Chapter 2

Group affiliation and firm value

2.1 Introduction

In many economies, business groups account for a large part of private sector economic activity. The prevalence of diversified business groups makes the effect of group affiliation on firm value a relevant issue. This chapter contributes to the empirical literature on this issue by examining the effect of business group affiliation on firm value, using a sample of Indian companies. Most importantly, we analyze the relationship between the valuation effect of group affiliation and a number of firm and group characteristics. This constitutes a number of indirect tests of different views on the functioning of business groups.

An important advantage of business group affiliation is that it gives access to the groups internal resources, such as labor and capital. From a transaction costs perspective, Coase (1937) and Williamson (1985) have argued that using internal markets may yield substantial economic benefits. With respect to internal capital markets, Stein (1997) argues that corporate headquarters' authority to allocate capital (*winner picking*) may lead to a more efficient allocation of capital compared to external financial markets. According to this theory, more severe market imperfections increase headquarters value-creating potential, or the potential benefit from using internal markets. To

This chapter is based on Van der Molen and Lensink (2004).

the extent that business groups perform this internal capital market function, they may play an important role in the allocation of capital, especially when financial markets are less sophisticated. Or as Khanna and Palepu (1997) put it:

> Highly diversified business groups can be particularly well suited to the institutional context in most developing countries.

In this view, which we will call the *intermediation* view of business groups, business groups play an important role in generating and allocating funds.

However, the use of internal markets often comes at the cost of more severe agency problems (see Rajan et al., 2000, and Scharfstein and Stein, 2000). Conflicts of interest may arise between different affiliates of the same group or between the controlling family and minority shareholders. Especially because of the complicated ownership structure, which is typical for business groups, conflicts between shareholders may entail large costs (see, among others, Claessens et al., 2002 and LaPorta et al., 2002). Controlling shareholders have an incentive to use their power to divert or *tunnel* resources to favor themselves at the expense of minority shareholders (Johnson et al., 2000). One way to do this is to transfer funds out of companies in which the controlling shareholder's ownership stake is small to companies in which he owns a large fraction. This view of business groups, which we will term the *expropriation* view, suggests that the increase in agency costs due to group affiliation may lower firm value. These agency costs are likely to be especially high when legal institutions such as property rights and shareholder protection are poorly developed. Because these legal institutions also play an important role in the efficient functioning of markets, agency costs are likely to be high exactly when the benefits of using internal markets are also high.

Empirical studies may shed light on the relative importance of the intermediation and expropriation effects of business group affiliation. Recently, a number of studies have dealt with the effects of business groups. Khanna and Palepu (2000) compare the performance of group affiliates and stand-alone companies, using accounting and stock market data on Indian corporations. They find that only the firms that are affiliated with the most diversified business groups outperform their stand-alone peers. For affiliates of less di-

versified groups, group affiliation negatively affects profitability and value. Khanna and Palepu conclude that the effect of group affiliation on firm performance depends on group composition. The value enhancing effects of group affiliation dominate the value destroying effects only for the most diversified groups. Using a cross-section of firms in seven emerging markets (including India), Lins and Servaes (2002) investigate the effect of *corporate* diversification on firm value.[1] They find a significant diversification discount for group affiliated firms. The authors suggest that this finding may be explained by the fact that business groups offer their affiliates some of the benefits of diversification, making corporate diversification an obsolete strategy. Khanna and Rivkin (2001) explore data from 14 emerging markets to examine the effect of group affiliation on firm profitability. They find that groups have a substantial impact on economic performance, but that this impact differs for different countries. This study suggests that the role of groups is likely to be different in different institutional environments.

Whereas these papers have tested the overall effect of group affiliation on firm value or firm performance, some other papers have explicitly investigated the intermediation and expropriation hypotheses. With respect to the expropriation view, recent papers find evidence that business groups are used by controlling shareholders to tunnel funds away from minority shareholders to themselves (see Bertrand et al., 2002, and Bae et al., 2002). The intermediation-role of business groups has been analyzed in a number of studies (see, for instance, Hoshi et al., 1991, and Shin and Park, 1999). However, these studies are all based on comparing investment-cash flow sensitivities for group and non-group companies, a methodology which is not without problems (see Kaplan and Zingales, 1997).

Claessens et al. (2002) take a different route to distinguish between the intermediation and expropriation views. They identify financially constrained firms by looking at firm characteristics such as coverage ratios and dividend policy. Using data from nine East-Asian economies, they find that group affiliation per se does not affect firm value. In the case of Japan, they find that financially constrained firms do benefit from group affiliation. Taking into account ownership variables, the authors find that older and slower growing group affiliates are valued higher when the largest owners have con-

[1] Note that they analyze firms, not groups.

trol rights exceeding their cash flow rights. They interpret this as consistent with the expropriation view: group affiliation may lead to misallocation of capital when the ownership structure is more susceptible to agency problems.

Our chapter adds to the existing literature in at least two respects. First, we use panel data estimators in our regression models. We show that results from cross-sectional OLS estimators, which are used in most of the above-mentioned papers, may change dramatically after explicitly taking into account the effect of calendar-year and firm-specific effects.

Second, we shed new light on the valuation effect of group affiliation and the determinants of this effect. One of the variables that we use to test the intermediation view of business groups is a company's dependence on external financing, as defined by Rajan and Zingales (1998).[2] We argue that companies with a high external dependence will, on average, benefit most from a lower cost of external financing. According to the intermediation view, these companies are most likely to have a positive valuation effect. Because there are some problems with using cash-flow sensitivities as a measure of financing constraints, we believe external dependence to be an attractive alternative. We find that the valuation effect is higher for firms that are likely to benefit least from improved access to external financing. This result is not consistent with the intermediation view.

To test the expropriation view of business groups, we investigate whether the valuation effect depends on firm and group characteristics, which are likely to be related to expropriation of minority shareholders. We use the controlling shareholder's ownership fraction to identify which companies are likely to gain and which will lose if the controlling shareholder engages in tunneling. We find that these ownership variables do not have a significant effect on firm value. This finding is at odds with the view that the valuation effect is mainly driven by expropriation incentives.

This chapter proceeds as follows. Section 2.2 gives some information about the construction of our data set and contains descriptive statistics of the data. Moreover, we give a detailed description of the variables that we use in our tests. In section 2.3, we present the results of our regression analyses. Section 2.4 concludes.

[2] We give a detailed description of this measure in section 2.2.

2.2 Sample construction and descriptive statistics

We first describe the construction of our sample, and the variables we use. Then we discuss the nature of group affiliation. Finally, we give some descriptive statistics.

2.2.1 Sample selection and variable construction

The sample

We use the Prowess dataset from the Center for Monitoring the Indian Economy (CMIE), a private, Mumbai based company. The Prowess dataset is a corporate database, containing information on more than 8,000 Indian companies. The first year for which Prowess contains share price data is 1996. Therefore, our sample period runs from 1996 to 2001. From the Prowess dataset, we select all listed private (i.e., not government owned) manufacturing companies for which the required information is available for at least three consecutive years during the 1996-2001 period. In line with the literature, we require companies in our final sample not to be too small. Therefore, we remove companies that have sales less then 10 Rs. crore for one or more of the sample years.[3] Our final sample contains 7,186 firm-year observations on 1,342 companies; 3,876 observations on 712 group affiliates, and 3,310 observations on 630 stand-alone companies.

Dependent variable

We measure firm value, the dependent variable in our regression models, by a proxy for Tobin's q, the market-to-book ratio. It is calculated as the book value of total assets minus the book value of common equity plus the market value of common equity, divided by the book value of total assets. To reduce the influence of outliers, we remove market-to-book values that are below the 1st or above the 99th percentile of the distribution. This means that 72 observations are removed.

Firm size

One of the firm characteristics for which we control in our regressions is firm size. Usually, firm size is proxied by a firm's total assets or sales, and these

[3] One Rs. crore is 10 million Rs., which, at the current rate, is about 186,000 euro.

two measures are often regarded as substitutes. However, since the book value of total assets is the denominator of the dependent variable in our regression models, our prior is that using total assets as a proxy for firm size may lead to spurious results. Therefore, we use sales as a proxy for firm size. In fact, the choice between using either assets or sales to measure firm size has a large impact on the results. For instance, when using total assets, we find that group affiliation has a significantly positive effect on firm value. Group affiliation raises a firm's market-to-book by 0.15, on average, which is more than twice as large as the effect that we find when using sales as a proxy for firm size.[4] In addition, we find that firm size measured by total assets does not explain any variation in a firm's market-to-book ratio over time. Based on this, we believe that total assets is unsuitable as a proxy for firm size in our models. This also has the more general implication that one should be very cautious in interpreting the outcomes of models which use total assets to explain market-to-book ratios.

Other control variables

Furthermore, we control for a company's growth opportunities by including the growth rate of sales from one year to another. A company's debt-to-assets ratio is included to control for differences in leverage. The debt-to-assets ratio is measured as the book value of debt over the book value of total assets. In some of our models, we also include firm age, which is measured as the number of years since incorporation. All variables are measured at the beginning of the year. Finally, we include industry dummies to control for industry-specific effects. In all panel data models, we also include calendar-year dummies.

Group characteristics

We also want to investigate how the valuation effect of group affiliation depends on group characteristics. We construct measures of group size and group diversity. Group size is measured by the number of firms that belong to the same group. Here, the number of firms in a group is measured as a count of all firms in Prowess which belong to the same business group. Because Prowess does not contain the whole population of Indian companies, this measure of group size will underestimate the true number of affiliates.

[4] These results are based on a generalized two-stage least squares estimator. Details are available from the authors.

However, since we are interested in the effect of differences in group size on the affiliate's value, we have no reason to believe that this introduces any systematic bias. In addition to the firm count measure, FIRMC, we also measure the effect of group size on firm value by constructing three dummy variables; FIRMC1, FIRMC2 and FIRMC3. FIRMC1 is equal to one if a company belongs to a small group, i.e. a group that has up to five affiliates (FIRMC ≤ 5), and zero otherwise, FIRMC2 equals one if a company belongs to a medium sized group ($5 <$ FIRMC ≤ 12) and zero otherwise, and FIRMC3 equals one if a company is affiliated to one of the largest groups (FIRMC > 12), and zero otherwise. We measure the degree of group diversity by counting the number of different industries that are represented in a group, where industries are defined at the two digit SIC-level. Again, for each group we use information on the industry affiliation for all firms in Prowess that belong to the same group. This information gives us our prime measure of group diversification, INDSC. Moreover, we use dummy variables to measure group diversity; NINDS1, NINDS2 and NINDS3 classify business groups into three diversification categories. A group is classified as least diversified (NINDS1), moderately diversified (NINDS2), or highly diversified (NINDS3) when the number of industries is less than or equal to 3, greater than 3 but less than or equal to 6, or greater than 6, respectively.

External dependence

We define a firm's external dependence as its 'technical' or intrinsic dependence on external financing, as it was first introduced by Rajan and Zingales (1998). Observing a firm's demand for external finance is difficult, since the observed dependence on external financing is an equilibrium outcome. Rajan and Zingales argue that this problem does not arise in the case of large, publicly traded US companies. They argue that the supply of external funds to these companies is close to being perfectly elastic at the proper risk-adjusted rate. Therefore, the demand for external financing of these companies can be identified by simply looking at their actual use of external financing. Now, based on a sample of large US firms, Rajan and Zingales (1998) determine the intrinsic external dependence on an industry basis.

The aim of the Rajan and Zingales (1998) paper is to determine the effect of financial development on economic growth. They assert that companies with a high demand for external finance will benefit most from financial

development. Put differently, if financial development lowers the cost of external financing, high external dependence companies are likely to benefit most from financial development, on average. Hence the link with the current analysis: if business groups serve to mitigate the problems due to financial markets imperfections, group affiliates will face a lower cost of external financing. Therefore, the intermediation view predicts that group affiliation is especially beneficial for high external dependence companies.

We use the Rajan and Zingales measures of external dependence to determine the intrinsic external dependence of the firms in our sample. The external dependence measures apply across different countries to the extent that technological shocks at the industry level are not country-specific. Moreover, we are especially interested in the relative external dependence of companies. Hence, even if the levels of external dependence differ across countries, the Rajan and Zingales measures still serve our purpose if the ranking of industries with respect to external dependence is the same across different countries.[5] Since we have no *a priori* reason to believe that this is not the case, we believe that this measure of external dependence is also informative in the Indian situation.

The most important advantage of using external dependence is that it is an exogenous measure of the extent to which a company would benefit from a lower cost of external finance. Many variables that are often used to identify these companies (such as the cash-flow sensitivity of investment, the coverage ratio, or dividend policy) suffer from endogeneity problems. Moreover, they may be affected by group affiliation. Because external dependence is an industry characteristic, it will be largely immune to endogeneity problems.

We use the Rajan and Zingales measures in the following way. We classify each company in our sample as either old or young[6], depending on whether or not it is older than the median company.[7] Based on this measure of a company's maturity and on the industry to which it is affiliated, we assign to each company the appropriate measure of its external dependence, based

[5]For a more detailed discussion of this measure of external dependence, see Rajan and Zingales (1998, pp. 563-5)

[6]Since the demand for external financing is likely to change over the firm's life cycle, Rajan and Zingales construct different measures for mature and young firms.

[7]We determine the age of a company as the number of years since incorporation. The median value is 10 years.

on the results in Rajan and Zingales (1998).[8] We use the number thus obtained as external dependence in our regressions. Based on this measure of external dependence, we also construct a dummy variable, EXTDEP. For companies with above-median external dependence (where the median is calculated for companies in the same maturity class), EXTDEP takes the value of one. Otherwise, it is equal to zero.

Ownership structure

To analyze the relationship between expropriation (through tunneling) and firm value, we need to know the ownership stake of the controlling shareholder. The disclosure requirements in India are such that publicly listed companies must classify equity holdings as either promoter's or non-promoter's share. A promoter is 'a person or persons who are in control of the company, or (...) a relative of the promoter' (SEBI Regulations, 1997). Moreover, if a promoter (either a corporate body or an individual) has a controlling share in another company, this company is also defined as a promoter. Thus, the definition of a promoter captures both direct ownership (i.e., through owning shares in a company) and indirect ownership (i.e., through owning (a fraction of) another corporate body, which has an ownership stake in the company). We use the promoter's share as a proxy for the ownership stake, or the cash flow rights, of the controlling shareholder.

The promoter's share is an important determinant of tunneling. First, the controlling shareholder has an incentive to transfer resources from firms in which his ownership stake is low to firms where he owns a large stake. Hence, the higher a firm's promoter's share, the more likely it is to benefit from tunneling. Second, the variation in the controlling shareholder's stake is what creates tunneling incentives in the first place. Other things equal, the probability of tunneling taking place is increasing in the variation of the promoter's share. We capture this variation by the coefficient of variation of the promoter's ownership stake across all firms in the same group.

[8] The industry classification is as detailed as possible, given the external dependence measure reported in Rajan and Zingales (1998) and given our data set. Because we could not find a matching industry in our sample for all industries mentioned in Rajan and Zingales, we lose some observations.

2.2.2 Group affiliation

For every company, Prowess reports whether or not it is affiliated to a business group, and if so, the name of the business group. Although group affiliation is not a formal firm characteristic, information about group affiliation is in the public domain in India. In many cases, information about a company's group affiliation can be directly accessed via its annual reports or the company website. Moreover, information about a company's group affiliation is commonly reported in the economic press and used by business analysts. Since the knowledge about group affiliation is so common, we have no *a priori* reason to question the reliability of the information on group affiliation reported in Prowess. To be sure, we checked the information for a small number of firms in our sample by comparing the Prowess information with information provided by the respective companies. We found no differences.

Prowess contains the most recent information about group affiliation. Thus, in principle, the information may be incorrect for earlier years in the sample. This will be the case if a company changed from being group affiliated to stand-alone or the other way around, or if a group affiliate was taken over by another business group during the sample period. Therefore, we compared the information in the current sample with the information in a sample that we used in an earlier study on Indian business groups. This older sample contains group affiliation information for 1996. Of the 712 group affiliates in the current sample, 316 companies were also in the older sample. We compared the information about group affiliation of these companies, and found that all 316 companies were affiliated to the same group in 1996 as they were in 2001. Moreover, we found no cases where a stand-alone company had become a group affiliate, or the other way around. Although we cannot be sure about the other firms in our sample, we think that 316 out of 712 companies is a representative number. We are therefore led to the conclusion that group affiliation is, in general, constant over time. In our regression models, group affiliation is captured by a dummy variable, GROUPD, which takes the value of one if a firm is a group member and zero otherwise.

2.2.3 Descriptive statistics

Table 2.1 reports descriptive statistics for our sample of 7,186 firm-year observations from 1996 to 2001. Firm value, as measured by market-to-book value of assets, is higher for group affiliates, on average (although the difference is only statistically significant for the mean value). The mean (median) values for sales and assets are also significantly higher for group affiliates: group affiliates are three to four times as large as stand-alone companies, both in terms of sales (134 vs. 39) and assets (147 vs. 36)[9]. Moreover, we find group affiliates to be significantly older than stand-alone companies.

The mean (median) growth rate of sales is 0.09 (0.09) for group affiliates and 0.13 (0.10) for stand-alone companies. The differences in mean (median) are significant at the 1 percent (5 percent) level. So, in our sample, stand-alone companies grow faster than group affiliates. This is not surprising, given the fact that group members are typically smaller and younger than group affiliates. Finally, group affiliates have lower external dependence, on average. The difference between the two subsamples' external dependence is significant at the one percent level. Again, this may be explained by the fact that more stand-alone companies are classified as young, and therefore tend to have higher external dependence.

Since external dependence is an important variable in our regressions, we also compare the subsamples of high- and low-external dependence companies. We split the sample using the dummy variable which indicates high dependence on external financing, EXTDEP. The statistics are reported in table 2.2. We find that high-external dependence companies have higher firm value and are larger, on average. Moreover, we find that group-affiliates are overrepresented in the high-external dependence subsample. This implies that a disproportionately large number of group affiliates is operating in industries characterized by relatively high dependence on external capital.[10]

Some information about group size and group diversity is reported in table 2.3. Table 2.3 uses ownership information on all group affiliates in the

[9] These figures are in Rs. crore. We focus on medians because of the skewness of the distributions

[10] Group affiliates are more often classified as high-external dependence companies, although their average external dependence is lower than that of stand-alone companies (see table 2.1). This is because the high-external dependence indicator controls for firm age.

Table 2.1. Descriptive statistics: Firm characteristics
This table reports descriptive statistics for a number of firm characteristics. MTOB is the ratio of market value of the firm to the book value of its assets, GRSALES denotes the growth rate of sales, DTOA is the ratio of the book value of debt to the book value of total assets, ASSETS is the book value of assets, and SALES denotes the value of gross sales. EXTDEP is the Rajan-Zingales measure of external dependence. Statistics are reported for companies affiliated to a business group and for all stand-alone companies, which are not thus affiliated. Figures on ASSETS and SALES are in Rs. crore. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively. Here, statistical significance refers to the differences between the subsamples.

	Group affiliates					
	mean	median	stdev	max	min	nobs
MTOB	1.287**	1.092	0.660	7.296	0.555	3876
GRSALES	0.092	0.094	0.345	6.418	-2.641	3876
DTOA	0.410**	0.401**	0.217	3.033	0	3876
ASSETS	435.74**	147.40**	1,323	27,104	5.71	3876
SALES	333.24**	134.09**	882	28,008	10.04	3876
EXTDEP	0.347	0.140	0.533	2.06	-1.53	3509
	Stand-alone companies					
	mean	median	stdev	max	min	nobs
MTOB	1.097	1.007	0.428	6.687	0.543	3310
GRSALES	0.128**	0.104*	0.421	6.450	-1.916	3310
DTOA	0.393	0.386	0.205	2.368	0	3310
ASSETS	63.82	35.76	96.18	1,731	3.08	3310
SALES	66.55	39.44	88.65	1,900	10.01	3310
EXTDEP	0.497**	0.260**	0.593	2.06	-1.53	3111

Prowess dataset to describe group characteristics of the groups and firms in our sample. So, for each firm in our sample, we determine the group to which it is affiliated, and find characteristics of this business group using information on other affiliates of the same group available in Prowess. The information thus obtained is summarized in table 2.3 both at the level of individual firms and at the level of groups. The 712 individual group affiliates in our sample are affiliated to 367 different business groups. A group com-

Table 2.2. Descriptive statistics: External dependence
This table reports descriptive statistics for high and low external dependence companies. A company has a high external dependence when its intrinsic external dependence is above the median for firms in the same maturity class (i.e., old or young). Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively. Here, statistical significance refers to the differences between the subsamples.

	Low-external dependence companies: EXTDEP = 0					
	mean	median	stdev	max	min	nobs
MTOB	1.154	1.019	0.547	6.888	0.543	3161
GRSALES	0.106	0.095	0.408	6.449	-2.641	3161
DTOA	0.423**	0.420**	0.209	2.463	0	3161
ASSETS	170.72	65.60	424.87	9,293	3.08	3161
SALES	162.83	66.30	313.87	5,894	10.01	3161
GROUPD	0.499	0	0.500	1	0	3161
	High-external dependence companies: EXTDEP = 1					
	mean	median	stdev	max	min	nobs
MTOB	1.200**	1.074**	0.483	7.258	0.543	3414
GRSALES	0.106	0.097	0.355	6.417	-2.619	3414
DTOA	0.392	0.381	0.208	3.032	0	3414
ASSETS	243.19**	76.80**	710.31	12,555	4.24	3414
SALES	189.70**	73.26**	455.41	7,845	10.04	3414
GROUPD	0.559**	1**	0.496	1	0	3414

pany in our sample belongs to a group which has more than 11 affiliates (not necessarily in our sample) and is active in more than 5 different industries, on average (the median values are 5 affiliates and 3 industries).[11] For the 367 groups in our sample, the mean (median) number of affiliates is 5.4 (4). The largest group has 101 affiliates. The average business group is active in 3.2 different industries, the median number of industries per group is 2. The most diversified business group has activities in 29 different industries.

Because large groups have a large number of affiliates, by definition, the fact that our sample is slightly biased towards large groups is not surprising.

[11] Industries are defined at the two-digit SIC level.

Table 2.3. Descriptive statistics: Group characteristics
This table reports descriptive statistics for two group characteristics: group size (measured by the number of companies) and group diversification (measured by the number of industries). The upper panel denotes the summary statistics per company, whereas in the lower panel, the statistics are defined at the level of groups.

	mean	median	stdev	max	min	nobs
per company						
number of companies	11.65	5	19.21	101	1	712
number of industries	5.38	3	5.81	29	1	712
per group						
number of companies	5.41	4	7.26	101	1	367
number of industries	3.23	2	2.84	29	1	367

We also find that the affiliates of more diversified groups are overrepresented in our sample. This can be explained by the positive relationship between group size and group diversity.[12]

Next, we split our sample using the dummy variables for group diversification and group size that we introduced earlier. In table 2.4, we compare the different subsamples. Panel A contains the subsample medians for different firm characteristics. We focus on medians, since the variables' distributions are skewed. Looking at group diversity, we find that group affiliates have significantly higher median market-to-book values compared to standalone companies, irrespective of the degree of group diversity. Moreover, we find a positive relationship between group diversity and firm value: firms that are affiliated to the most diversified groups have significantly higher median market-to-book values. Affiliates of the most diversified groups tend to be the larger firms, i.e., firm size and group diversity are positively related. Finally, note that the firms that are affiliated to the least diversified

[12] We find a correlation coefficient for FIRMC and INDSC of 0.95

Table 2.4. Descriptive statistics per subsample
This table describes subsamples based on two firm characteristics: group diversification and group size. NINDS1(2)(3) is a dummy variable taking the value of one if a firm belongs to the least (moderately)(most) diversified business groups. NCOMP1(2)(3) is a dummy variable taking the value of one if a firm belongs to a small (medium sized)(large) business group. N is the number of observations. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively. Here, statistical significance refers to the differences between the appropriate subsample and the subsample of stand-alone companies.

Panel A: (sub)sample medians

	MTOB	GRSALES	DTOA	SALES
Total sample	1.054	0.098	0.395	71.93
Stand-alone companies	1.007	0.104	0.386	39.44
Group affiliates	1.092**	0.094	0.401**	134.09**
NINDS1	1.074**	0.113	0.413**	109.90**
NINDS2	1.102**	0.076**	0.403**	146.74**
NINDS3	1.121**	0.076**	0.378	191.94**
NCOMP1	1.068**	0.105	0.413**	107.64**
NCOMP2	1.124**	0.094	0.394	174.32**
NCOMP3	1.113**	0.073**	0.386	189.39**

Panel B: relative size of subsamples

	% of sample		N	# firms
	ASSETS	SALES		
Total sample	100	100	7258	1342
Stand-alone companies	11.07	14.51	3335	630
Group affiliates	88.93	85.49	3923	712
NINDS1	23.05	26.41	1973	360
NINDS2	18.99	19.32	972	178
NINDS3	46.88	39.76	978	174
NCOMP1	23.38	25.09	1998	370
NCOMP2	18.45	20.85	937	166
NCOMP3	47.10	39.54	988	176

groups, which are also the smallest firms among all group affiliates, are on average almost three times as large as stand-alone companies. Despite this

difference in size, their sales growth does not differ significantly from that of stand-alone companies. So, if there exists a negative relationship between growth rates and firm size, it seems that this relationship is less negative for group affiliates.

Splitting our sample based on group size leads to similar observations. There is a positive relationship between group size and firm size, and firm values are significantly higher for all group companies, irrespective of group size. With respect to the growth rate of sales, we again find that the affiliates of the smallest groups, which are also the smallest firms, are on average almost three times as large as stand-alone companies, and, yet, have on average the same growth rate of sales as stand-alone companies. With respect to firm value, we find significant differences between the median values for the three group size categories, with the affiliates of medium-size groups having the highest market-to-book ratios, on average.

Overall, these figures indicate that group affiliation *per se* has a larger effect on firm value than group characteristics such as the diversity and size of the group.

In panel B of table 2.4, we look at the relative size of the different subsamples. Note that, although stand-alone firms make up about 46 percent of our firm-year observations and of the firms in our sample, they account for less than 15 percent of total sample assets and sales. Also note that the size of the different categories of group affiliates differ substantially. Together, the firms that are affiliated to the most diversified groups (13 percent of the firms in the sample) account for more than 40 percent of total sample assets and sales. This confirms our earlier findings about the differences in firm size between group affiliates and stand-alone companies.

2.3 Regression results

In this section, we report the outcomes of our regression analysis. First, we look at the overall valuation effect of group affiliation, i.e., we analyze whether group affiliation has an effect on firm value in general. After determining the overall effect, we ask how the valuation effect of group affiliation may depend on simple group characteristics such as group size and group diversity. Finally, we analyze how the valuation effect differs depending on

firm characteristics and on the interaction of firm and group characteristics.

2.3.1 Overall valuation effect

To be able to compare our results directly to the findings from previous literature, we start our regression analyses by separately estimating our model for every cross-section. We estimate the following model:

$$\begin{aligned} \text{MTOB}_i &= \alpha + \beta_1 (\text{GROUPD}_i) + \beta_2 (\text{GRSALES}_i) + \beta_3 (\text{DTOA}_i) \\ &\quad + \beta_4 (\text{SIZE}_i) + \beta_5 (\text{INDUSTRY}_i) + u_i, \end{aligned} \tag{2.1}$$

where MTOB_i is the market-to-book ratio of firm i, GROUPD_i is a dummy variable, which equals one if firm i is affiliated to a group and zero otherwise, GRSALES_i measures the growth rate of sales for firm i, DTOA_i measure firm i's debt-to-assets ratio, SIZE_i is the natural logarithm of firm i's sales, INDUSTRY_i denotes a set of dummy variables for different industries, taking the value of one for the industry in which firm i is active, and zero otherwise, and u_i is an error term with expectation zero.[13] The results from estimating this model by OLS are in table 2.5. Heteroskedasticity-robust standard errors are reported in parentheses below the estimated coefficients. Note that firm size has a significantly positive effect on firm value in all six years. The effect of leverage is also consistent: it is significantly negative for all years. In general, a higher growth rate of sales increases firm value.

Most notably, we find the effect of group affiliation to differ from one year to another. In general, group affiliation has a positive effect on firm value; the coefficient on GROUPD is positive for every year in our sample. However, in most of the years the valuation effect of group affiliation is not significantly different from zero. Only in 1996 and 1999, the effect is significant at the five percent level. In these years, group affiliation increases firm value by about 0.07. This suggests that results from cross-section analysis could be flawed, and may lead to the wrong conclusions.

By using the panel structure of our dataset, we can explicitly take into account the effect of the different years of observation. Moreover, using panel data techniques allows us to control for omitted explanatory variables.

[13] We also estimated all our models including AGE as an explanatory variable. We find that firm age is insignificant, and excluding it from our models does not change our results.

Table 2.5. Cross-section regressions
This table reports the results from estimating the effect of group affiliation on firm value for every year in our sample. The dependent variable is the ratio of the market value of the firm to the book value of its assets, MTOB. Industry dummies are also included, but not reported. The reported standard errors are robust to heteroskedasticity. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively.

Variable	**Coefficient** (Std. Err.)					
	1996	1997	1998	1999	2000	2001
GRSALES	0.078*	0.142**	0.060	0.117*	0.070	-0.045
	(0.036)	(0.046)	(0.052)	(0.046)	(0.044)	(0.043)
DTOA	-0.966**	-0.722**	-0.623**	-0.677**	-0.514**	-0.366**
	(0.119)	(0.094)	(0.077)	(0.108)	(0.075)	(0.063)
LNSAL	0.108**	0.102**	0.108**	0.136**	0.144**	0.118**
	(0.016)	(0.015)	(0.016)	(0.022)	(0.020)	(0.019)
GROUPD	0.072*	0.026	0.033	0.075*	0.021	0.024
	(0.030)	(0.029)	(0.024)	(0.035)	(0.032)	(0.027)

Therefore, we proceed by estimating the following model:

$$\begin{aligned} \text{MTOB}_{it} &= \alpha + \beta_1 (\text{GROUPD}_i) + \beta_2 (\text{GRSALES}_{it}) + \beta_3 (\text{DTOA}_{it}) \\ &\quad + \beta_4 (\text{SIZE}_{it}) + \beta_5 (\text{INDUSTRY}_i) + \beta_6 (\text{YEAR}_t) + v_{it}, \\ v_{it} &= c_i + u_{it} \end{aligned} \tag{2.2}$$

where the it-subscript indicates the value for firm i in year t, and YEAR is a set of dummy variables for each year, where the t-th dummy variable equals one for observations in year t and zero otherwise (where $t = 1996, \ldots, 2001$). The error term, v_{it}, now consists of two parts. The first part, c_i, is an unobserved, firm specific effect, which is assumed to be constant over time. The second part, u_{it}, is an idiosyncratic error term. Note that GROUPD and INDUSTRY are constant over time. Table 2.6 reports the results of estimating this model.

We set out by estimating model (2.2) making the assumption that the composite error term is uncorrelated with the observed explanatory variables. In this case, we can use least squares estimators to consistently estimate the β's in model (2.2). The results are reported in the first two columns of table

2.6. The first column contains the results of using a pooled OLS estimator, where the reported standard errors are robust to heteroskedasticity across companies. The growth rate of sales and firm size have a positive effect on firm value, whereas the effect of leverage is negative. Most importantly, we find a positive valuation effect of group affiliation. Group affiliation raises firm value by 0.04, and this effect is significant at the five percent level. We do not report the coefficients of the year dummies, but we test for their joint significance and find that they explain a significant part of the variation in firm value. Moreover, we test for the presence of an unobserved effect. If firm specific effects indeed are present, we expect to find significant serial correlation in the regression residuals, since $E[v_{it}v_{is}]$ will no longer be equal to zero. Examining the residuals after estimating model (2.2) with pooled OLS, we find that the absence of serial correlation is strongly rejected. This indicates the presence of unobserved firm specific effects.

Although the pooled OLS estimator is a consistent estimator under the assumption of no correlation between the unobserved effect and the observed explanatory variables, it is generally not efficient. More specifically, knowing that there is an unobserved effect, we can improve the efficiency of the estimator by taking into account the serial correlation in the error term. Therefore, we estimate model (2.2) using a GLS-estimator, where we assume that the covariance matrix has the random effects structure (see Wooldridge (2002), Chapter 10). The outcomes of this estimation are reported in column II of table 2.6. Again, we find significant valuation effects of firm size and leverage. The estimated coefficient for the group dummy is 0.06, and it is significant at the five percent level. In sum, after taking into account firm- and year-specific effects, we find a positive valuation effect of group affiliation.

However, the consistency of the POLS and GLS estimators crucially depends on the assumption of no correlation between the unobserved firm-specific effect and the observed explanatory variables. We can test whether this so-called random effects (RE) assumption holds in our sample by performing a Hausman test. Basically, this amounts to comparing the GLS-estimates to the outcomes of a fixed effects (FE) estimator, which is consistent even if the RE assumption does not hold. The FE estimates are reported

Table 2.6. Regression results: panel estimators
This table reports the results from estimating the effect of group affiliation on firm value, using different panel data estimators. The dependent variable is the ratio of the market value of the firm to the book value of its assets, MTOB. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively.

Variable	**Coefficient** (Std. Err.)			
	POLS	GLS	FE	2SGLS
GRSALES	0.066**	0.019	0.012	0.014
	(0.022)	(0.012)	(0.013)	(0.013)
DTOA	-0.604**	-0.376**	-0.253**	-0.267**
	(0.060)	(0.034)	(0.041)	(0.037)
LNSAL	0.116**	0.102**	0.093**	0.091**
	(0.014)	(0.009)	(0.015)	(0.013)
GROUPD	0.043*	0.057*	-	0.069
	(0.021)	(0.026)		(0.079)
Hausman test	-	48.99	-	0.73
p-value		0.000		0.995

in column III of table 2.6.[14] The test statistic, which has a χ^2-distribution with eight degrees of freedom, has a value of 48.99, strongly rejecting the RE assumption. Therefore, the POLS and GLS estimates are inconsistent.

Correlation between (some of) the regressors and the (composite) error term suggests the use of instrumental variables to obtain consistent estimators of β. The usual way around this problem is to use the fixed effects estimator, which uses the within-transformed variables (which transforms a variable into deviations from individual means) as instruments for the original, untransformed variables. However, the FE estimator is not very useful

[14]The FE-estimator gives us an additional test of the presence of an unobserved effect. In the absence of an unobserved effect, the residuals from the POLS and FE estimators would be the same: if $c_i = 0$, $u_{it} = v_{it}$. An F-test on the difference between the sums of squared residuals of the two estimators strongly rejects the null of identical sums of squared residuals. Thus, we find additional evidence for the presence of unobserved, firm specific effects.

in this situation, because it cannot identify the effect of group affiliation. Therefore, we use a generalized two-stage least squares (G2SLS) estimator to consistently estimate model (2.2). This amounts to using instrumental variables for the regressors that are correlated with the firm-specific effect; the variables that are uncorrelated with the firm-specific effect can serve as their own instruments. Because the within transformed variables are uncorrelated with the firm-specific effect by construction, we use them as instruments for the variables that are correlated with the firm-specific effect. In column IV of table 2.6, we report the results of using this estimator, where we have assumed that firm size may be correlated with the firm-specific effect. We again find a significantly positive effect of firm size, a significantly negative effect of leverage, and no significant effect of the growth rate of sales. However, the estimated effect of group affiliation changes: the effect of group affiliation on firm value has become insignificantly different from zero. We perform a Hausman test to test the specification of the model. The test statistic has a value of 0.73, which indicates that our assumptions about the (lack of) correlation between the observed explanatory variables and the firm-specific effect cannot be rejected. So, taking into account the correlation between firm size and the firm-specific effect, we find the overall effect of group affiliation on firm value to be insignificant. Business groups do not increase or decrease the value of their affiliates, in general.

2.3.2 Group diversity and size

We proceed by investigating how group diversity and group size affect the value of group affiliates. First, we re-estimate model (2.1) for each cross-section and replace the group affiliation dummy by different group characteristics. The results are in tables 2.7 and 2.8, reporting the effects of group diversity and group size, respectively. As for group diversity, we include in our model the number of industries in the group to which a firm is affiliated, INDSC, and $(\text{INDSC})^2$, to allow for non-linearities in the relationship between group diversification and firm value. In doing this, we follow Khanna and Palepu (2000). We find that the number of industries does not affect firm value in the first three years of our sample period. Note that this is at odds with the results from Khanna and Palepu (2000). In the last three years, firm value is decreasing in the number of industries. Moreover, we find a sig-

Table 2.7. Cross-section regressions: group diversity
This table reports the results from estimating the effect of group diversification on firm value for every year in our sample. The dependent variable is the ratio of the market value of the firm to the book value of its assets, MTOB. Group diversification is captured by INDSC, which counts the number of two-digit SIC-code industries in a group, and $(\text{INDSC})^2$. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively.

Variable	**Coefficient** (Std. Err.)					
	1996	1997	1998	1999	2000	2001
GRSALES	0.076*	0.136**	0.051	0.097*	0.051	-0.056
	(0.036)	(0.045)	(0.053)	(0.045)	(0.045)	(0.043)
DTOA	-0.959**	-0.720**	-0.614**	-0.658**	-0.503**	-0.355**
	(0.118)	(0.095)	(0.077)	(0.106)	(0.074)	(0.061)
LNSAL	0.115**	0.107**	0.117**	0.157**	0.162**	0.130**
	(0.016)	(0.015)	(0.017)	(0.022)	(0.021)	(0.020)
INDSC	0.010	-0.001	-0.013	-0.022*	-0.029**	-0.014†
	(0.008)	(0.007)	(0.008)	(0.011)	(0.009)	(0.008)
$(\text{INDSC})^2$	0.000	0.000	0.001*	0.001*	0.001**	0.001†
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)

nificantly positive coefficient for $(\text{INDSC})^2$ in these years. This suggests that there is a non-linear relationship between group diversity and firm value, as reported by Khanna and Palepu. However, using the point estimates, we find the level of group diversity beyond which group affiliation is value enhancing to vary widely over the three years. This again raises the concern that the results are mainly driven by year-specific factors.

From table 2.8, we conclude that group size may have a positive effect on firm value. For three out of six years, the effect of FIRMC is positive, and significant at the ten percent level. These results at least suggest that the relationship between group size and firm value is not constant over time. In sum, the cross-section regressions show that the effect of group diversity and group size on firm value may differ from year to year.

Next, we use panel estimators to estimate model (2.2), with the group affiliation dummy replaced by our measures of group size and diversity. Table 2.9 reports the results. First, estimating the effect of group diversification and allowing for a non-linear effect (by including INDSC and $(\text{INDSC})^2$), we

Table 2.8. Cross-section regressions: group size
This table reports the results from estimating the effect of group size on firm value for every year in our sample. The dependent variable is the ratio of the market value of the firm to the book value of its assets, MTOB. Group size is captured by FIRMC, which counts the number of companies in a group. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively.

Variable	**Coefficient** (Std. Err.)					
	1996	1997	1998	1999	2000	2001
GRSALES	0.076*	0.137**	0.062	0.116*	0.069	-0.046
	(0.036)	(0.036)	(0.052)	(0.046)	(0.045)	(0.042)
DTOA	-0.957**	-0.719**	-0.613**	-0.662**	-0.510**	-0.361**
	(0.118)	(0.095)	(0.077)	(0.107)	(0.075)	(0.061)
LNSAL	0.118**	0.105**	0.106**	0.139**	0.143**	0.121**
	(0.014)	(0.013)	(0.015)	(0.021)	(0.020)	(0.018)
FIRMC	0.002†	0.001	0.002†	0.004†	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)

find no effect of group diversity (see column I). The results of estimating the effect of group size, as reported in column II, are similar: including FIRMC, we find no effect of group size on firm value. So, taking into account year and firm specific effects, neither group diversity nor group size is found to have a significant effect on firm value. To see whether this result is robust to changes in the way we measure differences in group characteristics, we proceed by replacing the group dummy in model (2.2) by dummies indicating different classes of group diversity and group size, consecutively. Columns III and IV of table 2.9 report the results. We find that the coefficients for the group diversity and group size dummies are insignificant. This confirms our result that these group characteristics do not significantly affect firm value.

Of course, this is not to say that group characteristics are not important in determining the relationship between group affiliation and firm value. On the contrary, we would expect large differences between groups, and, as a consequence, differences in the way group affiliation affects firm value. But our results suggest that the effects of group characteristics on firm value cannot simply be stated in terms of group size or group diversity.

Table 2.9. Regression results: group characteristics
This table reports the results from estimating the effect of group characteristics on firm value. The dependent variable is the ratio of the market value of the firm to the book value of its assets, MTOB. NINDS1, 2, and 3 are dummy variables, referring to least, moderate and most diversified groups, respectively. The dummy variables FIRMC1, 2, and 3 refer to small, medium sized, and large business groups, respectively. All model are estimated by a generalized 2SLS-estimator. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively.

Variable	**Coefficient** (Std. Err.)			
	(I)	(II)	(III)	(IV)
LNSAL	0.090**	0.090**	0.090**	0.090**
	(0.013)	(0.013)	(0.013)	(0.013)
GRSALES	0.014	0.014	0.014	0.014
	(0.012)	(0.012)	(0.012)	(0.012)
DTOA	-0.271**	-0.269**	-0.270**	-0.270**
	(0.036)	(0.036)	(0.036)	(0.036)
INDSC	-0.002			
	(0.019)			
$(\text{INDSC})^2$	0.000			
	(0.001)			
FIRMC		0.002		
		(0.002)		
NINDS1			0.079	
			(0.085)	
NINDS2			0.059	
			(0.111)	
NINDS3			0.061	
			(0.112)	
FIRMC1				0.052
				(0.083)
FIRMC2				0.129
				(0.110)
FIRMC3				0.053
				(0.109)

2.3.3 Firm characteristics

In this section, we investigate how the valuation effect of group affiliation depends on firm characteristics. In doing so, we develop an indirect test of the intermediation and expropriation views of business groups.

The intermediation view of business groups implies that lowering the cost of external financing is an important feature of business groups. Hence, we can perform an indirect test of this view by asking whether group affiliation is especially beneficial for firms that are likely to benefit from a lower cost of external financing. We identify these firms in two separate ways: by looking at external dependence and age. Since high external dependence companies have a higher intrinsic demand for external funds, we would expect a decrease in the cost of external funds to be most valuable for these companies, on average. We test this prediction by including in model (2.2) the Rajan and Zingales (RZ)-measure of external dependence and the interaction between this measure and the group-affiliation dummy. The coefficient estimate for the interaction term measures how the valuation effect of group affiliation changes with external dependence. The results are reported in column (I) of table 2.10. As before, group affiliation *per se* does not significantly affect firm value. The coefficient estimate for the interaction between the group affiliation dummy and external dependence is not statistically different from zero. This indicates that the valuation effect of group affiliation is not affected by the intrinsic external dependence of a company.

We further analyze the importance of external dependence by splitting the sample into low- and high-external dependence companies. A company is classified as a high-external dependence company if it has a RZ-measure above the median value for all companies in the same maturity class (i.e., old or young). Other companies are classified in the low-external dependence subsample. We estimate model (2.2) for both subsamples separately. Columns (II) and (III) of table 2.10 report the results for the low- and high-external dependence subsamples, respectively. There are some remarkable differences between the two outcomes. First and foremost, we find that group affiliation is much more beneficial for the low-external dependence companies (0.169 vs. 0.063), and that the effect of group-affiliation is significantly positive for these companies. The effect of firm size on firm value is more than five times higher for high-external dependence companies. Moreover,

Table 2.10. Regression results: firm characteristics
The dependent variable is the ratio of the market value of the firm to the book value of its assets, MTOB. In column (II), the model is estimated using only observations with below-median external dependence, whereas the model in column (III) is estimated for the high-external dependence observations only. EXTDEP refers to the Rajan and Zingales-measure of external dependence. OLD is a dummy variable, which takes the value of one for group companies which are older than the median group company. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively.

Variable	**Coefficient** (Std. Err.)				
	(I)	(II)	(III)	(IV)	(V)
LNSAL	0.051**	0.015	0.080**	0.086**	0.094**
	(0.012)	(0.017)	(0.017)	(0.014)	(0.015)
GRSALES	0.022*	0.020	0.028†	0.016	0.034**
	(0.010)	(0.014)	(0.016)	(0.012)	(0.013)
DTOA	-0.214**	-0.305**	-0.145**	-0.270**	-0.313**
	(0.032)	(0.045)	(0.045)	(0.036)	(0.040)
EXTDEP	-0.031	-0.085	0.058		
	(0.082)	(0.117)	(0.161)		
LNAGE				0.043	0.099**
				(0.035)	(0.034)
GROUPD	0.104	0.169**	0.063	-0.148	0.007
	(0.082)	(0.062)	(0.166)	(0.137)	(0.115)
GROUPD*EXTDEP	0.006				
	(0.113)				
GROUPD*LNAGE				0.070†	
				(0.041)	
OLD					0.052**
					(0.017)

an increase in the leverage ratio leads to a decrease in firm value that is twice as large for the low-external dependence companies. One explanation for this difference may be that high levels of debt are less detrimental to high-external dependence companies, simply because they have an intrinsic tendency to use external financing.

Moreover, we expect the value of a reduction in the cost of external funds to be inversely related to a firm's age, as younger firms tend to be more

capital constrained. Therefore, we also test how the valuation effect depends on firm age. First, we include in model (2.2) the interaction of the group dummy and firm age. Column (IV) of table 2.10 shows that the coefficient estimate for the interaction term is positive, suggesting that the valuation effect is increasing in firm age. This is confirmed in column (V), where we include a dummy variable, OLD, which takes the value of one if a firm is a group member and if its age is greater than the median age. Again, we find a significantly positive coefficient, suggesting a positive relationship between firm age and the valuation effect.

In sum, the evidence is at odds with the intermediation view of business groups. If the intermediation view holds, we would expect group affiliation to be especially beneficial for young and high external dependence companies. In fact, we find that the valuation effect of group affiliation is highest for those firms for which the intermediation view would predict it to be the lowest.

According to the expropriation view, the valuation effect of business group affiliation will be determined by the controlling shareholder's expropriation incentives. We test whether this is the case in our sample by analyzing whether the valuation effect depends on the ownership variables that are related to tunneling. The results of these tests are reported in table 2.11. To find out whether there is a relationship between the controlling shareholder's incentive to engage in tunneling and the valuation effect, we interact the group affiliation dummy with the coefficient of variation in the promoter's share. This variable takes the value of zero for stand-alone companies. We find that the coefficient for this interaction term is insignificant, as reported in column I of table 2.11, suggesting that the valuation effect of group affiliation does not depend on the controlling shareholder's incentive to expropriate minority shareholders through tunneling. This finding is confirmed in column II, where we use the coefficient of variation of the promoter's share to define two additional variables, HCVPROM and LCVPROM. HCVPROM is a dummy variable, which takes the value of one if a company belongs to a group whose ownership variation is in the top-30 percent of the distribution, and zero otherwise. LCVPROM is defined in a similar way, indicating ownership variation in the bottom 30-percent of the distribution. Both variables are insignificant, suggesting that high or low tunneling incentives

Table 2.11. Valuation and expropriation
This table reports the results from estimating how variables related to tunneling affect the valuation affect of group affiliation. The dependent variable is the ratio of the market value of the firm to the book value of its assets, MTOB. CVPROM is the coefficient of variation of the promoter's share across all companies in the same group. HCVPROM is a dummy variable, which takes the value of one if a company belongs to a group whose ownwership variation is the top 30 percent of the distribution, and zero otherwise. LCVPROM is defined in a similar way, indicating ownership variation in the bottom 30 percent of the distribution. HPROM is a dummy variable, which takes the value of one if a firm's promoter's share is above the sample median, and zero otherwise. LPROM is defined in a similar way, indicating low promoter's share companies. Statistical significance at the ten-, five-, and one-percent level is indicated by †, *, and **, respectively.

Variable	**Coefficient** (Std. Err.)		
	(I)	(II)	(III)
LNSAL	0.091**	0.091**	0.091**
	(0.013)	(0.013)	(0.013)
GRSALES	0.014	0.014	0.014
	(0.012)	(0.012)	(0.012)
DTOA	-0.268**	-0.267**	-0.266**
	(0.036)	(0.037)	(0.037)
GROUPD	0.018	0.050	0.055
	(0.087)	(0.112)	(0.093)
GROUPD*CVPROM	0.218		
	(0.170)		
HCVPROM		0.031	
		(0.122)	
LCVPROM		0.021	
		(0.142)	
HCVPROM*HPROM			0.020
			(0.117)
HCVPROM*LPROM			0.108
			(0.205)

do not change the valuation effect.

Of course, if tunneling takes place in a business group, some affiliates will benefit at the expense of others. Therefore, the way tunneling affects the valuation effect will not only depend on whether tunneling is taking place, but also on the position of the firm in the group. We develop a more precise test of the effect of tunneling by taking into account both the controlling shareholder's incentive to tunnel and his ownership stake in the respective companies. In general, firms whose promoter's share is above the sample median (HPROM = 1) are more likely to benefit from tunneling, whereas companies with relatively low promoter's share (LPROM = 1) are likely to be the losers. This effect will be more pronounced when the controlling shareholder's incentive to tunnel is high. Hence, HCVPROM*HPROM indicates firms that we expect to benefit from tunneling, whereas HCVPROM*LPROM indicates firms that would lose from tunneling. We test whether the valuation effect of group affiliation is different for these two types of firms. As reported in column III of table 2.11, we find no significant differences.

In sum, our results do not support the view that the valuation effect of group affiliation is mainly driven by tunneling. Hence, we find no evidence for the expropriation view.

2.4 Conclusion

In this chapter, we analyze the effect of group affiliation on firm value for a sample of Indian companies. We find that group affiliation does not affect firm value, in general. After correcting for differences in firm size, growth opportunities, and leverage, the value of group affiliates is not significantly different from that of stand-alone companies. This finding is in line with the results from previous studies. Moreover, we find that the effect of calendar-year and firm-specific effects is significant. This implies that using panel data estimators leads to more reliable results. The effect from using more advanced econometric techniques is especially apparent in studying the effect of group size and group diversification on firm value. In contrast to existing literature, we find that the valuation effect of group affiliation does not depend on group size and group diversification.

By analyzing how the valuation effect depends on certain firm and group

characteristics, we can say more on the functioning of business groups. In our test of the intermediation view of business groups, we find that the valuation effect of group affiliation is higher for low external dependence companies and old companies. These findings are not consistent with the intermediation view of business groups. This is not to say that business groups do not perform tasks that are otherwise performed by well-functioning capital markets. It is still possible that business groups play a role in generating and allocating funds, but our results cast doubt on the efficiency of this intermediation. We find that group affiliation is especially beneficial for firms that are likely to have a low cost of external financing or a low demand for external financing, even if they were stand-alone companies. This suggests that lowering the cost of external financing for the most financially constrained firms is not the main economic role of business groups.

According to the expropriation view, business groups mainly benefit the controlling shareholder. Although we cannot test this prediction directly, we also do not find that group affiliation lowers the value of companies that are most likely to be the victims of self-interested controlling shareholders. This is not consistent with the expropriation view of business groups. Although tunneling may be a distinctive feature of (some) business groups, our results imply that other factors are driving the valuation effect of group affiliation.

To understand why group affiliation is value-enhancing for some companies, while value-destroying for others, a more detailed understanding of the functioning of business groups is needed. It may be interesting to see how the intermediation and expropriation views interact. Given the controlling shareholder's ability to transfer resources from one group affiliate to another, it may be in his interest to tunnel funds out of one firm and invest it in another, highly profitable yet financially constrained firm. So, intermediation and expropriation may be complements rather than substitutes. To understand exactly how intermediation and expropriation interact, we need more detailed information about the composition of a business group, the characteristic of the constituent firms, and the capital flows between these companies. We will analyze some of these issues in the next chapters.