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March 2010

Online at <https://mpra.ub.uni-muenchen.de/24291/>  
MPRA Paper No. 24291, posted 09 Aug 2010 10:10 UTC

# Affiliation and Firm Performance: Evidence from Indian Business Groups

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## Abstract

Using data on a sample of Indian firms from 1996-2006, we examine the effect of group affiliation on firm performance. After controlling for the differences in firm size, growth opportunities and leverage, the findings indicate that group affiliation exerts a salutary impact on firm performance, measured in terms of *adjusted Q* or *RoA*. Moreover, the evidence indicates that tunneling is not an important factor driving the valuation and profitability effect of group affiliation.

*Key words:* Business groups, Adjusted Q, RoA, Tunneling, Promoter's share, India

*JEL classification:* G32

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# Affiliation and Firm Performance: Evidence from Indian Business Groups

## 1 INTRODUCTION

Business groups account for a significant share of the private sector in several emerging economies (Khanna and Rivkin, 2001). The presence of such diversified groups makes the effect of group affiliation on firm valuation a relevant issue. The present paper examines this aspect, using a sample of companies for an emerging economy. More specifically, we focus on India as a case study and analyze how group affiliation affects firm valuation, by comparing the market value of group affiliates and stand-alone entities, after controlling for a number of firm characteristics. Is the valuation effect influenced by group- and firm-specific variables? Does the valuation differ for members of large or more diversified groups?

There are several reasons as to why these are important questions and India presents an ideal laboratory for examining these issues. First, in emerging economies such as India, business groups invest in and produce in several industries or product markets rather than a single product line. Khanna and Palepu (1997) found that Indian business groups operate in an average of 3.76 industries. This provides a role for policy in the corporate diversification debate. A second reason is that India is one of the few emerging economies for which a comprehensive and reliable corporate database is available over an extended time span, permitting rigorous statistical analysis. Third, as Khanna and Palepu (1997) remark, firms in India are typically members of only one group, making it possible to cleanly identify the group affiliation of each sample firm. The findings obtained from the analysis may offer useful implications for the role of group affiliates in attracting external funds in other emerging markets.

An alternate strand of thinking contends that the use of internal capital markets could engender agency problems (Rajan *et al.*, 2000). Conflicts of interests may arise between different affiliates of the same group or between the controlling family and minority stakeholders, often with significant costs (Claessens *et al.*, 2002; La Porta *et al.*, 2002). This view of business group, termed *expropriation view*, suggests that an increase in agency costs due to group affiliation may lower firm value. These agency costs are likely to be especially high when

legal institutions are poorly developed. It, therefore, remains a moot question as to which of the aforesaid competing views are likely to be dominant in the Indian context and is a major concern of the paper.

The rest of the paper unfolds as follows. Section 2 provides an overview of the evolution of Indian business groups against the backdrop of the evolving literature. Section 3 describes the dataset and contains descriptive statistics of the data. We also give a detailed description of the variables we employ in our tests. Section 4 presents the results of our analysis. The final section concludes.

## 2 RELEVANT LITERATURE

Institutional economics conceptualize business groups as organizational responses to environments characterized by poorly functioning markets and institutions. Early research emphasized the way in which business groups develop internal capital markets for efficiently allocating resources. In addition, absent well-functioning capital markets, firm diversification was viewed as a way for investors to diversify their investment and contain risks. Research on Japanese *keiretsus* (Caves and Uekusa, 1976) and Korean *chaebols* (Chang and Choi, 1988) pursued this approach. Subsequent research contended that business groups not only alleviate capital market failures, but also deficiencies in other markets, including product, labor and technology markets (Khanna and Palepu, 1997).

A number of studies have dealt with the effects of business groups in the Indian context. Khanna and Palepu (1997) compare the performance of group affiliates and stand-alone companies, using accounting and stock market data on Indian corporates. They conclude that diversified business groups outperform their stand alone peers. Using a cross section of firms in several emerging markets including India, Lins and Servaes (2002) investigate how corporate diversification impacts firm value. They find a significant diversification discount for group affiliated firms. Khanna and Rivkin (2001) explore data from 14 emerging markets to examine the effect of group affiliation on firm profitability. Group firms are found to exert a substantial impact on economic performance, although the magnitude of the impact differs across countries. Lensink *et al.* (2003) explore whether affiliated firms face less finance constraints on investment than non-affiliated firms and find support in favor of the former. More recently, using data on business groups for 1988-93, Majumdar and Sen (2006) find evidence in favor of rent seeking by Indian business groups.

None of these studies however, examined the *intermediation* versus *expropriation* hypothesis of business groups and this is our point of entry into the paper. Accordingly, we examine the *expropriation* hypothesis

which suggests that the increase in agency costs due to group affiliation could impact firm value. Additionally, we ascertain which of the firm-level factors are important in affecting performance of firms.

### 3 THE INDIAN SITUATION

The Industrial Policy Resolution of 1956 laid the groundwork for the establishment of industrial policy in independent India. The economic development envisaged by policymakers accorded the “commanding heights” of the economy to the public sector with the private sector being given only a residual role. In effect, the policy exerted multiple controls over private investment that limited areas in which private investors were allowed to operate and also determined the scale of operations, the location of new investments and even the technology employed, a process often described as the *license raj*. This was buttressed by a highly protective trade policy, often providing tailor-made protection to each sector of industry. The heavily regulated economy also stimulated the prevalence of large diversified business groups. The licensing system led to rent-seeking behavior, enabling firms with best political connections to corner the licenses. Moreover, the restrictions on market share imposed by the relevant Acts of the time induced many companies to diversify into new industries. By 1973, business groups accounted for over a quarter of all joint ventures active in India (Encarnation, 1989).

The reforms process of the 1990s led to new opportunities and challenges for business groups. On the one hand, the opening of areas earlier reserved for public sector created newer business opportunities, leading to the rise of several new ventures. On the other hand, the abolition of the licensing system and the important substitution programs challenged many of the established business groups. Companies faced intensified competition from both domestic and foreign competitors and suddenly faced the need to restructure and modernize. Several business groups were able to successfully rise to the challenge, while others could not adequately adjust to the new realities.

At the same time, the opening up of capital markets not only created enormous potential of foreign capital, but also faced the Indian companies with new standards of corporate governance. Again, this was a challenge for the business groups. Groups erstwhile dictated by opaque ownership structures and complex networks had to rapidly re-orient them with modern standards of corporate governance were able to benefit from increased access to foreign capital.

This overview of the Indian business history in the second half of the twentieth century indicates that the prevalence of business groups in India is the culmination of a number of factors. Political economy considerations and responses to government regulation tell only a part of the story. Rapid re-orientation to emerging realities and improving best practices in corporate behavior and transparency were equally influential in shaping the success and failure of different business groups.

#### 4 DATASET AND VARIABLES

The data employed for the study is extracted from the *Prowess* database (Release 2.5), generated and maintained by the Centre for Monitoring the Indian Economy (CMIE), a leading private think-tank in India. The *Prowess* is a firm-level database, akin to the *Compustat* database for US firms and the Financial Analysis Made Easy (FAME) database for UK and Irish public and private limited companies. This database is being increasingly employed in the literature for firm-level analysis on Indian industry concerning issues like the effect of foreign ownership on the performance of Indian firms (Chibber and Majumdar, 1999), the effect of privatization on firm profitability (Gupta, 2005) and the effect of financial liberalization in alleviating financing constraints for manufacturing companies (Ghosh, 2006).

The present dataset contains financial information on around 9,800 companies (including 4500 services and construction companies). In addition, if an entity is not listed, it qualifies for inclusion in the database if the average sum of sales and total assets is at least Rs.200 million ( $\approx$ US \$4 million) as per the latest audited financial results. Accordingly, the firms in the sample generally do not include the smallest firms due to the requirements for firms to be included in *Prowess*.<sup>2</sup> Thus, in effect, the sample is skewed towards large Indian firms. The database contains detailed information on the financial performance of companies culled out from their profit and loss accounts, balance sheets and stock price data. There is also disaggregated information on the equity holding pattern of the firm as also the ownership type of the firm.

In our analysis, since we employ stock price data as a measure of performance, therefore we confine our analysis to listed firms. The first year for which *Prowess* contains share price data is 1996. Therefore, our sample runs from 1996-2006. In step one, we cull out information on all firms that are listed on the National Stock Exchange.<sup>3</sup> This, in effect, provided us with aggregate information on 801 firms. We subsequently delete

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<sup>2</sup> The small and medium-sized firms (SME), as classified by the Indian Ministry of Industry, are those with gross fixed assets less than Rs.100 million (about US\$ 2 million).

<sup>3</sup> The National Stock Exchange is the state-of-the-art exchange for Indian corporates.

a number of firms from the sample. First, we delete firms with extremely mis-recorded data, lowering the sample to 773 firms. In step two, we delete firms with negative observations on some of the relevant variables, such as sales, profits and leverage, further reducing the number of sample firms to 739. We also exclude firms with less than five consecutive years of information on the concerned variables. Finally, to remove the effect of outliers, we winsorize all the firm-level variables at the one percent level in both tails of the distribution. These exclusions reduce the final sample to 700 firms. Owing to missing data for certain years for several firms, we are left with data on 681 firms. These companies, on average, account for four-fifths of sales and over 75% of the market capitalization of all manufacturing companies on which information is provided in *Prowess*.

Table 1 provides the description of the sample. We have, on average, 7.8 years of observations per firm; hence the maximum number of firm-years is 5331: 3745 observations on 412 group affiliates, and 1586 observations on 269 stand alone companies. We adopt *Prowess* classification for identifying group affiliation. This procedure has previously been employed by Khanna and Palepu (1997) and thereafter, by Bertrand *et al.* (2002) and more recently, by Majumdar and Sen (2006) and Gopalan *et al.* (2007).

**[Table 1]**

We measure firm performance in two distinct ways: *adjusted Q*, a market-based measure of firm value and an accounting measure *RoA*, a measure of firm profitability. The market-based measure of performance is the proxy for Tobin's *q*, defined as the aggregate of the market value of equity and market value of debt divided by total assets. However, in India as in many emerging markets, the computation of Tobin's *q* is rendered difficult primarily because a large proportion of corporate debt is institutional debt which is not actively traded in the debt market. Also, most companies report asset values to historical cost rather than at replacement costs. We, therefore, compute the proxy for Tobin's *q*, defined as *adjusted Q* employed in similar studies on India (see for example, Khanna and Palepu, 1997; Ghosh, 2007) by taking the aggregate of the market value of equity and book value of debt in the numerator, scaled by the book value of assets. In line with the literature, *RoA* is measured as the ratio of net profit to total assets. Table 2 provides the definitions of the variables employed in the analysis.

**[Table 2]**

The control variables are similar to those employed in earlier studies. More specifically, firm size is measured as the log of total sales. In addition, we control for the firm's growth opportunities by including the annual growth in sales. The debt to asset ratio is included to control for differences in leverage across firms. To

capture the uniqueness of a firm’s product, we use the ratio of R&D to assets. If a firm offers unique products, consumers may find it difficult to obtain alternatives in case of liquidation; hence, the costs of bankruptcy increase. Finally, we include industry dummies to control for industry-specific effects and year dummies to control for year specific effects.

The main focus of the analysis is 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 as a count of the number of firms that belong to the same group. 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 equals one if a company belongs to a small group, i.e., a group which has up to five affiliates( $FIRMC1 \leq 5$ ) and zero otherwise, FIRMC2 equals one if a company belongs to a medium sized group ( $5 < FIRMC2 \leq 12$ ) and zero otherwise and FIRMC3 equals one if a company is affiliated with a large group ( $FIRMC > 12$ ), else zero.

## 5 RESULTS AND DISCUSSION

### 5.1 Baseline results

Table 3 reports comparisons of firm valuation, profitability, and the relevant control variables for the sample firms. The results show that, although group affiliated (GA) firms exhibit higher valuation, they are, on average, less profitable than stand-alone (SA) firms. The differences appear to be economically important, as well. For example, the *adjusted Q* for GA firms is 0.90, which exceeds that for SA firms. On the other hand, the profitable levels for SA firms are roughly double those for GA firms, on average.

#### [Table 3]

These univariate tests do not control for factors than might systematically impact firm performance. For one, we do not account for firm-specific controls. More generally, firm performances are likely to differ across industries and over time.

We control for the factors mentioned above in a multivariate regression framework. Measures of firm performance are regressed on the firm-level controls, including logarithm of firm sales (*Sales*), growth in sales (*Gr Sales*) and leverage (*leverage*).

Accordingly, the regression specification for firm *i* at time *t* is specified as:

$$Perf_{i,t} = \alpha_0 + \alpha_1 [Controls]_{i,t} + \alpha_2 [DGROUPE]_{i,t} + \varepsilon_{i,t} \quad (1)$$



where the concerned performance measure is regressed on a set of firm-level controls. Our coefficient of interest is *DGROUP*, a dummy variable which assumes value one for firms belonging to a business group, else zero. If group affiliation has a positive effect on firm performance, the coefficient on this variable would be positive.

In Table 4, firm size and sales growth have positive effect on firm value, whereas the effect of leverage is negative. More importantly, we find a positive performance effect of group affiliation. Group affiliation raises firm value by 0.01; the impact on profits is lower. Both these effects are significant at conventional levels.

#### **[Table 4]**

We proceed by investigating how group diversity and group size affect the performance of group affiliates. As for group diversity, we include in our model, following Khanna and Palepu (1997), the number of industries in a group to which a firm is affiliated, *INDSC* and  $(INDSC)^2$ , to allow for non-linearities in the relationship between diversification and firm performance. The evidence in Table 5 indicates that diversification initially lowers firm valuation but increases subsequently, consistent with Khanna and Palepu (1997). The inflection point in the relationship with firm valuation as the dependent variable is 6.9<sup>4</sup> This convex quadratic relationship suggests that as group diversification increases, the marginal value of firm value diminishes, suggestive of a diversification discount (Lang and Stulz, 1994; Laeven and Levine, 2007). The retardation in firm value reverses once *INDSC* crosses a threshold, leading to a beneficial effect of diversification of valuation. The results are similar when *RoA* is the dependent variable, the estimated inflection point is close to that obtained in case of *adjusted Q*. Group size exerts a perceptible influence on valuation, since the coefficient on *FIRMC* is significant in Model 2: group size raises valuation by roughly 0.01.

To see whether the results are robust to changes in the way we measure differences in group characteristics, we proceed by replacing the group dummy in (1) by dummies indicating different classes of group diversity and group size, consecutively. Models 3-4 report the results with *adjusted Q* as dependent variable; the results with *RoA* as dependent variable are reported in Models 8-9.

#### **[Table 5]**

## 6 CONCLUDING REMARKS

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<sup>4</sup> The inflection point is calculated as the derivative of firm performance with respect to *INDSC*. The other reported inflection points are computed in a similar manner.

The paper analyzes the effect of group affiliation on firm value for a sample of Indian companies for the period 1996-2006. After controlling for the differences in firm size, growth opportunities and leverage, the findings indicate that group affiliation exerts a salutary impact on firm performance, measured in terms of *adjusted Q* or *RoA*.

According to the *expropriation* view, business groups benefit primarily the controlling shareholder. Although we cannot directly test this prediction, we do not find that group affiliation lowers performance for companies that are most likely to be the victims of self-interested controlling shareholders. Although tunneling may be a distinctive feature of certain business groups, the results imply that other factors are driving the valuation and profitability effect of group affiliation.

## REFERENCES

- Bertrand, M., P.Mehta and S.Mullainathan (2002). Ferreting Out Tunneling: An Application to Indian Business Groups. *Quarterly Journal of Economics* Vol. 117, No. 1, pp. 121-48.
- Caves, R., and M.Uekusa (1976). *Industrial Organization in Japan*. Washington DC: Brookings Institution.
- Chang, S. J. (2003). *Financial Crisis and Transformation of Korean Business Groups: The Rise and Fall of Chaebols*. Cambridge: Cambridge University Press.
- Chang, S. J., and J. Hong (2000). Economic Performance of Group-affiliated Companies in Korea: Intra-group Resource Sharing and Internal Business Transactions. *Academy of Management Journal* Vol. 43, No.4, pp. 429-48.
- Chang, S. J., and U. Choi (1988). Strategy, Structure and Performance of Korean Business Groups: A Transactions Cost Approach. *Journal of Industrial Economics* Vol. 37, No.1, pp. 141-58.
- Chibber, P.K., and Majumdar, S.K., (1999). Foreign Ownership and Profitability: Property Rights, Control, and the Performance of Firms in Indian Industry. *Journal of Law and Economics* Vol. 42, No. 2, pp. 209-238.
- Claessens, S., S.Djankov, J.P. Fan and L.H.P. Lang (2002). The Benefits and Costs of Group Affiliation: Evidence from East Asia. Discussion paper 3364, Center for Economic Policy Research.
- Encarnation, D., (1989). *Dislodging Multinationals: India's Comparative Perspective*. Ithaca NY: Cornell University Press.
- Fombrun, C., (2005). Corporate Reputations as Economic Assets. In M. Hitt, R.E. Freeman and J.S. Harrison (Eds.) *The Blackwell Handbook of Strategic Management* pp. 289-312. United Kingdom: Blackwell.

- Ghosh, S., (2006). Did Financial Liberalization Ease Financing Constraints? Evidence from Indian Firm-level Data. *Emerging Markets Review* Vol. 7, No. 2, pp. 176-90.
- Ghosh, S., (2007). Bank Monitoring, Managerial Ownership and Tobin's Q: An Empirical Analysis for India. *Managerial and Decision Economics* Vol. 28, No. 2, pp. 129-43.
- Gopalan, R., V. Nanda and A. Seru (2007). Affiliated Firms and Financial Support: Evidence from Indian Business Groups. *Journal of Financial Economics* Vol. 86, No. 6, pp. 759-95.
- Guillen, M. F., (2001). *The limits of convergence: Globalisation and organizational change in Argentina, South Korea and Spain*. Princeton, NJ: Princeton University Press.
- Gupta, N., (2005). Partial Privatization and Firm Performance. *Journal of Finance* Vol. 60, No. 5, pp. 987-1015.
- Hoshi, T., A.K.Kashyap and D.Scharfstein (1991). Corporate Structure, Liquidity and Investment. Evidence from Japanese Industrial Groups. *Quarterly Journal of Economics* Vol. 106, No. 1, pp.33-60.
- Kaplan, S.N., and L. Zingales (1997). Do Investment Cash Flow Sensitivities Provide Useful Measures of Financing Constraints? *Quarterly Journal of Economics* Vol. 112, No. 1, pp. 169-215.
- Khanna, T., and J. Rivkin (2001). Estimating the Performance Effects of Networks in Emerging Markets. *Strategic Management Journal* Vol. 22, No. 1, pp. 45-74.
- Khanna, T., and K. Palepu (1997). Is Group Affiliation Profitable in Emerging Markets? An Analysis of Diversified Indian Business Groups. *Journal of Finance* Vol. 55, No. 4, 867-91.
- Kim, I. (1997). *Imitation to Innovation: The Dynamics of Korean Technological Learning*. Boston: Harvard Business School Press.
- Lensink, R., R.Van der Molen and S.Gangopadhyay (2003). Business Groups, Financing Constraint and Investment: The Case of India. *Journal of Development Studies* Vol. 40, No. 1, pp. 93-119.
- Laeven, L., and R. Levine (2007). Is there a Diversification Discount in Financial Conglomerates. *Journal of Financial Economics* Vol. 85, No. 3, pp. 331-67.
- Lang, L.H.P., and R. Stulz (1994). Tobin's Q, Corporate Diversification and Firm Performance. *Journal of Political Economy* Vol. 102, No. 5, pp. 1248-80.
- LaPorta, R., F.Lopes de Silanes, A.Shleifer and R.Vishny (2002). Investor Protection and Corporate Valuation. *Journal of Finance* Vol. 57, No. 4, pp. 1147-70.

- Lins, K., and H.Servaes (2002). Is Corporate Diversification Beneficial in Emerging Markets. *Financial Management* Vol. 31, No. 1, pp. 5-31.
- Majumdar, S.K., and K.Sen (2006). The Debt Wish: Rent Seeking by Business Groups and the Structure of Corporate Borrowing in India. *Public Choice* Vol. 130, No. 2, pp. 209-23.
- Rajan, R.G., H.Servaes and L.Zingales (2000). The Cost of Diversity: Diversification Discount and Inefficient Investment. *Journal of Finance* Vol. 55, No.1, pp. 35-80.
- Rose, N., and A.Shepard (1997). Firm Diversification and CEO Compensation: Managerial Ability or Executive Entrenchment? *RAND Journal of Economics* Vol. 28, No. 2, pp. 489-514.
- SEBI (1997). *SEBI Regulations*. Available at <<http://sebi.gov.in>>
- Shin, H., and Y.S. Park (1999). Financing Constraints and Internal Capital Markets: Evidence from Korean Chaebols. *Journal of Corporate Finance* Vol. 5, No.2, pp. 169-91.
- Thomsen, S., and T.Pederson (2000). Ownership Structure and Economic Performance in the Largest European Companies. *Strategic Management Journal* Vol. 2, No. 5, 689-705.
- Williamson, O., (1985). *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. Free Press.

TABLE 1: DISTRIBUTION OF SAMPLE FIRMS BY INDUSTRY CLASSIFICATION

Industry GROUP	Number of Firms	Percent	Average number of years of observations	Total number of observations
Automobiles and ancillaries	71	10.1	8.5	604
Cement	29	4.1	8.6	251
Chemicals	138	19.7	8.6	1181
Diversified	19	2.7	8.5	161
Drugs and Pharmaceuticals	50	7.1	8.7	436
Electrical Machinery	68	9.7	8.7	594
Electronics	24	3.4	8.6	204
Food, Sugar and Beverages	66	9.4	8.7	572
Metal and metal products	69	9.9	8.4	578
Rubber and plastic products	31	4.4	9.1	282
Textile and textile products	91	13.0	9.2	837
Others	44	6.3	9.5	422
<b>Total</b>	<b>700</b>	<b>100.0</b>	<b>8.7</b>	<b>6122</b>

Source: Computed from the *Prowess* database

TABLE 2 : VARIABLES AND EMPIRICAL DEFINITION

Variable	Empirical definition	Mean	SD	p 25	Median	p 75
Adjusted Q	(Market value of equity <i>plus</i> book value of debt)/total asset	0.873	0.899	0.45	0.63	0.94
RoA	Net profit/total asset	0.046	0.089	0.02	0.04	0.08
Sales	Logarithm of total sales	2.324	0.659	1.95	2.30	2.72
Gr sales	Growth in sales over the previous year	1.109	4.565	0	0.12	0.26
Leverage	Total debt/total asset	0.346	0.199	0.21	0.35	0.47
Age	Logarithm of number of years since the incorporation of the firm	2.997	0.842	2.565	2.996	3.638
DGROUP	Dummy=1, if a firm belongs to a business group, else zero	0.585	0.493	0	1	1
PROM	Promoter's equity stake in the group firm	0.444	0.223	0.328	0.481	0.601
CVPROM	Coefficient of variation of promoter's share across firms in the same group	0.403	0.650	0.025	0.108	0.492
		Mean	SD	Max	Median	Min
NINDS	Number of industries in a business group	1.339	1.967	12	1	0
FIRMC	Number of firms in a business group	1.674	2.367	13	1	0

TABLE 3: UNIVARIATE TESTS: GROUP AFFILIATES (GA) VS. STAND-ALONE (SA) FIRMS

Variable	GA firms Mean (SD)	Observations	SA firms Mean (SD)	Observations	t-statistic for difference
Adjusted Q	0.901 (0.900)	4271 (418)	0.829 (0.893)	2742 (291)	3.275***
Net profit	0.041 (0.090)	4271 (418)	0.053 (0.088)	2742 (292)	-5.630***
Sales	2.441 (0.591)	4234 (417)	2.143 (0.716)	2719 (291)	18.109***
Gr sales	0.853 (36.868)	3823 (415)	1.511 (56.794)	2430 (287)	-0.229
Leverage	0.357 (0.194)	4271 (418)	0.329 (0.204)	2742 (291)	5.557***

\*\*\*, \*\* and \* denote statistical significance at 1, 5 and 10%, respectively

Number within brackets under Observations is the number of firms

TABLE 4: RESULTS FOR GROUP AFFILIATION AND FIRM PERFORMANCE

Variable	Dep. Var = Adjusted Q		Dep. Var = RoA	
	Constant	0.039 (0.011)***	0.397 (0.139)**	-0.004 (0.0009)***
Sales	0.267 (0.094)***	0.299 (0.051)***	0.046 (0.008)***	0.019 (0.004)***
Gr sales	0.0002 (0.0006)	0.0002 (0.003)	0.0001 (0.00002)***	0.0006 (0.0002)***
Leverage	-0.212 (0.115)*	-0.451 (0.147)***	-0.173 (0.016)***	-0.221 (0.013)999
DGROUP	0.013 (0.008)*		0.002 (0.0008)***	
dy_YR	Yes	Yes	Yes	Yes
dy_IND	Yes	Yes	Yes	Yes
Firms; group entities	681; 412	412	681; 412	412
Observations	5331	1576	5331	1576
Sample period	1996-2006	2001-2006	1996-2006	2001-2006
R-squared	0.309	0.210	0.286	0.205

The dependent variable is defined at the top of each column. Industry and year dummies are included in all specifications, but not reported to save space. The definitions of the variables are provided in Table 2.

Standard errors (allowed for clustering by firm and year) are within parentheses. \*\*\*, \*\* and \* denote statistical significance at 1, 5 and 10%, respectively

TABLE 5: GROUP CHARACTERITICS AND FIRM PERFORMANCE

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	Dep. Var = Adjusted-Q				Dep. Var = RoA			
Constant	0.282(0.149)*	0.225 (0.153)	0.283(0.126)**	0.207(0.169)	0.079(0.012)***	0.082(0.017)***	0.084 (0.026)***	0.073(0.013)***
Sales	0.419(0.093)***	0.411(0.092)***	0.422(0.093)***	0.416(0.091)***	0.027(0.004)***	0.026(0.004)***	0.027 (0.004)***	0.026(0.004)***
Gr sales	0.002(0.0004)***	0.001(0.0004)***	0.001(0.0003)***	0.001(0.0004)***	0.004 (0.004)	0.003 (0.004)	0.002 (0.003)	0.004 (0.004)
Leverage	-0.619(0.201)***	-0.630(0.201)***	-0.625(0.202)***	-0.621(0.197)***	-0.227(0.014)***	-0.229(0.014)***	-0.228(0.013)***	-0.228(0.014)***
INDSC	-0.069 (0.032)**				-0.009(0.003)***			
INDSC squared	0.005 (0.002)**				0.0007(0.0002)*			
FIRMC		0.013 (0.006)**			**	0.001 (0.0008)		
NINDS1			0.013 (0.109)				0.004 (0.022)	
NINDS2			0.038 (0.073)				0.021 (0.022)	
NINDS3			0.192 (0.078)***				0.022 (0.024)	
FIRMC1				0.223 (0.077)***				0.009 (0.006)
FIRMC2				0.186 (0.079)**				0.0003 (0.008)
FIRMC3				0.091 (0.092)				0.0008 (0.008)
dy_YR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
dy_IND	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firms, N.	412, 3745	412, 3745	412, 3745	412, 3745	412, 3745	412, 3745	412, 3745	412, 3745
Obs								
Period	1996-2006	1996-2006	1996-2006	1996-2006	1996-2006	1996-2006	1996-2006	1996-2006
R-squared	0.229	0.227	0.230	0.232	0.382	0.376	0.381	0.377

The dependent variable is defined at the top of each column. Industry and year dummies are included in all specifications, but not reported to save space. The definitions of the variables are provided in Table 2.

Standard errors (allowed for clustering by firm and year) are within parentheses. \*\*\*, \*\* and \* denote statistical significance at 1, 5 and 10%, respectively