

**The Effect of Business Group Affiliation  
on Firm Market and International Strategies**

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**Abstract**

This paper examines how business group affiliation influences the product market and international strategies of affiliated firms. Because business groups possess advantages in product markets through their access to group reputations, established relationships with clients, and other affiliate firms, I hypothesize that these advantages enable group-affiliated firms to serve a broader set of industry segments. In addition, business groups are likely to have trade ties or affiliates in foreign markets, who can share their knowledge of these markets, thereby lowering the barriers to entry for group affiliates. Thus, group-affiliated firms are predicted to serve a more diverse set of foreign markets. I generate competing arguments on the export orientation of group-affiliated firms. Since group-affiliated firms are likely to have ties to foreign markets, they may have a higher export orientation. Conversely, the benefits of group membership could be somewhat confined to the domestic market, suggesting that group-affiliated firms will have a lower export orientation. I test these arguments on a sample of 173 group-affiliated and 537 unaffiliated Indian software service firms from 1991-2002.

Key words: Business groups, firm strategies, firm performance, emerging economy

## 1. INTRODUCTION

The idea that corporate ownership is something that is widely-dispersed among many shareholders is typical for very few countries. In most countries, especially those with poor shareholder protection, firms have controlling shareholders, usually wealthy families that control many firms simultaneously. Within these family controlled firms there is little separation between ownership and management (La Porta, Lopez de Silanes, & Shleifer, 1999). This type of family-dominated ownership of several legally independent companies is commonly referred to as a *business group* (Khanna & Rivkin, 2001).

Business groups have been theorized to provide benefits to their affiliate firms through capital markets, product markets, contract enforcement, and government influence (Khanna & Palepu, 1997), which are often beyond the reach of independent firms. My dissertation addresses how access to group resources, such as ties to sister affiliate firms, established relationships with clients, and group reputations, influences the strategies of group-affiliated firms within an industry. While scholars have examined the effect of group affiliation on performance (e.g., Khanna & Palepu, 2000a), relatively few have examined how affiliation affects firm market choices (e.g., Guillén, 2002). More theoretical consideration and firm-specific data is needed to understand how affiliation influences firm strategies. My dissertation systematically analyzes both the product-market and international strategies of firms to build a more comprehensive picture of competition in emerging economies. As such, it explores how group affiliation translates into strategy differences beyond just financial performance.

I compare the product market and international strategies of group-affiliated versus unaffiliated firms. Drawing on business group literature, I argue that group-affiliated firms have access to a more diverse customer base, in terms of the industry segments they serve, resulting in

them serving a wider range of industries. In addition, business groups are likely to have trade ties or affiliates in foreign markets. These affiliates can share their client contacts and knowledge of the foreign markets, thereby lowering the barriers to entry for group affiliates. Thus, group-affiliated firms are predicted to have a higher export orientation and serve a more diverse set of foreign markets. On the other hand, the benefits of group membership may be somewhat confined to domestic markets, suggesting group-affiliated firms focus more on domestic sales and less on international sales.

I investigate these questions within the context of one industry – the Indian software services industry (“Indian software industry”) over the period 1991-2002. As noted by Khanna and Palepu (2000a), the Indian context offers several advantages: 1) there are hundreds of business groups in India, permitting large sample statistical analysis and 2) firms in India are usually associated with just a single business group. Indeed, Figure 1 shows the large number of group-affiliated and independent firms in the software industry over the study period. Furthermore, business groups typically entered the software industry by starting a new firm or division rather than through acquisition. Firms, then, did not choose to be associated with a business group, but were so from the beginning of their existence. And many of them were wholly-owned by a business group, making it possible to account for ownership cleanly. Finally, the unique dataset I use contains information on both private and public firms. Previous studies on business groups used either publicly listed companies or very large firms for their comparisons. For example, Change and Hong (2000) use only those firms listed on the Korean stock exchange and unlisted companies with assets of more than 6 billion won. The unaffiliated firms included in these previous studies may be the most successful and largest firms in the economy, causing the results to be biased. My dataset alleviates these issues.

[Insert Figure 1 about here]

## 2. THEORY AND HYPOTHESES

Business groups are multicompany organizations, meaning that they control several legally independent firms that frequently operate in different industries but which are bound together under the control of a founder family (Leff, 1978; Khanna & Rivkin, 2001). In the sense that they operate in different industries, business groups are similar to conglomerates, the difference being that they are both managed and controlled by a family.

Institutional economics conceptualizes 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 to rent-generating opportunities (e.g., Leff, 1976). In addition, absent well-functioning capital markets, firm diversification was seen as a way for investors to diversify their investment and reduce risk. Research on Japanese *keiretsus* (Caves & Uekusa, 1976) and Korean *chaebols* (Chang & Choi, 1988) both followed this framework. Later researchers argued that business groups not only alleviate capital market failures, but also failures in product markets, labor markets, and technology markets (Khanna & Palepu, 1997). Within this later framework, group affiliation is assumed to confer a number of benefits onto affiliated firms, including the pooling of resources for training purposes, sharing information amongst members, sharing a brand name, transferring skilled managers to different businesses, and exchanging resources internally. Given that affiliated firms have access to these numerous resources, one would expect their strategies to differ from those of unaffiliated firms. However, we lack a comprehensive understanding of how these resources translate into strategic choices, especially

within industries. In the following sections, I illustrate how these resources impact three strategy variables – industry segments, exports, and foreign markets.

## **2.1 Industry segment strategy**

Business groups are diversified organizations, often having firms in different industries. For example, in India the Hero Group is controlled by the Munjal family and has firms that operate in the bicycle, motorcycle and moped, automotive parts, health equipment, business process outsourcing, and finance and insurance industries. Similarly, the Modi Group (controlled by the Modi family) operates in the sugar, rubber, steel, liquor, car dealership, travel, cosmetics, writing instruments, financial services, and pharmaceutical industries. Khanna and Palepu (2000a) found that Indian business groups operate in an average of 3.76 industries, while Khanna and Rivkin (2001) found the average to be 3.5 industries. Similar to Korean chaebols and Chilean *grupos*, Indian business groups invest in and produce in several industries or product markets rather than a single product line.

Business groups accrue advantages by operating in these diverse industries. For one, business groups generate information from their activities, which can be relevant for investment and production decisions elsewhere within the group or economy (Leff, 1978). Indeed, Guillen (2001) found evidence that information and experience flow within groups from one company to another. Kim (1997) describes how Korean chaebols promote information sharing through the transfer of employees among affiliated firms. Dyer (1996) also provides evidence of information and knowledge sharing through face-to-face interaction and employee co-location within automotive keiretsus. Information sharing, in turn, reduces uncertainty surrounding investment and production decisions.

Business groups also coordinate activities between their affiliates (Khanna & Rivkin, 2001). For example, Korean business groups set up group-level R&D centers along broadly defined product lines, sharing any technological innovations among affiliates (Kim, 1997; Chang & Hong, 2000). Groups may also coordinate plant construction and staffing (Guillen, 2001). And evidence exists that groups coordinate exports and imports among their various affiliates to meet government regulations (Chang, 2003). These examples suggest that business groups coordinate more than just financial resources among affiliates, often facilitating the flow of information between firms.

Business group affiliates then have advantages in selling to different industries through their possession of group resources, such as direct ties between affiliated firms, established relationships with clients, and group reputations. Because business groups tend to operate in multiple industries, these resources provide an opportunity for group-affiliated firms to serve these internal customers. As illustration, Modi Software (part of the Modi Group) lists its previous software projects as including a product planning and control system for Modi Rubber Limited and a materials requirement planning and accounting system for Modi Olivetti Limited (Nasscom, 1995: 260). In Korea, internal sales among the top 30 chaebols accounted for an average of 15 percent of total sales (Chang & Hong, 2000). Group-affiliated firms can rely not just on these internal markets within the group structure, but also on the relationships their sister affiliate members have with outside firms in different industries in order to attract prospective clients. The existence of these business ties amplifies group reputations, providing opportunities for the firm to leverage the group's accumulated goodwill to attract customers and ease contracting difficulties that can arise in institutionally weak environments. Additionally, business groups invest in brands or reputations that credibly commit its affiliated firms to produce high-quality goods and not act opportunistically, increasing confidence in a firm's

products or services (Khanna & Rivkin, 2001)<sup>1</sup>. These favorable reputations help firms secure resources and customers by signaling superior quality and increasing confidence in a firm's products or services (Fombrun, 2005). Group-affiliated firms benefit from the group's reputation, which has been created through the course of its existence.

Unaffiliated firms do not possess similar resources, suggesting that they are at a significant disadvantage in both attracting clients and contracting with them. Group-affiliated firms, on the other hand, are able to serve clients in a broad range of industries. As a result, the range of markets in which group-affiliated firms operate is expected to differ from those of unaffiliated firms.

*Hypothesis 1: Business group affiliated firms will target a broader range of industry segments than unaffiliated firms.*

## **2.2 International strategies**

Business groups frequently have established contacts in foreign markets, which may enable them to penetrate these markets more easily than unaffiliated firms. First, many business groups have trading houses, which they use to export and import goods from other countries. For example, all of the largest Korean chaebols set up general trading companies, which they used to take advantage of government subsidies and tax exemptions on imports (Chang, 2003). The Korean trading houses were modeled on the Japanese *sogo shosha*. Similarly, many but not all Indian business groups have trading houses. And the government allows firms to import goods at favorable tax rates in exchange for generating foreign exchange earnings, providing business groups with an additional incentive to coordinate their exports and imports across industries.

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<sup>1</sup> This implicitly assumes reputations on the whole are positive. Even though firm reputations can at times be negative, the dissertation focuses on business group reputations in emerging economies, which have been found to be largely positive by other researchers (e.g., Khanna & Palepu, 1997).

Business groups may also have affiliates in foreign countries. In the 1960s and 70s, Indian business groups secured most of the licenses required by the government to establish joint ventures abroad. For example in 1970, eighty percent of the licenses for joint ventures in overseas production were secured by business groups. By 1977, business groups had established two-thirds of all Indian joint ventures in production overseas (Encarnation, 1989: 147).

Business groups are also frequent joint venture partners with multinationals wishing to enter the group's home market<sup>2</sup>. Business groups may use their strong political and bureaucratic ties to protect property rights and enforce contracts more efficiently than unaffiliated firms. This is an attractive feature for foreign firms wishing to protect proprietary assets but entering environments characterized by a lack of property rights protection. As a result, foreign firms may prefer to partner with groups that have reputation for honoring contracts (Mahmood & Mitchell, 2004). Groups may have better access to financial capital, talented labor, and firms in supporting industries so they will be more productive partners for foreign firms. In India, by 1973, business groups accounted for over a quarter of all joint ventures active in India (Encarnation, 1989: 62). Anecdotal evidence also demonstrates the prevalence of joint ventures between business groups and foreign firms. For example, Hero Honda is a joint venture started in 1984 between India's Hero Group and the Honda Motor Company of Japan. Hutchison Essar is a joint venture between the Essar Group and Hutchison Telecom International (Hong Kong) to sell cellular service in India. Similarly, Modi-Senator is a joint venture between the Modi Group and Merz & Krell (Germany) to manufacture and sell writing instruments in India.

These factors suggest that business groups are likely to have trade ties or affiliates in foreign markets, either through their joint venture partners or their import-export relations, which

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<sup>2</sup> The use of joint ventures in emerging economies is often due to government regulations that place restrictions on foreign ownership, nonetheless the subject here is the frequent partnering between business groups and foreign companies.

they can subsequently leverage to attract clients to a sister affiliate firm. For instance, Modi Software, part of the Modi Group which has a joint venture with Olivetti (Italy), lists its previous software projects as including “software development and support services to Olivetti’s Software Group for Olivetti Systems & Networks, Ivrea, Italy” (Nasscom, 1995: 260). These types of contacts allows groups to develop localized knowledge foreign markets, thereby lowering entry barriers to these markets and decreasing a firm’s liability of foreignness (Zaheer, 1995) in serving international markets. Thus business group affiliated firms, by virtue of possessing such contacts, are able to export more than unaffiliated firms.

Foreign entry and exporting also requires a commitment of resources, both financial and managerial. Business group affiliated firms are more resource rich than their unaffiliated counterparts because they have access to group-level resources. Formally,

*Hypothesis 2: Business group affiliated firms will have a higher export orientation than unaffiliated firms.*

Group affiliation may also affect the range of foreign markets that a firm targets to sell its services. As previously noted, business groups are likely to have business ties or even affiliates in surrounding countries, which lower entry barriers to these markets for sister affiliates and help attract customers. So for instance, keiretsu members help their affiliates with FDI in Southeast Asia (Belderbos & Sleuwaegen, 1996). And group-affiliated firms learn from the previous entries of sister firms into foreign markets (Guillen, 2002, 2003). In addition, the proliferation of regional trade agreements with neighboring countries increases the likelihood of the business group having established foreign trading relationships. Once within a country, a firm may also find that the market opportunity is greater than initially thought (Aharoni, 1966) and share that information with its sister affiliates. Thus, business group affiliated firms enjoy greater ease in

entering foreign markets and are aware of more market opportunities. As a result, I expect that group-affiliated firms will sell services to a broader range of foreign markets than unaffiliated firms.

*Hypothesis 3: Business group affiliated firms will serve a broader range of foreign markets than unaffiliated firms.*

On the other hand, many of the benefits of group membership are restricted to a business group's home country, where the group's network of economic and social ties is strongest (Granovetter, 1994). For example, group reputation is likely to be stronger domestically, where managers are familiar with the business group and its activities. Through their extensive participation in the domestic economy, the group's affiliate firms have developed strong ties to domestic companies. They may use these ties to establish arrangements with firms or assist in securing contracts. Thus, group membership provides its greatest benefits in the domestic market. As a result, group-affiliated firms may decide to exercise these benefits by focusing more on the domestic market and less on foreign markets.

*Hypothesis 4: Business group affiliated firms will have a lower export orientation than unaffiliated firms.*

### **3. DATA AND METHODS**

#### **3.1 Empirical Context**

This empirical study compares group-affiliated and independent firm strategies within the Indian software industry over the period 1991-2002. I am able to collect data on the Indian software industry starting in 1991, which coincides with a series of government reforms that effectively deregulated parts of the Indian economy, including the software sector (Zaheer & Rajan, 2003). This is especially relevant because business groups derive some benefits through

political influence. Political influence, however, is difficult to observe. By studying an industry that is largely devoid of government regulation, I am able to reduce the likelihood that firm strategies were influenced by political rent-seeking behavior. Further, analyzing an industry that has undergone liberalization has important practical implications. For example, whether or not the benefits of group affiliation dissolve with liberalization speaks differently about the systematic disadvantage of unaffiliated firms in these economies.

### **3.2 Data, Sample and Measures**

The data to test the hypotheses primarily comes from India's Nasscom directories. Nasscom (National Association of Software Service Companies) is the main industry trade group of the software and services industry in India; its members account for 90 to 95 percent of the Indian software industry revenue. One of the biggest advantages of the Nasscom directories is that they contain information on both private and public firms in India. Whereas previous research on business groups in India has been confined to only publicly traded or very large firms due to data availability (e.g., Khanna & Palepu, 2000a; Khanna & Rivkin, 2001), my sample includes both private and small firms, along with large and publicly traded ones.

The entries in the Nasscom directories constitute the primary source of historical data on the population of software services firms. I have collected and digitized the directories, which were originally produced in paper form, for the following years: 1990-91, 1992-93, 1994-95, 1996-97, 1997-98, 1999-2000, 2000-01, and 2001-02<sup>3</sup>.

I identified group-affiliated firms by reading the profile of each firm in the directories and recording its ownership, checking my coding against information on the Internet and in *Prowess*, a database created by the Center for Monitoring the Indian Economy (CMIE). Firms that are

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<sup>3</sup> The information is reported in the directories in the following year. Thus I have directories for 1992, 1994, 1996, 1998, 2000, 2001, 2002, and 2003.

affiliated with a business group are coded with a 1, and 0 otherwise. There are a total of 1516 software services firms in the directories. After eliminating multinationals, joint-ventures, and firms for which Nasscom did not provide descriptions, the final sample includes 173 group-affiliated and 537 independent firms, resulting in 1638 firm-year entries.

I use information provided in the Nasscom directories to construct the key variables. The range of *industry segments* a firm sells to is computed by aggregating the number of industries that a firm sells to. The entries in the Nasscom directories list the industry segments (commonly referred to as “verticals”) each firm serves. *Export orientation* is measured as the proportion of revenue earned from exports compared to total revenue. The Nasscom directories separate export revenue from total revenue for each firm. The *range of foreign markets* served is constructed by counting the number of foreign regions that a firm targets. Firms in the Nasscom directories list the foreign markets they target. Finally, I have several control variables at the firm level, which come from the Nasscom directories and other sources, as summarized in Table 1.

[Insert Table 1 about here]

### **3.3 Analysis and Preliminary Results**

In Table 2, I present descriptive statistics and correlations for the sample. Table 3 compares the means and standard errors between business group-affiliated and unaffiliated firms for firm-level independent variables. Not surprisingly, business group-affiliated firms are larger than unaffiliated firms and are more likely to have a quality certification. Notably, there is very little difference in age between these two sets of firms, suggesting that survivor bias may be minimized. Finally, group-affiliated firms are less likely to be publicly listed than unaffiliated firms.

[Insert Tables 2 & 3 about here]

All of the hypotheses have a similar form – business group membership is hypothesized to cause differences in strategy variables between business group-affiliated firms and unaffiliated firms. There are multiple observations over time for many of the firms in my sample, to account for this I perform a generalized least squares regression with random effects<sup>4</sup> for each strategy variable separately. Generalized least squares estimation with random effects produces unbiased results (Greene, 2003). To ensure that multicollinearity does not bias the results, the variance inflation factors were examined for each model and all variables scores were well below the recommended cut-off of 10, with the average variable scores being around 1.31 (Neter *et al.*, 1996). Table 4 presents the results of the regressions.

[Insert Table 4 about here]

Business group affiliation is not a significant predictor for either the number of industries or foreign markets that a firm serves, thus Hypothesis 1 and 3 are not supported. However, group-affiliated firms do appear to have lower export intensity than unaffiliated firms, rejecting Hypothesis 2 and lending support to Hypothesis 4. Combined, these results do not appear to support the view of business groups as providing benefits to their affiliates in terms of sharing information. Instead, the results suggest that business groups may act as constraints, causing affiliated firms to be more insular and confined to the domestic market.

Predictably, firm size, measured as the number of employees, has a positive and significant effect on all three strategy variables: number of industries served, export intensity, and number of foreign markets served. Firm age does not have a significant effect on export intensity or the number of foreign markets served, reflecting in some way the global nature of

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<sup>4</sup> I do not use fixed effects because business group affiliation is coded as a 1 or 0 and it does not change over time.

this industry where many firms commenced international activities from the outset, fitting the “born global” model. Firm age does a significant negative effect on the number of industries a firm serves. This suggests that many firms begin as ‘generalists’, serving a wide variety of industries, and over time develop specializations within certain industries which they then focus on. Having a quality certification has a significant effect on only the export and foreign markets. Interestingly, the effect is not significant for the number of industries served. This result supports the contention that Indian software service firms use quality certifications as a legitimation tool for foreign clients. Being publicly listed, on the other hand, does not have a significant effect on either export intensity or the foreign markets served. However, it does positively and significantly influence the number of industries served.

Finally, for the location variables, the GDP growth of the Indian state in which the firm is headquartered does not have a significant effect on any of the strategy variables. However, having a large amount of entrepreneurial investment in the manufacturing sector in the state (IEM) does significantly and positively influence a firm’s export orientation. This is not surprising since IEM investment is a proxy for investment in export-oriented units (EOU). Data on EOUs is only available beginning in 1996, eliminating two years from the sample. However, data on IEM is available for the entire sample period. Table 2 shows that the two measures are 75 percent correlated. In addition, I ran the regressions using EOU (excluding years before 1996) and achieved nearly identical results as with IEM.

### **3.4 Robustness Checks and Limitations**

An alternative estimation that may be used is a seemingly unrelated regression (SUR) model. An SUR model estimates all three regression equations simultaneously as a system. The advantage that SUR has over ordinary least squares regression is that it allows for

contemporaneous correlation of the error terms of each equation, thus leading to more efficient estimates (Greene, 2003). However, the drawback of SUR is that it is unable to accommodate multiple observations on the same firm over time. To overcome this limitation, I ran the SUR model six times (one for each year) using the same independent variables as in Table 4. There was no significant difference between these results and those presented in Table 4.

There are several limitations with the analysis presented. First, the dependent variables in the regressions are bounded since they are either count variables or ratios. The random effects GLS estimation does not explicitly take this into account. Although the results are unbiased, they are not necessarily the most efficient. Using count models, such as a negative binomial regression, may produce more efficient results. Future analysis may incorporate this and other estimations to produce more efficient results.

Second, business group affiliation is currently coded as a dummy variable (1 or 0), which does not account for variation among business groups. Group characteristics such as group size and diversification, as well as R&D and advertising, have been found to influence affiliate performance (Chang & Hong, 2000; Khanna & Palepu, 2000a) and may also impact affiliate strategy. The next step in my analysis will be to collect data on business group characteristics and incorporate these characteristics into my analysis. I have acquired the *Prowess* database on Indian firms, which has been used by other researchers to compile information on business groups, and I plan to use the database to find information on group size, diversification, exports, and whether they have operations in closely related industries, such as electronics and computer hardware.

Lastly, there are many firms that drop out of the sample during the time period examined. This is likely due to a combination of the secondary data sources used and the dynamic nature of

the industry. The Nasscom directories were compiled by surveying members. As with any survey, the response rate is not 100 percent, resulting in firms being dropped from the dataset. Additionally, the dynamic nature of the software industry in the 1990s, when many firms rapidly enter and exit, is also a contributing factor. This last factor is of considerable concern because it suggests that firms which provided information (for many consecutive time periods) may not be representative of the population: instead, they are the relatively more successful firms in the industry. To guard against this possibility, I plan to investigate the survival of each firm that dropped out of the sample.

#### **4. CONCLUSIONS AND FUTURE EXTENSIONS**

This research contributes to theories on business groups and competitive strategy by showing how access to group benefits affects firm behavior and market outcomes. Although there is some evidence that group structure mitigates capital market deficiencies, such as enabling business groups to enter diverse industries (Classens et al., 1999), there is little research on whether affiliation provides advantages beyond entry. This dissertation systematically examines whether or not these advantages translate into different strategies chosen by group-affiliated and unaffiliated firms.

The second half of my analysis will examine how business group affiliation affects firm performance. While scholars have studied the direct impact of business group affiliation on firm performance, the results have been contradictory with some researchers finding a positive effect (e.g., Khanna & Palepu, 2000a, 2000b), and others a negative one (e.g., Choi & Cowing, 1999). My aim is to investigate the effect of group affiliation on performance, contingent on firm strategies. I do not focus on evaluating the merits or shortcomings of the strategies themselves.

For example, I do not argue lower (higher) export intensity is beneficial (detrimental) to firm performance *per se*. Instead, I focus on whether group-affiliation helps or hurts firms, after controlling for firm strategies. My contribution will be that I examine this relationship taking into account firm strategies.

In related work, I plan to explore the technology strategies of firms. On the one hand, group-affiliated firms have access to resources such as highly talented employees, training programs, and manufacturing expertise; they can draw on these to develop technological capabilities. But on the other hand, affiliation may serve to shield firms from market forces like competition by allowing them to rely on the group structure to sell services. In this manner, group-affiliation may actually serve as a “disincentive to learn,” hindering their technological development. Additional research will look across industries and examine how business groups respond to increasing liberalization.

## 5. REFERENCES

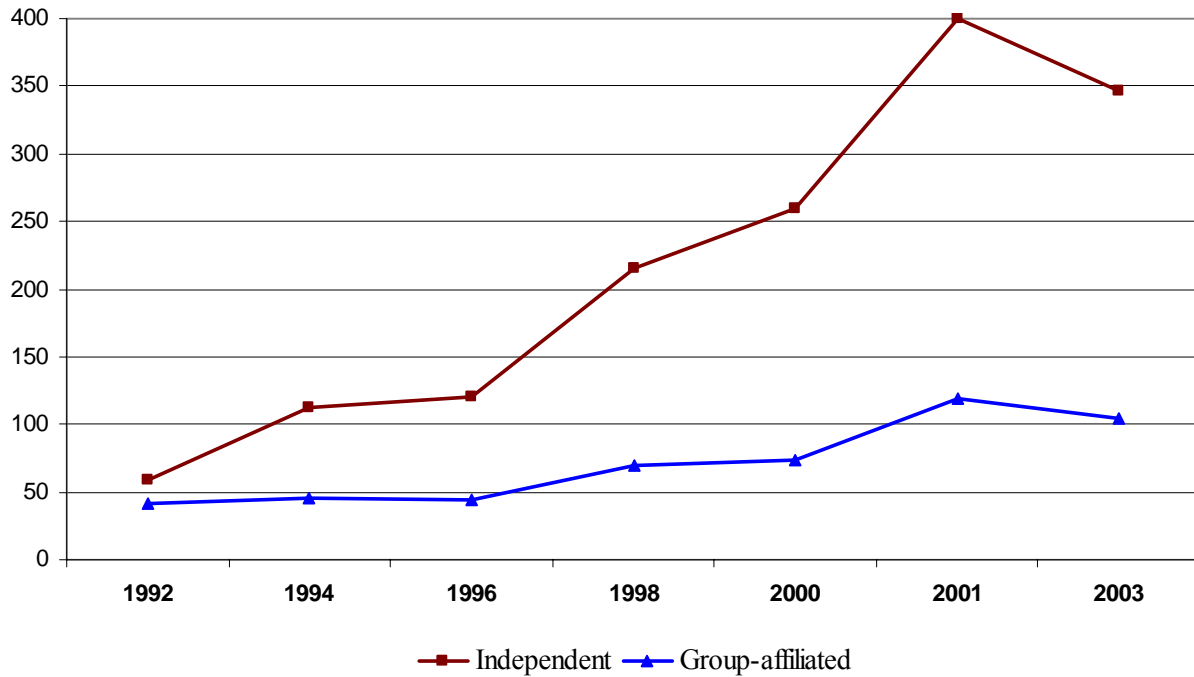
- Aharoni, Y. 1966. *The Foreign Direct Investment Decision Process*. Division of Research, Graduate School of Business Administration, Harvard University: Boston.
- Belderbos, R., & Sleuwaegen, L. 1996. Japanese Firms and the decision to invest abroad: Business groups and regional core networks. *Review of Economics and Statistics*, 78: 214-220.
- Caves, R., & Uekusa, M. 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., & Choi, U. 1988. Strategy, structure and performance of Korean business groups: A transactions cost approach. *Journal of Industrial Economics*, 37: 141-158
- Chang, S. J., & Hong, J. 2000. Economic performance of group-affiliated companies in Korea: Intragroup resource sharing and internal business transactions. *Academy of Management Journal*, 43: 429-448.
- Choi, J-P., & Cowing, T. 1999. Firm behavior and group affiliation: The strategic role of corporate grouping for Korean firms. *Journal of Asian Economics*, 10: 195-209.
- Classens, S., Djankov, S., Fan, J., & Lang, L. 1999. Corporate diversification in East Asia: The role of ultimate ownership and group affiliation. Working Paper #2089, World Bank Policy Research.
- Dyer, J. 1996. Does governance matter? *Keiretsu* alliances and asset specificity as sources of Japanese competitive advantage. *Organization Science*, 7: 649-666.
- 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, & J. S. Harrison (Eds.), *The Blackwell Handbook of Strategic Management*: 289-312. United Kingdom: Blackwell.
- Granovetter, M. 1994. Business groups. In N. J. Smelser & R. Swedborg (Eds.), *Handbook of economic sociology*: 453-475. Princeton, NJ: Princeton University Press.
- Greene, W.H. 2003. *Econometric Analysis* (5<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.

- Guillén, M. F. 2001. *The Limits of Convergence: Globalization and Organizational Change in Argentina, South Korea, and Spain*. Princeton, NJ: Princeton University Press.
- Guillén, M. F. 2002. Structural inertia, imitation, and foreign expansion: South Korean firms and business groups in China, 1987-95. *Academy of Management Journal*, 45: 509-525.
- Guillén, M. F. 2003. Experience, imitation, and the sequence of foreign entry: Wholly owned and joint-venture manufacturing by South Korean firms and business groups in China, 1987-1995. *Journal of International Business Studies*, 34: 185-198.
- Khanna, T., & Palepu, K. 1997. Why focused strategies may be wrong for emerging markets. *Harvard Business Review*, 75: 41-51.
- Khanna, T., & Palepu, K. 2000a. Is group affiliation profitable in emerging markets: An analysis of Indian diversified business groups. *Journal of Finance*, 55: 867-891.
- Khanna, T., & Palepu, K. 2000b. The future of business groups: Long run evidence from Chile. *Academy of Management Journal*, 43: 268-285.
- Khanna, T., & Rivkin, J. W. 2001. Estimating the performance effects of business groups in emerging markets. *Strategic Management Journal*, 22: 45-74.
- Kim, I. 1997. *Imitation to Innovation: The dynamics of Korean technological learning*. Boston: Harvard Business School Press.
- La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. 1999. Corporate ownership around the world. *Journal of Finance*, 54: 471-517.
- Leff, N. 1976. Capital markets in the less developed countries: The group principle. In *Money and Finance in Economic Growth and Development*, McKinnon R (ed.). New York: Marcel Dekker.
- Leff, N. 1978. Industrial organization and entrepreneurship in developing countries: The economic groups. *Economic Development and Cultural Change*, 26: 661-675.
- Mahmood, I. P., & Mitchell, W. 2004. Two faces: Effects of business groups on innovation in emerging economies. *Management Science*, 50: 1348-1365.
- Nasscom, 1995. *Indian Software Directory 1995-96*. New Delhi, India: Nasscom.
- Neter, J., Kutner, M.H., Nachtsheim, C.J., & Wasserman, W. 1996. *Applied Linear Regression Models* (4<sup>th</sup> ed.). Chicago, IL: Irwin Press.
- Zaheer, S. 1995. Overcoming the liability of foreignness. *Academy of Management Journal*, 38: 341-363.

Zaheer, S., & Rajan, R. 2003. Creativity under constraint: Technological imprinting and the migration of Indian business to the new economy. In B. Kogut (Ed.), *The global internet economy*: 191-222. Boston, MA: MIT Press.

## 6. APPENDIX

**FIGURE 1: Total number of business group-affiliated and independent firms in Indian software industry, 1991-2002.**



Source: Nasscom directories for years 1992-2003.

**TABLE 1: Variable Definitions**

<b>Definitions</b>		<b>Source</b>
<b>Dependent Variables</b>		
Industry segments	Count of industry segments a firm sells services to	Nasscom
Export Intensity	Proportion of revenue from exports	Nasscom
Foreign Markets	Count of foreign regions served	Nasscom United Nations Statistics Division
<b>Independent and control variables</b>		
Business group	1 if affiliated with business group, else zero	Nasscom, Prowess, Internet
Age	Firm age	Nasscom
Size	Log of number of employees in software division	Nasscom
Quality Certification	1 if firm has an ISO 9000-family or CMM level certification, else zero	Nasscom
Publicly listed	1 if firm is publicly traded on Bombay (BSE) or National Stock Exchange (NSE), else zero	Nasscom, BSE, NSE
GDP growth	Net domestic product per Indian state each year	Handbook of Statistics on Indian Economy
Industrial entrepreneur memorandum (IEM)	Cumulative value of entrepreneurial investment in the private sector per state, per year (in ln)	Secretariat for Industrial Approvals
Export oriented units (EOU) <sup>a</sup>	Cumulative value of investment in export-oriented units per state, per year (in ln)	Secretariat for Industrial Approvals

<sup>a</sup> Information on the investment in export-oriented units is only available starting in 1996. This information is missing for 1992 and 1994. Instead, I use the value of entrepreneurial investment (IEM), which is available for the entire time period.

**TABLE 2**  
**Mean, Standard Deviations and Correlations**

Variable	Mean	s.d.	Min	Max	1	2	3	4	5	6	7
1. Industries	5.24	3.16	0	16							
2. Export Intensity	0.53	0.42	0	1	0.0258						
3. Foreign Markets	2.70	2.09	0	17		0.4956***					
					0.1649***						
4. Business group	0.25	0.43	0	1	0.0487*	-0.0233	0.0794**				
5. Total employees <sup>a</sup>	4.40	1.38	0.69	9.73	0.1735***	0.2208***	0.4882***	0.1573***			
6. Age	7.28	6.10	0	35	0.0233	0.0622*	0.2330***	0.0498**	0.4770***		
7. Quality certification	0.25	0.43	0	1	0.0939***	0.2310***		0.1255***	0.5093***	0.2564***	
							0.3635***				
8. Publicly listed	0.16	0.37	0	1	0.1367***	0.1191***	0.2599***	-0.0265	0.4414***	0.1712***	0.2794***
9. State GDP growth	0.06	0.08	-0.51	0.45	0.0277	-0.0485	0.0065	0.0310	-0.0129	-0.0259	-0.0526*
10. IEM investment <sup>a</sup>	25.51	2.16	0	28.31	-0.0773**	0.1169***	0.0700*	-0.0116	0.1133***	0.0520*	0.1609***
11. EOU investment <sup>a</sup>	21.72	0.80	16.81	22.46	-0.0046	0.1252***	0.1148***	-0.0128	0.1554***	0.0725**	0.0885**
					<b>8</b>	<b>9</b>	<b>10</b>				
9. GDP growth rate					-0.0262						
10. IEM investment <sup>a</sup>					0.0724**	-0.3314***					
11. EOU investment <sup>a</sup>					0.1349***	-0.3172***	0.7466***				

$N = 1638$  (Export intensity,  $N=1564$  due to missing values)

<sup>a</sup> Logarithm or natural log of value

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

**TABLE 3: Comparison of the Means between Unaffiliated and Group-affiliated firms for Key Independent Variables**

	Obs.	Unaffiliated	Group-affiliated
<b>Log of Employees</b>	1638	4.28 (0.037)	4.79 (0.079)
<b>Age</b>	1638	7.11 (0.159)	7.81 (0.370)
<b>Quality Certification</b>	1638	0.22 (0.012)	0.34 (0.024)
<b>Publicly Listed</b>	1638	0.17 (0.011)	0.14 (0.018)

(standard errors are in parentheses)

**TABLE 4: Results of Regression Analysis with Strategy Variables as Dependent Variables**

Variable	Industry Segments	Export Intensity	Foreign Markets
Business group affiliation	0.168 (0.75)	-0.079** (-2.26)	-0.015 (-0.11)
Age	-0.049** (-2.77)	-0.002 (-0.68)	-0.006 (-0.53)
No. of Employees	0.295** (3.42)	0.041*** (3.86)	0.591*** (11.58)
Quality	-0.023 (-0.11)	0.085*** (3.71)	0.610*** (5.00)
Publicly listed	0.737** (2.80)	0.002 (0.05)	0.137 (0.89)
State GDP growth	0.034 (0.04)	0.060 (0.66)	0.382 (0.75)
IEM investment <sup>a</sup>	-0.126** (-3.17)	0.010** (2.16)	0.003 (0.15)
Constant	7.282*** (6.90)	0.093 (0.79)	-0.218 (-0.36)
<i>N</i>	1638	1564	1638
<i>R</i> <sup>2</sup>	0.05	0.08	0.26
Wald test of estimation fit, $\chi^2(7)$	41.26	69.05	324.74

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ ; z-statistics are reported in parentheses.

<sup>a</sup>To ensure that IEM investment is a good proxy for investment in export oriented units (EUO), I performed all of the regressions using investment in EOU for years after 1996 and the results were identical to those using IEM.