance in the sample. Once INDCNT exceeds six industries, marginal increases in group diversification increase Tobin's $q$. Of the 655 group-affiliates, 124 fall in the range where INDCNT exceeds six industries.

When we reestimate these specifications using other measures of group diversification and group size, we find that the quadratic dependence on group diversification always holds but that the point estimate on the group

---

[8] We also perform several analyses to reinforce the choice of the functional form. For example, we use a series of dummy variables constructed from INDCNT to indicate various levels of group diversification in some specifications. We also estimate models of Tobin's $q$ and ROA as piecewise linear functions of group diversification. There is no qualitative change in our conclusions. Details are available from the authors.

**Table IV**
## The Effects of Group Diversification and Group Size

This table reports OLS regressions examining the incremental effect of group membership on firm performance. Panel A uses an approximation to Tobin's $q$ as a dependent variable. This is defined as (market value of equity + book value of preferred stock + book value of debt)/(book value of assets). Panel B uses ROA, defined as (net income + $(1 -$ tax rate$) *$ interest)/(total assets), where a tax rate is estimated for each firm. The sample consists of all Indian private sector firms publicly traded on the Bombay Stock Exchange in 1993. Data are obtained from the Centre for Monitoring the Indian Economy (CMIE). The standard errors reported in parentheses allow for correlation in the error terms among all members of a particular group, and correct for heteroskedasticity, following Moulton (1986, 1990). The independent variables are a set of firm-specific attributes and industry dummies and group attributes. The group dummy measures membership in a diversified group. The number of industries is used as a measure of group diversification. Number of firms is used as a measure of group size. A finer categorization of group dummies is used to capture the effects of membership in groups with different degrees of diversification. The least diversified group dummy captures membership in groups in 1–4 industries, the intermediate diversified group dummy captures membership in groups in 5–7 industries, and the most diversified group dummy captures membership in groups in >7 industries.

| | Panel A: Tobin's $q$ | | | Panel B: ROA | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Coefficient | | | | | |
| | Specification | | | Specification | | |
| Variable | (i) | (ii) | (iii) | (i) | (ii) | (iii) |
| Constant | 1.2859*** | 1.2863*** | 1.3632*** | 0.0600*** | 0.0591*** | 0.0682*** |
| | (0.0778) | (0.0797) | (0.0836) | (0.0060) | (0.0060) | (0.0062) |
| Log of sales | 0.0208 | 0.0210 | 0.0249 | 0.0170*** | 0.0170*** | 0.0167*** |
| | (0.0218) | (0.0219) | (0.0235) | (0.0018) | (0.0018) | (0.0018) |
| Age | −0.0051*** | −0.0050*** | −0.0053*** | −0.0008*** | −0.0007*** | −0.0008*** |
| | (0.0017) | (0.0016) | (0.0016) | (0.0001) | (0.0001) | (0.0001) |

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Group dummy | 0.0055 | | | −0.0126*** | | |
| | (0.0644) | | | (0.0047) | | |
| Least diversified group dummy | | 0.0062 | | | −0.0102** | |
| | | (0.0674) | | | (0.0051) | |
| Intermediate diversified group dummy | | −0.1491 | | | −0.0275*** | |
| | | (0.1010) | | | (0.0086) | |
| Most diversified group dummy | | 0.2941*** | | | −0.0052 | |
| | | (0.1104) | | | (0.0066) | |
| Number of industries | | | −0.0722** | | | −0.0099*** |
| | | | (0.0338) | | | (0.0027) |
| Number of industries squared | | | 0.0060** | | | 0.0006*** |
| | | | (0.0028) | | | (0.0002) |
| Number of firms | | | 0.0070 | | | 0.0008 |
| | | | (0.0088) | | | (0.0005) |
| Industry dummies | | | | | | |
| Number of observations | 1308 | 1308 | 1308 | 1303 | 1303 | 1303 |
| $F$-statistic | 4.58*** | 5.0100*** | 7.4800*** | 7.0000*** | 6.5400*** | 6.2800*** |
| $R^2$ | 0.0502 | 0.0560 | 0.0550 | 0.0913 | 0.0953 | 0.0960 |
| Root MSE | 1.0095 | 1.0072 | 1.0080 | 0.0750 | 0.0749 | 0.0750 |

***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

size variable is less precise, though always positive (alternative group size measures include total group assets other than the assets of the firm in question, or total group sales other than the sales of the firm in question, or log transformations of group size). Repeating these regressions using a group size and a group size squared measure, in addition to a group diversification and a group diversification squared measure, always results in the quadratic relationship between Tobin's $q$ and group diversification being significant at conventional levels, and the group size and group size squared variables never being significant at conventional levels.

### C.2. ROA Regressions

Panel B of Table IV repeats the specifications of Panel A, on the same sample of firms, using ROA as the dependent variable instead of Tobin's $q$. Specification (i) indicates that firm ROA is lower by 1.3 percentage points as a result of group affiliation (measured by a group dummy), in a sample where average ROA is 8.5 percent. This is in contrast to the result using Tobin's $q$ where the group dummy coefficient is positive though not significant. The other difference from specification (i) in Panel A is that firm size affects firm ROA positively, and the effect is statistically significant.

Specification (ii) in Panel B uses dummies to distinguish between the effects of affiliation with the least diversified, intermediate diversified, and most diversified business groups (defined as for Table III). We find that affiliates of the least and intermediate diversified groups underperform focused unaffiliated firms in a statistically significant manner. We also find that there is no statistically significant difference between the ROA of affiliates of the most diversified firms and the ROA of focused firms. These results are consistent with the univariate tests in Table III. As with the Tobin's $q$ results in Panel A, there appears to be a quadratic relationship between performance and group diversification.

Finally, specification (iii) controls for group size and again finds results similar to those in specification (iii) in Panel A. INDCNT and INDCNT$^2$ are significant at the 1 percent level. These point estimates suggest that marginal increases in group diversification beyond an INDCNT of eight industries result in increases in firm ROA; 72 of the 655 group affiliates lie in this range. The group size variable is again positive, though not statistically significant. These results are again in contrast to those obtained by Berger and Ofek (1995) using a measure similar to ROA. They find that, for U.S. firms, there is a monotonic increase in the magnitude of the value loss from diversification as the extent of diversification increases.

Using both Tobin's $q$ and ROA as performance measures, we find that firm performance initially decreases with increases in group diversification and then, beyond a certain threshold, increases with increases in group diversification. The coefficient on group size is generally positive and sometimes

statistically significant. In the Tobin's $q$ regressions, we find that affiliates of the most diversified groups outperform focused unaffiliated firms, though we do not find this result in the ROA regressions.

## D. Group Level Analysis

As a robustness check, we repeat our analysis using group level performance measures. We construct an industry-adjusted group Tobin's $q$ by subtracting from group Tobin's $q$ a weighted average of industry Tobin's $q$s (with the industries being the ones represented in the particular group, and the weights for these industry Tobin's $q$s given by the ratio of the assets of the group firms in that industry to the total group assets). The industry Tobin's $q$s themselves are determined in various ways. We report results where the industry Tobin's $q$ is the median Tobin's $q$ of all unaffiliated firms in the industry. We obtain virtually identical measures using other measures for industry Tobin's $q$ (unweighted or asset-weighted mean Tobin's $q$ of all unaffiliated firms in the industry).

The distribution of the industry-adjusted group Tobin's $q$ has a mean of 0.23, median of 0.04, and standard deviation of 0.76. Of 272 groups, 149 outperform the comparable portfolios of focused unaffiliated firms, and 123 underperform their comparable portfolios. The mean diversification of the former subset of groups (2.8 industries) exceeds that of the later subset (2.3 industries), with the difference statistically significant at the 3 percent level. A regression of industry-adjusted group Tobin's $q$ on group size and group diversification reveals a quadratic relationship between performance and group diversification as in the firm level estimations, but the point estimates on the group diversification and group diversification-squared variables are significant for some measures of group diversification, but not for others.

We perform similar analyses with industry-adjusted group ROA. This distribution has a mean and median of zero, with 141 groups outperforming the comparable portfolios of focused firms, and 131 underperforming their comparable portfolios. There is no statistically significant difference in the mean group diversification between these two categories of firms. A regression of industry-adjusted group ROA on group size and group diversification does not reveal any significant correlations.

The evidence of a quadratic relationship between performance and group diversification is weaker than in the firm level estimations. Similar to the firm level estimations, however, there is no evidence that group diversification destroys value. In fact, more than half of the groups outperform comparable portfolios of focused firms, using both group Tobin's $q$ and group ROA as performance measures.

The accounting treatment for intercorporate investments in India is to recognize profits only to the extent dividends are received, and to recognize investments at the lower of cost or market value. This accounting treatment

leads to a potential downward bias in ROA and a potential upward bias in Tobin's $q$ for firms with high intercorporate investments. To the extent that there are systematic differences between group and nongroup affiliates in the level of intercorporate investments, these biases affect our results. We are unable to do much to correct for these biases except to note three factors that might mitigate this concern. First, the biases affect the two performance measures in opposite direction, but our results are similar for both performance measures. Second, these biases alone cannot explain the quadratic relation between diversification and performance. Third, we use data on the extent of group affiliates' investments in other members of the same group, obtained from CMIE, to probe this concern, and find that the raw correlations between this measure and each of our performance measures are extremely low. We conclude that accounting biases are unlikely to be driving our results.

We also perform and conclude that our results are not driven by outliers or by differences in the liquidity of group and nongroup firms.[9]

## III. Sources of Costs and Benefits of Group Affiliation

In this section, we provide some evidence on three potential sources of costs and benefits of group affiliation in India: access to foreign capital and technology, monitoring by concentrated owners, and access to internal capital markets. Our analysis of the ownership and internal capital markets is motivated by the fact that they have been found to be important determinants of the performance of diversified businesses in the United States and Japan. The analysis of access to foreign capital and technology is motivated by the importance of these inputs to Indian companies. The results are reported in summary fashion, though details are available from the authors.

### A. Access to Foreign Capital and Foreign Technology

Firms affiliated with business groups can have superior access to foreign capital and technology if international investors and joint venture partners value groups' investment in reputation and preferential access to bureaucrats. Foreign providers of capital and technology value these assets because of significant information problems and their own inability to protect the

---

[9] The concern regarding the effect of liquidity arises because constrained firms may have a high average Tobin's $q$ or profitability not because of inherent superior performance but because they are unable to undertake all positive NPV projects available to them. We use dividend yield (defined as the dividend issued during 1993 divided by the stock price on the last trading day of the year) as a measure of liquidity, on the assumption that firms suffering liquidity problems will be less likely to issue dividends (see Fazzari, Hubbard, and Petersen (1988)). Reestimating the regressions in Table IV with our measure of liquidity shows that, although dividend yield has a negative and significant coefficient as predicted, there is no change in either the signs or significance for the point estimates of the diversification measures.

property rights of their investments. However, it is also possible that group-affiliated firms are disfavored by foreign suppliers of capital and technology because of the potential agency problems associated with diversified business groups. We obtain three types of data from different sources to address this issue: global depository receipt (GDR) issues, foreign analyst following, and international joint ventures.

Data on 46 GDRs issued prior to March 1994 are obtained from *The Economic Times*, an Indian business newspaper. Relative to unaffiliated firms, affiliates of the most diversified Indian groups access international capital markets more frequently. Of the issuers, 83 percent are group affiliates, with the larger groups accounting for a disproportionate share of the issuers. A logistic regression with a dependent variable that captures whether or not a firm issued a GDR indicates that both firm size (measured by logarithm of firm sales) and group membership affect the probability of GDR issuance (both positive and significant at the 1 percent level), after industry dummies and firm age are controlled for as in previous regression specifications.

An examination of international analysts following Indian firms shows that they collectively covered 180 group affiliates and 70 unaffiliated firms.[10] Further, of those firms followed by equity analysts, group affiliates were covered by an average of 1.86 analysts, and unaffiliated firms were covered by an average of 1.27 analysts. As 22 of the 23 analysts in our database are located in the United States, Europe, or the Far East, this evidence appears consistent with disproportionate interest in group-affiliated firms on the part of international capital providers. A tobit regression, using as dependent variable the number of analysts covering a particular firm, reveals that both firm size and group membership affect the extent of analyst coverage (both positive and significant at the 1 percent level).

We use hand-collected data, from the Institute of Chartered Financial Analysts Federation of India, on the joint venture agreements entered into by the 50 largest group affiliates and the 50 largest unaffiliated firms. These joint ventures are all organizational arrangements in which the foreign partner contributes technology or product know-how and the Indian firm contributes market access. Of the group affiliates, 50 percent have entered into at least one joint venture, as compared to 34 percent of the nongroup affiliates. Further, the incidence of joint ventures is greater for the largest groups. In groups with more than 10 member firms, 60 percent have entered into joint ventures. A tobit regression, using the number of joint ventures entered into by a particular firm as the dependent variable (for the sample for which we collected joint venture data), suggests that group members are less likely to enter into joint ventures than nongroup members, and that larger firms are more likely to enter into joint ventures (both variables are significant at

---

[10] These data are obtained from *Nelson's Directory of Investment Research*, 1996, Vol. II: *International Firms*, Nelson Publications, Port Chester, N.Y.

the 1 percent level). From other multivariate specifications, we find some evidence that the number of joint ventures is greater for affiliates of the largest groups than for unaffiliated firms.

In summary, the superior access of groups to international capital markets is consistent with these organizations providing an extrajudicial mechanism for property rights enforcement, either by investing in reputation or through their close relationships with the bureaucracy. Evidence from the joint venture data is more mixed, however. On average, providers of technology appear reluctant to deal with groups, though there is some evidence that larger groups appear to facilitate members' access to international joint venture markets.

## B. Monitoring by Concentrated Owners

Earlier studies suggest that ownership structure has an important effect on firm performance. Concentrated owners, by internalizing the benefits of monitoring activities (Shleifer and Vishny (1986)), are generally thought to have greater incentives to monitor deviant managers. In the case of Japan, Berglof and Perotti (1994) argue that a system of concentrated ownership within keiretsu firms (and their affiliated main banks) serves as an effective governance mechanism.[11] Empirical evidence also exists, however, that once concentrated ownership exceeds a certain threshold, these owners can extract private benefits (McConnell and Servaes (1990), and Weinstein and Yafeh (1995)). Our earlier summary statistics show differences in ownership structure across group affiliates and unaffiliated firms, especially in that group affiliates have higher insider holdings. We examine whether these differences in ownership structure affect the relative performance of the two types of firms.

We reestimate the regressions of Table IV with the ownership measures described earlier (Table I) as controls. We use the smaller sample of 1004 firms (567 group affiliates and 437 unaffiliated firms) for which we have reliable ownership data. Foreign institutional ownership is positively and statistically significantly correlated with performance, and domestic institutional ownership is negatively and statistically significantly correlated with performance (using both measures of performance). Insider ownership is positively correlated with performance (though the point estimate is statistically significant only in the Tobin's $q$ estimation). The point estimates on the other ownership measures are not statistically significant at conventional levels. When ownership variables are interacted with the group variables (either the group dummy, or the group diversification and group size measures), they are not significant. In all these estimations, our basic result of performance—first falling with group diversification and then rising—

---

[11] Since there is no analog to the main bank in Indian groups, our priors are that this is not a primary mechanism of value creation for Indian groups.

remains unchanged. We conclude from this analysis that, although inside ownership is positively related to performance for group affiliates, this relationship is also present for unaffiliated firms.

## C. Access to Internal Capital Markets

Several authors emphasize potential value creation through internal capital markets when external markets are underdeveloped (Leff (1976), Baker (1992), Ramirez (1995)), but our priors are that the legally separate nature of affiliates in Indian groups and the absence of a keiretsu-like main bank preclude the kinds of internal capital markets that one might find within a conglomerate. Given the difficulties of measuring the operation of internal capital markets, we adopt the standard technique of investigating whether investment is significantly correlated with proxies for changes in internal funds, especially for subsets of firms that are a priori thought to be capital constrained (Fazzari et al. (1988), Hubbard (1997)). We generally find strong investment cash-flow sensitivities; however, we find no difference in the magnitudes of these sensitivities across group and nongroup companies, nor any systematic relationship between the magnitudes of the sensitivities and group diversification. We interpret these as indicating that funding of ongoing investments through internal capital markets is unlikely to play a role in explaining the quadratic dependence of firm profitability on group diversification.

To summarize, we find that although there is some evidence of the benefits of concentrated ownership in Japanese keiretsu (Berglof and Perotti (1994)), we find none in Indian business groups. Internal capital markets have been asserted to play a negative role in U.S. diversified firms (Lamont (1997) and Shin and Stulz (1998)), and a positive role in Japanese keiretsu (Hoshi et al. (1991)), but they play no role that distinguishes Indian business group affiliates from unaffiliated firms. We do find that group affiliates are able to access international capital markets more frequently than unaffiliated firms.

## IV. Summary and Conclusions

Firms affiliated with a large majority of diversified Indian business groups have lower Tobin's $q$ measures than unaffiliated focused firms, but those firms affiliated with the most highly diversified Indian business groups have higher Tobin's $q$ measures than all the other firms in the economy. Multivariate analysis shows that there is a quadratic relationship between the degree of affiliated-group diversification and accounting as well as Tobin's $q$ measures of firm performance. These results differ from the negative relationship between corporate diversification and line-of-business performance of U.S. conglomerates.

Our research suggests that the most diversified business groups add value by replicating the functions of institutions that are missing in this emerging market. These institutional voids make it costly for individual firms to deal

with product, labor, and capital markets because of information problems, imperfect contract enforcement, inability to enforce property rights, and flawed regulatory structures. These problems are solved in advanced economies by a variety of intermediating institutions. Large diversified business groups have the scope and scale to justify the fixed costs needed to create the internal structures and processes for performing the intermediating function. One interpretation of our results is that the payoff from such intermediation is sufficiently large to offset both the costs of creating the structures and the agency costs of diversification. Indian groups may also be able to mitigate the costs of diversification because they are organized as a collection of independent companies, which restricts their ability to use internal capital markets to prop up inefficient operations. Another interpretation of our result is that the largest and most diversified business groups are able to derive economic benefits because of their political connections in an economy where government regulation plays an important role.

Our evidence on small- and medium-level business groups is consistent with the conjecture that many groups do not have the management skills, the internal processes, or the political connections to generate benefits from diversification. Further, given the poor monitoring institutions in the Indian capital markets, these groups are likely to suffer from severe agency problems. The net result is that firms affiliated with a large majority of Indian business groups underperform focused firms.

There is an important caveat to our interpretation of the relation between performance and group affiliation. Since our evidence is based on cross-sectional correlations, it is theoretically possible that group affiliation is driven by performance, rather than the opposite causality we posit. However, this alternative interpretation is unlikely to be valid in the Indian context because firms do not choose to become members of a group. Further, prior to 1994 there was virtually no acquisition activity in India.[12] Nonetheless, it is important to be sensitive to the possible endogeneity of group membership.

Our results on the performance of firms affiliated with diversified groups in India differ from the performance of lines of business of U.S. conglomerates; however, one should bear in mind that there are substantial differences in group structure in India relative to diversified firms in advanced economies. For example, unlike U.S. conglomerates, which own a collection of lines of business, firms affiliated with Indian business groups are owned by distinct sets of shareholders. Also, unlike Japanese keiretsu, Indian business groups cannot own banks. The differences in our findings for India from those for the United States and other economies, therefore, are not only affected by differences in institutional context, but also by differences in organizational structure.

---

[12] Results of other sensitivity tests regarding endogeneity problems are available from the authors.

## Appendix

The institutional context in which firms operate in India differs significantly from the context in advanced economies. The following table shows how the institutional context in India differs from that in the United States and Japan, two economies studied extensively by financial economists.

### Table AI
### The Institutional Context in India

| Institutional feature | United States | Japan | India |
|---|---|---|---|
| Market for finance | Equity focused; managers monitored by disclosure rules and the market for corporate control | Bank focused; monitoring by interlocking investments and directors | Underdeveloped, illiquid equity markets and nationalized banks; weak monitoring by bureaucrats |
| Market for labor | Business schools and consulting firms offer talent; certified skills and welfare benefits enhance mobility | Few business schools; training takes place smoothly within firms, firm-specific development of talent | Few business schools, little training; management talent is scarce, workers inflexible |
| Market for products | Reliable enforcement of liability laws and efficient information dissemination, activist consumers | Reliable enforcement of liability laws and efficient information dissemination, less activist consumers | Limited enforcement of liability laws, little information dissemination, no activist consumers |
| Governmental regulation | Low, relatively corruption free | Moderate, relatively corruption free | High, corruption is common |
| Enforcement mechanisms | Predictable | Predictable | Unpredictable |
| Corporate scope | Focused; diversified groups have disadvantages | Groups may have some advantages | Groups may have many advantages |

Source: Why focused strategies may be wrong for emerging markets, Khanna and Palepu (1997).

## REFERENCES

Baker, George, 1992, Beatrice: A study in the creation and destruction of value, *Journal of Finance* 47, 1081–1119.
Baker, George, and Cynthia Montgomery, 1994, Conglomerates and LBO associations: A comparison of organizational forms, Unpublished manuscript.
Baker, George, and George David Smith, 1998. *The New Financial Capitalists: Kohlberg Kravis Roberts and the Creation of Corporate Value* (Cambridge University Press, Cambridge).
Benston, George J., 1985, The validity of profits-structure studies with particular reference to the FTC's line-of-business data, *American Economic Review* 75, 37–67.

Berger, Philip, and Eli Ofek, 1995, Diversification's effect on firm value, *Journal of Financial Economics* 37, 39–65.

Berglof, Erik, and Enrico Perotti, 1994, The governance structure of the Japanese financial keiretsu, *Journal of Financial Economics* 36, 259–284.

Caves, Richard, Michael Porter, Michael Spence, with John Scott, 1980, *Competition in the Open Economy: A Model Applied to Canada* (Harvard University Press, Cambridge, Mass.).

Coase, Ronald, 1937, The nature of the firm, *Economica* 4, 386–405.

Comment, Robert, and Gregg Jarrell, 1994, Corporate focus and stock returns, *Journal of Financial Economics* 37, 67–87.

Fazzari, Steven M., R. Glenn Hubbard, and Bruce C. Petersen, 1988, Financing constraints and corporate investment, *Brookings Papers on Economic Activity* 1, 141–195.

Ghemawat, Pankaj, 1996, Ballarpur Industries, Harvard Business School case 9-798-067.

Goto, Akira, 1982, Business groups in a market economy*, European Economic Review* 19, 53–70.

Hoshi, Takeo, Anil Kashyap, and David Scharfstein, 1991, Corporate structure, liquidity, and investment: Evidence from Japanese industrial groups, *Quarterly Journal of Economics* 106, 33–60.

Hoskisson, Robert, and Michael Hitt, 1990, Antecedents and performance outcomes of diversification: A review and critique of theoretical perspectives, *Journal of Management* 16, 461–509.

Hubbard, R. Glenn, 1997, Capital market imperfections and investment, NBER Working paper 5996.

Jacquemin, Alexis, and Charles H. Berry, 1979, Entropy measure of diversification and corporate growth, *Journal of Industrial Economics* 27, 359–369.

Khanna, Tarun, 1996, RPG Enterprises–1995, Harvard Business School case 9-797-106.

Khanna, Tarun, and Krishna G. Palepu, 1997, Why focused strategies may be wrong for emerging markets, *Harvard Business Review* July/August, 41–51.

Khanna, Tarun, Krishna G. Palepu, and Danielle Wu, 1998, The House of Tata, 1995: The next generation, Harvard Business School case 9-798-037.

Lamont, Owen, 1997, Cash flow and investment: Evidence from internal capital markets, *Journal of Finance* 52, 83–109.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 1997, Legal determinants of external finance, *Journal of Finance* 52, 1131–1150.

La Porta, Rafael, Florencio Lopez-de-Silanes , Andrei Shleifer, and Robert Vishny, 1998, Law and finance, *Journal of Political Economy* 106, 1113–1155.

Leff, Nathaniel, 1976, Capital markets in the less developed countries: The group principle; in Ronald McKinnon, ed.: *Money and Finance in Economic Growth and Development* (Marcel Dekker, New York).

McConnell, John, and Henri Servaes, 1990, Additional evidence on equity ownership and corporate value, *Journal of Financial Economics* 27, 595–612.

Montgomery, Cynthia, 1994, Corporate diversification, *Journal of Economic Perspectives* 8, 163–178.

Moulton, Brent, 1986, Random group effects and the precision of regression estimates, *Journal of Econometrics* 32, 385–397.

Moulton, Brent, 1990, An illustration of a pitfall in estimating the effects of aggregate variables on micro units, *The Review of Economics and Statistics* 72, 334–338.

Palepu, Krishna G., 1985, Diversification strategy, profit performance and the entropy measure, *Strategic Management Journal* 6, 239–255.

Ramanujam, Vasudevan, and P. Rajan Varadarajan, 1989, Research on corporate diversification: A synthesis, *Strategic Management Journal* 10, 523–551.

Ramirez, Carlos, 1995, Did J.P. Morgan's men add liquidity? Corporate investment, cash flow, and financial structure at the turn of the twentieth century, *Journal of Finance* 50, 661–679.

Robison, Richard, 1986, *Indonesia: The Rise of Capital* (Allen and Unwin, Sydney).

Shin, Hyun-Han, and René Stulz, 1998, Is the internal capital market efficient? *Quarterly Journal of Economics* 108, 531–552.

Shleifer, Andrei, and Robert Vishny, 1986, Large shareholders and corporate control, *Journal of Political Economy* 94, 461–88.

Strachan, Harry, 1976, *Family and Other Business Groups in Economic Development: The Case of Nicaragua* (Preager, New York).

Weinstein, David, and Yishay Yafeh, 1995, Japan's corporate groups: Collusive or competitive? An empirical investigation of Keiretsu behavior, *Journal of Industrial Economics* 43, 359–376.

Williamson, Oliver, 1985, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (Free Press, New York).