Business Group Affiliation Improves New Firms' Profitability

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Abstract

I investigate the causal link between business group affiliation and new firms' profitability. To overcome selection issues related to group affiliation, I focus on ownership changes at least two levels away in the ownership chain that lead to a change in group affiliation. I provide evidence suggesting that these "unintentional" changes are likely exogenous. I find that business group affiliation leads to a 12% increase in new firms' profitability during the first six years. I further present evidence consistent with two channels. First, new firms quickly increase revenues and expand market shares after joining business groups, possibly leveraging on groups' marketing networks. Second, group affiliation triggers a higher ratio of top manager turnover and leads to more experienced top managers and more productive employees. It is possible that business groups provide a talent pool of managers and better monitor new firms' labor force. Results suggest that business groups parallel the role of venture capital firms in sponsoring new firms in economies with concentrated equity ownership.

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1. Introduction

Business groups that function as legally independent firms and that are connected with common concentrated equity ownership are a dominant structure outside of the United States.[1] Several studies show that such groups are also widespread in the new firm sector (Rosa and Scott, 1999; Iacobucci, 2002; Bena and Ortiz-Molina, 2013). As shown in this paper, business groups are a pervasive ownership structure for new firms across industries in European countries.[2] Its dominant role dwarfs other common ownership structures for new firms, such as venture capital (VC).

The total effect of business group affiliation is controversial. On the one hand, business group affiliation could be beneficial to group members by providing financing advantages, improving operating efficiency,[3] promoting R&D investment and knowledge spillovers,[4] and creating an internal labor market (Khanna and Palepu, 1999; Belenzon and Andrea, 2011). On the financing advantage, group members can leverage the group's internal capital market[5] and reputation (Khanna and Palepu, 2000; Gomes, 2000), receive contingent support,[6] and share risk among group members (Khanna and Yafeh, 2005). All of these benefits make the business group an ideal ownership structure for new firms, which tend to be financially constrained, vulnerable to financial shocks, highly risky, but active in innovation. On the other hand, certain disadvantages of group affiliation may be more severe for new firms. Among the various means of expropriation by the ultimate owner, the most notorious phenomenon is tunneling. New firms usually gravitate to the bottom of the ownership chains, where the diversion incentives are larger.

[1] For both empirical evidence and theoretical background, refer to La Porta, Lopez-De-Silanes, and Shleifer (1999); Claessens, Djankov, and Lang (2000); Khanna (2000); and Morck, Wolfenzon, and Yeung (2005).

[2] In the period from 1999 to 2008, 11.2% of new firms belonged to business groups. These group affiliated new firms account for 50.6% of total assets, 46.3% of total revenues, and 38.9% of employees in the new firm sector. Detailed statistics are shown in Table A.1, Table A.2, and Table A.3.

[3] Hamelin (2011), Lechner and Leyronas (2009), and Iacobucci and Rosa (2005).

[4] Sea-Jin, Chi-Nien, and Mahmood (2006), Belenzon and Berkovitz (2010), and Hsieh, Yeh, and Chen (2010).

[5] Almeida and Wolfenzon (2006), Almeida, Park, Subrahmanyam, and Wolfenzon (2011), and Masulis, Pham, and Zein (2011).

[6] Morck and Nakamura (1999), Gopalan, Nanda, and Seru (2007), and Gopalan, Nanda, and Seru (2014).

In this paper, I aim to establish a causal link between business group affiliation and new firms' profitability, based on comprehensive ownership and financial data about new firms from 24 European countries. I also aim to provide evidence on the contributing mechanisms of the profitability change.

Regarding the causal effect of business group affiliation on firms, appropriately addressing selection is perhaps the most important task. In an ideal setting, new firms are assigned to groups or non-groups randomly. However, this cannot be realized since acquisitions (spin-offs) are not random. Instead, I propose a quasi-experimental setting, where the group status change is an unintentional result of ownership changes above the parent shareholder level. Intuitively, when a firm at the top of the ownership chain is acquired by a business group, holding other ownership links constant, firms at the bottom of the ownership chain (subsidiaries, sub-subsidiaries, etc.) also join the business group unintentionally. The same logic applies to firms that unintentionally leave business groups. More precisely, I require the ownership stake in the new firm from any parent shareholder to be constant during the group status change. In this setting, the unintentional claim is motivated by two facts. First, new firms are much smaller compared to the groups and parent shareholders. Therefore, they are expected to take a negligible weight in the acquisition decision. Second, if the acquirer's major incentive is to share cash flows of the bottom firm, the weakly dominant strategy is to acquire the bottom firm directly, instead of acquiring the bottom firm through its parent shareholder. I present an example in Appendix B to clarify this setting. A new firm Active Audio was partially owned by Electronatec. In 2006, Electronatec was acquired by ECA, which belonged to a huge family controlled business group. During the acquisition, Electronatec did not change its stake in Active Audio at all. As a result, Active Audio also became a member of the same business group. It is noteworthy that Active Audio was a tiny part of Electronatec and rarely mentioned as one of the acquisition incentives. In fact, its business was not directly related to the synergies claimed in the filing.[7] All of these

[7]ECA Group Annual Report, 2006.

observations suggest that Active Audio's group affiliation was unintentional.

I provide two sets of tests to investigate the validity of this setting. First, since any new firm with corporate parent shareholder(s) is a candidate for unintentional change, I check the ex-ante difference between new firms that unintentionally change group status, and other new firms with parent shareholder(s). Results show that these two sets of firms are similar, in terms of common observable characteristics such as size, growth rate, and profitability. Second, I check whether group effects vary by the relative importance of new firms. If changes in ownership above the parent level are driven by the new firm at the bottom, more important new firms are expected to take on increased weight in the acquisition decisions. Therefore, group effects should be stronger for them. I use the relative size of the new firm to the group or parent shareholder(s) as a proxy for importance. After splitting the sample into joining groups (group affiliation) and leaving groups (group detachment), I find that the group affiliation effect is actually driven by less important firms, while the group detachment effect does not vary. Results of these tests justify the unintentional claim for identification.

Using the above quasi-experimental setting, I carry out a difference-in-differences analysis, through investigating the change of profitability based on both non-parametric matching and multivariate OLS regressions. My studies show that group affiliation leads to a 12% increase in profitability, while group detachment has an insignificant effect. Comparing the results across models shows that selection issues are against the group affiliation and the group detachment effect. That is, less profitable firms are acquired by business groups, while more profitable firms are spun off, after controlling for observable characteristics. Without addressing selection issues, comparison of group versus non-group firms would underestimate the group affiliation effect, and overestimate the group detachment effect.

After establishing the positive group affiliation effect on a new firm's profitability, I investigate and present two major mechanisms. First, similar to VC firms, business groups may draw on their networks to support group members and help them increase revenue. Consistent with this projection, I find that revenue (scaled by the lagged total assets) increases by

5% upon joining a group. With a stable gross profit margin, this growth in revenue translates to growth in gross profit and accounts for 44% of the increase in profitability. Meanwhile, a new firm's market share in its industry increases by 14%. Additionally, the expansion magnitudes double when the business group has a higher market share in the same industry. Consistent with the revenue-oriented growth, I find that the group affiliation effect is more significant in the retail and wholesale sector. All of these effects are comparable to the VC's role in supporting portfolio companies (Gorman and Sahlman, 1989; Hochberg, Ljungqvist, and Lu, 2007).

The second potential channel is that group affiliation might provide the new firm with better quality labor. Indeed, my studies show that joining a group doubles the top manager turnover ratio. About 30% of those new managers are from other firms within the same group. Management experience, measured by the tenure of the top managers across different firms, increases by 24%. In addition, monitoring, training, and even replacement are not restricted to the top managers. The average productivity of employees also improves significantly, captured by revenue generated per employee (13%), profit generated per employee (18%), and the marginal productivity of labor measure (Larrain and Stumpner, 2013) (7%) for the manufacturing sector. Again, these results suggest that business groups parallel the role of VC in cultivating new firms (Gorman and Sahlman, 1989; Hellmann and Puri, 2002).

Overall, my results contribute to three strands of research. First, this paper documents the comprehensive role of business groups in sponsoring new firms and their causal effect on new firms' profitability. Although there is a vast literature about group effects on general firms, less attention has been given to its effects on new firms. Existing research on new firms are limited as they either focuses on one country (Rosa and Scott, 1999) or one industry (Iacobucci, 2002; Bena and Ortiz-Molina, 2013). I show that business groups are a dominant structure for new firms across 24 countries and 21 two-digit NAICS industries. The quasi-experimental setting helps establish the causal link and fills the void of methods addressing selection for new firms. Extensive research studying correlations between group affiliation

and performance is based on comparisons of group firms versus non-group firms. Khanna and Yafeh (2007) point out that these "comparisons are plagued with selection issues, the most obvious one being the assumption that group affiliation is exogenous." Several methods have been proposed to address the selection issue but none of them can be applied to studies of new firms. For example, some research studies use a firm's idiosyncratic risk as the instrument (Himmerlberg, Hubbard, and Palia, 1999; Villalonga and Amit, 2006; Masulis et al., 2011). Unfortunately, this could only be applied to public firms that have available market price. New firms tend to be dominated by private firms. Alternatively, leveraging the exogenous change of inter-corporate tax policy is appealing (Morck, 2005; Sautner and Villalonga, 2010). Nevertheless, there are three barriers to applying it in my setting. First, there is the limited variation of tax policy, in particular the inter-corporate dividend tax, during the same period in Europe. Second, the change of inter-corporate policy may take a long time to affect a firm's ownership structure (Kandel, Kosenko, Konstantin, Morck, and Yafeh, 2013). Third, new firms are less sensitive to the change of these tax policies as they rarely generate dividends during their early years. Spin-offs from business groups are biased towards more established firms. Therefore, neither inter-corporate dividend tax nor capital gain tax has a strong effect on the new firm's affiliation status. In fact, in-sample investigation shows that variations of inter-corporate tax rates are weakly correlated with one specific new firm's affiliation decision, after controlling for other firm level characteristics.

Second, the two mechanisms proposed extend the discussion of business group affiliation benefits. The expansion of revenue and market shares are consistent with the operating benefits of group affiliation. An improvement of labor quality is related to both the direct managerial support from business groups and the internal labor market created by the business groups. Third, my research findings are related to the research on corporate venture capitalists (CVC). Ivanov and Xie (2010) emphasize that the positive role of CVCs lies on a strategic fit between new firms and the parent companies of CVCs. This is consistent with my finding that operating synergies are a major part of affiliation benefits during the early

years.

The rest of the article is structured as follows. Section 2 describes group construction procedures, the quasi-experimental setting, and main specifications used in this study. Section 3 describes the data and investment pattern of business groups. Section 4 presents results related to profitability. Section 5 presents two major mechanisms contributing to the improvement in profitability. After discussing the robustness of the results in Section 6, I conclude the paper in Section 7.

2. Methodology

In this section, I first discuss the group construction procedure. Then I propose the quasi-experimental setting used to establish causal link. Finally, I describe major specifications used.

2.1. Identification of business groups

I use a similar method as Almeida et al. (2011) to identify business groups, based on inter-corporate ownership links.[8] This method takes into account all of the ownership links among group members. Business groups are identified in two steps: firms are assigned to different clusters; further restrictions are imposed to qualify clusters as business groups. Specifically, for a pre-selected cutoff value α, firms are identified as either one of the following two types:

1. Ultimate owner of a cluster. This kind of firm does not have any corporate shareholder with ownership stakes more than α. Each ultimate owner k belongs to a different cluster C_k.
2. Cluster member. A cluster C_k is defined as a biggest-possible fixed point:

[8]While each firm (including every corporate shareholder) has a unique BvD identification number in the database, individual shareholders can only be identified by name. Therefore, I only focus on inter-corporate ownership links to precisely construct business groups. As a result, all of the ultimate owners are firms instead of individual investors.

$$C_k(\alpha) = \{i : \sum_{j \in C_k(\alpha), j \neq i} s_{ji} \geqslant \alpha\}$$

$$\nexists C_m(\alpha) : C_k(\alpha) \subset C_m(\alpha), \forall m$$

$$C_m(\alpha) \cap C_n(\alpha) = \emptyset, \forall m, n$$

where s_{ji} is the ownership stakes of shareholder j in firm i. That is, a firm i is a member of cluster C_k as long as the sum of stakes from all other cluster members, including the ultimate owner, exceeds the threshold value α. The cluster also has to be the biggest possible one so that no other clusters could fully contain it. Last but not least, clusters are mutually exclusive.[9]

Business groups are defined as clusters with more than five firms and non-PE ultimate owner. The former criterion ensures that there are enough members in each group. The latter one ensures that group effects are not driven by portfolio companies of independent VCs. Major results in this paper are based on $\alpha = 30\%$. Clusters are constructed through iterations.

2.2. Quasi-experimental Setting

To establish causal link between group affiliation and profitability, it is crucial that firms exogeneously change the group affiliation status. Simple comparison of group versus non-group firms may be intuitive. Nevertheless, instead of being random, selection into (and out of) a group is generally determined on both observable and unobservable variables. Therefore, it is inappropriate to attribute any difference based on simple comparison to merely a distinct affiliation status (Khanna and Yafeh, 2007). Alternatively, comparisons of profitability before and after group affiliation only partially address this issue, by controlling for time-invariant firm characteristics. The difference based on comparison may still be driven by other time-variate variables. In a nutshell, in the setting to investigate causal

[9] Appendix A shows an example of cluster construction.

effect, the selection of group affiliation cannot be correlated with any other variables besides controlled characteristics.

In this paper, I propose a quasi-experimental setting where the change of affiliation status is unintentional. In this setting, none of the parent shareholders change their stake in the new firm. The change in group status is due to ownership changes at least two levels away in the ownership chain. For example, when a group acquires the parent company without changing its stake in its subsidiary, the subsidiary joins the group unintentionally. The acquisition decision is less likely to be driven by characteristics of the subsidiary. In fact, if the characteristic of a firm affects the decision of acquisition, changing ownership through its parent shareholder is weakly dominated by changing the ownership stake in it directly. Generally, the ownership change may occur well above the parent level, e.g., firms owning the parent firm may be acquired by the business group.

To be precise, a firm experiences an unintentional status change if:

1. There is an affiliation status change. The firm either joins a group or leaves a group;
2. None of its first layer parent shareholders change their stake in the firm;
3. Neither the firm nor any layer of subsidiary change its stake in its subsidiary.

The common trade-off between causality identification and local effect also applies in my setting. Since the definition of unintentional change implicitly requires that new firms already have at least one parent firm, estimation results are based on non-stand-alone firms. Essentially, I push the selection issue between the parent firm and the new firm back to the beginning of the sample. An example is presented in Appendix B to clarify the definition.

2.3. Main Specifications

I use the above quasi-experimental setting to do a difference-in-difference analysis. Since both joining a group and leaving a group suffer the selection problem, I first split the sample into these two parts to make the inference econometrically feasible. For each part, I keep

the firm in the sample up to one (unintentional) group status change.[10] Effects of joining a group are referred as group affiliation effects, while effects of leaving a group are referred as group detachment effects. Then I carry out the difference-in-differences analysis in two settings.

The first setting is based on the non-parametric comparison between the treatment sample and control sample.[11] For each firm that unintentionally joins (leaves) a business group, I find a control sample of firms which never (always) belong to a business group. This set of firms is matched exactly on the incorporation country, industry, year, age and legal form.[12] Besides, since any new firm with parent shareholder(s) is a candidate for unintentional change, the matched firms are further required to have at least one parent shareholder. I then calculate the average change of profitability before and after unintentionally joining (leaving) business groups, and repeat the calculation for the control sample. Finally I compare the difference in changes across two samples.

The second setting is an OLS multivariate regression model on a panel of firm level observations. The panel data helps control time-invariant observations. I run following regressions:

$$DepenVar_{it} = \alpha + \beta \cdot GroupDummy_{it} + \lambda' FirmControls_{i,t-1} + \delta_{ct} + \mu_i + \epsilon_{it} \qquad (1)$$

where $GroupDummy$ is a binary variable taking value 1 if firm i belongs to a group at year t, and 0 otherwise; $FirmControls$ are one year lagged firm level variables; δ_{ct} is the country by year fixed effect; μ_i is the firm fixed effect; and ε_{it} is the error term. My measure of reported profitability, which captures a new firm's ability to generate pledgeable cash flows, is operating income before interest, taxes, depreciation, and amortization scaled by the

[10] Major analysis through the paper requires this change to be unintentional. To investigate the selection issues, I also release this requirement for a general change in section 4.2.1.

[11] Following the experimental terminology, I call firms that experience group status change "treatment sample", while the set of matched firms "control sample".

[12] I implement the exact matching using the STATA command "psmatch2" of Egger, Erhardt, and Lassmann (2003). Results are based on 7 nearest neighbor matching, and robust to 5 or 10 nearest neighbor matching.

lagged total assets ($EBITDA/Total\ Assets_{t-1}$). I control for a set of firm level characteristics correlated with the acquisition decision, including firm size (*ln of Total Assets*), leverage ratio, tangibility (tangible asset scaled by total assets), age, and legal incorporation form.[13] A positive coefficient β indicates that the dependent variable is bigger when the firm is in the group.

I run this specification on three different sub-samples. The first sub-sample includes firms originally non-group (group) affiliated, but eventually join (leave) a group. Because entries to (exits from) groups are staggered, these firms are both control and treatment firms. For a firm that joins (leaves) a group, the control category includes non-group (group) firms which would eventually become group (non-group) firms. The second sub-sample adds firms that are never (always) group affiliated to the first sub-sample. Since any new firms with corporate parent shareholder(s) are candidates for the unintentional change, I introduce a dummy variable $LagParentInd$ to indicate whether the firm has at least one corporate shareholder one year before (taking value 1) or not (taking value 0). The third sub-sample further adds firms always (never) belonging to groups. Adding the latter two sub-samples only indirectly affects the identification of β through estimations of other coefficients.

3. Data

3.1. Data source

I use the Bureau Van Dijk (BvD) Amadeus database that contains data on private and public companies spanning all industries in 42 European countries. BvD collects data from different vendors across European countries. The data vendor of each country collects data from firms' filings. Public companies are required to file accounts, while private company's

[13]Since these control variables are not available for all firms in the sample, I imputed a value equal to country-industry-year average to the missing observations and also included dummies for each variable that equals one if the observation had been imputed. In this way, I do not lose observations, but can include the controls. The results are similar if I do not impute the missing observations.

filing may not be obligatory, depending on the incorporation country, legal form and size.[14] Although the coverage is not comprehensive due to filing requirements, in the 24 countries used, it is comparable to and representative of the population of firms reported in aggregate data by the European CommissionArellano, Bai, and Zhang (2012).[15]

The advantage of Amadeus is that it covers young private firms, and contains detailed ownership and accounting data. There are four major categories of data used in this paper: ownership information, profile information, top manager information,[16] and accounting information. For each firm, the ownership information includes shareholder names, ownership stakes, and shareholder types for both corporate shareholders and individual shareholders. Profile information has the firm's name, incorporation date, and industry classification. Accounting data reports 50 items from the standard balance sheet and income statement. And manager information contains each top manager's name, function and date of birth.

All four categories are linked through a unique BvD identification number for each firm. A company appears in Amadeus as long as its filing is available. And it is kept in the database up to four years after its last filing. For the first three categories, each update of Amadeus reports the most recent information. For accounting information, only the most recent ten years' data is contained. To construct a set of panel data and overcome the survival bias, I use ten Amadeus DVD updates: June 2000 (the first Amadeus DVD produced), June 2001, June 2002, June 2003, June 2004, June 2005, June 2006, June 2007, June 2008, and June 2009. The resulting panel data gives a unique breadth of cross-sectional coverage since Amadeus started to collect information (1995) to 2008.

[14]Detailed country level criteria are available in Table 12 of Klapper, Laeven, and Rajan (2006).

[15]According to Egger, Erhardt, and Lassmann (2013b), specifically to French data, Farid Toubal provided evidence on this on the occasion of a discussion of Egger, Egger, and Kreickemeier (2013a), at the "Globalization and Labor Market Outcomes: Recent Advance" conference at Banque de France on May 16-17, 2013.

[16]Top managers are identified as managers with positions of "CEO", "Chief Manager", "Chief Executive Officer", "Person In Charge", "Firm Manager", "Managing Director", and "President".

3.2. Sample construction

The sample construction includes three steps: identification of business groups, identification of new firms, and merging with other information. Since Amadeus significantly expanded coverage in 1998, I focus on observations from 1999 to 2008.

Business groups are identified based on all available inter-corporate ownership links available in Amadeus during the sample period (42 countries and 9.6 million links). I take into account a cross-border link even though the shareholder is in a country that is excluded from the sample later. This aims to more precisely identify business groups, as cross-border links are common among European firms.

To have enough observations for panel analysis, I identify new firms as those with ages 1-6 years old. This also takes into account that new firms may take 1 or 2 years after incorporation to reach the threshold of filing financial statements, and therefore appear in the Amadeus database. Since the major profitability measure uses lagged assets to scale the profit, for each firm there are up to five observations in the sample.

Starting with all of the new firms with available ownership information, I further impose the following criteria: First, I exclude the countries of the former Republic of Yugoslavia (Bosnia-Herzegovina, Croatia, former Yugoslav Republic of Macedonia, Federal Republic of Yugoslavia, Serbia, and Montenegro), which were at war during the sample period and where company identification numbers changed frequently. Second, I exclude Cyprus, Liechtenstein, Moldova, Malta, Slovenia, and Slovakia, which have a very small number of new firms covered (less than 50 firms annually). Third, similar to Bena and Ortiz-Molina (2013), I exclude Sweden and the Netherlands, which have incomplete information for small firms. Fourth, I exclude Belarus, since it did't enter the Amadeus database until 2006. Fifth, I exclude Lithuania where the profitability measure is not available. Finally, I further exclude the Ukraine and Russia where group affiliated firms tend to be dominated by state-owned enterprises. These restrictions exclude 264,706 firms over ten years (6.05% of total new firms identified). At last I merge unconsolidated financial information and top manager

information. The final sample includes 1,048,782 firms and 2,059,688 observations.

3.3. Summary statistics

Table 1 and Table 2 report the summary statistics of major variables used. They display three general patterns: the sample has a good coverage of new firms; new firms are very small; and there are significant differences between group firms and non-group firms. To better understand the difference across group status, I decompose the sample into three sub-samples: always group firms, always non-group firms and firms ever change group status. All variables are winsorized at the 1% level.

Statistics in Table 1 and Table 2 show that firms enter the sample at a young age. On average, a firm enters into the sample between the second and third year. Firms that ever change their group status, which are key to the identification, enter the sample even earlier. The average age is about three, equal to the mid-range of the sample. The unreported median level of age shows an even younger profile.

A great portion of new firms are very small. The average total assets are only 2.96 million, and the average revenue is 10.24 million. Additionally, new firms hire less people, on average with 21 employees. At last, new firms have limited market share in their industry, indicated by the mean at 0.72‰. Unreported medians show even smaller magnitudes and suggest the sample is skewed to smaller firms.

There are also significant differences between group firms and non-group firms. Group firms are bigger but less profitable. Across the three measures, *Total Assets*, *Fixed Assets* and *Revenue*, group firms are more than ten times bigger than non-group firms. They also have seven times more employees. Nevertheless, they are ten times less profitable, measured either by $EBITDA/Total\ Asset_{t-1}$ or $EBIT/Total\ Asset_{t-1}$. Group firms not only generate less revenue per unit of asset, but also have a lower gross profit margin. The differences between group and non-group firms are also extended to other measures, such as revenue, wage, and labor productivity.

The above differences confirm that group firms are fundamentally different from non-group firms. Group firms require more investment but have less pledgeable cash flow (Almeida and Wolfenzon, 2006). The differences also suggest that a simple comparison of group firms versus non-group firms is inappropriate to document the group affiliation effect.

4. Results

4.1. Group affiliation improves profitability

As a benchmark for the effect of business group affiliation on profitability, I start by investigating the difference-in-differences for firms unintentionally joining (leaving) business groups based on nonparametric matching. Table 3 presents the results. It shows that compared to control sample, unintentionally joining business groups significantly improves firm's profitability (Panel A), while unintentionally leaving business groups (Panel B) has an insignificant effect. Panel A, Column I reports the average profitability two years before unintentionally joining groups. It indicates that forthcoming group members, though less profitable compared to general new firms, are not significantly different from their matched firms ex-ante. Column II reports the average profitability two years after joining groups, and Column III reports the difference between the first two columns. Based on the difference, profitability of forthcoming group members would increase by 0.028 (17.33% compared to the sample average) after joining groups. Since common shocks (in the level of country, industry, year, age and etc.) may affect profitability, it is inappropriate to attribute the whole difference to group affiliation change. The control sample serves to ferry out those common shocks. After taking out the same change for the control sample, the difference-in-differences statistic (based on mean) in the third column indicates that joining a group leads to 0.018 increase in profitability, which is both statistically significant at 1% level and economically significant (11.14% compared to the sample average). The significant difference

across two samples is further confirmed by the Mann–Whitney statistic. Panel B repeats the test for firms unintentionally leaving business groups. Although previous group members also on average experience an increase in profitability after leaving the group, group detachment insignificantly contributes to the change.

Figure 1 visualizes the difference-in-differences setting and confirms the findings from Table 3. It shows that the average profitability level from two years before to two years after firms joining business groups. The solid line, indicating firms unintentionally joining business groups, ascends in a bigger magnitude compared to the dashed line, indicating firms in the matched sample. Additionally, the increasing trend is not reverting after two years.

Table 4 further confirms the significant effect of group affiliation (Panel A) and insignificant effect of group detachment (Panel B) in a regression setting using specification 1. Panel A, Column I shows that joining a group leads to 0.015 (9.47%) increase in profitability compared to the base category, which includes firms not belonging to a group but would join groups later. Column II adds firm level control variables and shows that the group affiliation effect is in similar magnitude (7.68%). Column III and Column IV repeat the tests by adding firms always non-group affiliated into the base category. Column V and VI further add firms always group affiliated into the sample. Through all of the specifications and samples, group affiliation effects are significant, varying from 0.018 (10.83%) to 0.022 (13.37%). Panel B reports the set of results for firms leaving business group. Across specifications, group detachment effects are insignificant. It is partially due to limited observations, as fewer firms leave groups within the first six years. In a nutshell, results in Table 4 indicate that the positive effect of group affiliation on profitability is significant and robust.

4.2. Tests of identification strategy

In this section, I first show that selection creates bias in the estimated group effect. Then I provide evidence that the quasi-experimental setting is appropriate to correct the bias.

4.2.1. Selection issues are against group effects

To capture the effect of selection on estimates, I repeat tests in Table 4 in a general setting, where selection into (out of) groups is not necessary to be unintentional. Firms are kept in the sample up to one group affiliation change, regardless of being unintentional or not. In this setting, *GroupDummy* may be correlated with the error term in specification 1. This would create a bias in the estimate for the coefficient of *GroupDummy*.

Table 5 reports results in this general setting. Compared to Table 4, group affiliation effect is downward biased (Panel A), while group detachment is upward biased (Panel B). In Panel A, estimates of group affiliation effects are smaller across different specifications, compared to Table 4, Panel A. This indicates that selection is against group affiliation. Controlling for other variables, less profitable firms are selected into business groups. Therefore we would under-estimate the group affiliation effect, without appropriately addressing the selection issue. In Panel B, estimates of group detachment are bigger and more significant compared to estimates in Table 4, Panel B. This indicates that leaving groups is correlated with an increase in profitability. But this is due to the fact that more profitable firms are spun off from business groups.

The adverse selection I find is both intuitive and consistent with previous research. Intuitively, more profitable firms would prefer to be standalone, while less profitable firms may sacrifice self-control for group affiliation benefits. It also confirms the proposition that simple comparison between group versus non-group firms would lead to an underestimate of the group affiliation effect (Masulis et al., 2011; Bena and Ortiz-Molina, 2013). Theoretically, The direction of selection is jointly determined by supply of investment opportunities and demand from investors. Gompers and Lerner (2000) shows that money is chasing for limited good opportunity among new firms. Therefore entrepreneurs have more bargaining power than investors. Consequently, on average, less profitable firms are acquired by business groups.

To sum up, selection issue is severe for group status change. It is critical to remedy it for

unbiased estimates. The quasi-experimental setting aims to address this issue. I will provide evidence to justify the setting in the next section.

4.2.2. Unintentional group status change is exogenous

The causal link presented above lies on the validity of the quasi-experimental setting. It assumes that unintentional selection into (out of) groups is exogenous to other omitted variables, either observable or unobservable to econometrician. Although this assumption cannot be directly tested, I provide two sets of tests to support this assumption.

The first set of tests investigates the observable difference between forthcoming (previous) group members and other candidates for the unintentional change, right before the former join (leave) business groups. Table 3, Column I already shows that the average profitability of forthcoming (previous) group members is not significantly different from that of other new firms with same matching criteria. I further investigate the difference by running following regression:

$$DepenVar_{it} = \alpha + \beta \cdot TreatSample_{it} + \lambda' FirmControls_{it} + \delta_{ct} + \mu_i + \epsilon_{it} \qquad (2)$$

on all non-group (group affiliated) firms with parent shareholder. $TreatSample$ is a binary dummy variable. It equals to 1 if the firm indirectly joins (leaves) the group in the following year, and 0 otherwise. The coefficient of $TreatSample$ captures the difference between the treatment sample and control sample ex-ante. I focus on the difference in revenue, profitability, sales growth, total asset growth and number of employees.

Table 6 and Table 7 report the estimation results for non-group firms with corporate shareholder(s) and group affiliated firms respectively. Through the two tables, $TreatSample$ dummy is insignificant. That is to say, controlling for firms' observable characteristics, firms unintentionally joining (leaving) business groups are similar to other non-group (group) firms with parent shareholder ex-ante.

The second set of tests provides evidence to falsify the counter-argument of the unintentional assumption. In particular, I check whether the group affiliation (detachment) effect varies by the importance of new firms. If the unintentional group change is endogenous, subsidiary new firms would affect acquisition decision of the parent firms, even after controlling for observable characteristics. The more important of the new firm, the higher weight it takes. Therefore, the group affiliation (detachment) effect should be stronger for more important new firms.

I use two measures to capture the importance: the relative size of a new firm to the group, and the average relative size to its parent group shareholders. I use total assets as the proxy for size. I introduce a binary dummy variable to indicate whether the relative size is higher than the median level (taking value 1) or not (taking value 0). Then I include the cross term between *GroupDummy* and the dummy into the regression. The coefficient of this cross term indicates additional group affiliation (detachment) effect for important new firms.

Table 8 shows that group affiliation effect, rather strengthens, actually weakens for more important firm. Panel A shows that new firms are small relative to the forthcoming business groups and first layer parent shareholder. The average relative size to the group is 11.41% and the median level is 6%. The average relative size to the first layer parent shareholders is 25.9% and the median level is 17%. Panel B indicates that the group affiliation effect is almost completely driven by less important firms. For a new firm indirectly joining a group, profitability may increase by up to 0.041 (25.07%) if its relative size to the group is lower than sample median. While there is barely no effect on the profitability for firms with relative size higher than median. Similar pattern exists when the relative size to the parent shareholders are used.

Regarding to the group detachment, Table 9 shows that the insignificant effect does not vary by the relative importance of new firms. Again, this may be attributed to the fewer observations in the sample.

Results in Table 8 and Table 9 contradict the endogeneity argument. Unreported tables deliver similar results when revenue is used as the proxy for size. They all indicate that unintentional changing group status satisfy the identification assumption. The quasi-experimental setting is valid to establish causal link.

Since group detachment has an insignificant effect, following discussions would focus on group affiliation effect. Results of group detachment are available upon request.

5. Mechanisms

In this section, I present two major mechanisms contributing to the the increase in profitability: revenue increase and market share expansion; and labor quality improvement.

5.1. Revenue increase and market share expansion

Within the short period after joining business groups, the most significant change is the fast growth in revenue. This growth is mainly driven by the quantity instead of the pricing power, evidenced by the expansion in market share and unchanged gross profit margin.

Table 10 presents the change of revenue (scaled by the lagged total assets), gross profit margin, gross profit (scaled by the lagged total asset) and the market share upon group affiliation. The first two columns show that scaled revenue increases by 5%. Since there is insignificant change in the gross profit margin, as the next two columns show, the increase in revenue almost completely translates to the increase in gross profit (5.4%), evidenced by the significant magnitude in the fifth and sixth column. The 5.4% increase in gross profit margin accounts for 44% of the increase in profitability documented earlier. In the last two columns, I checked the market share of new firms, which is the new firm's revenue relative to the total revenue generated in the same country, year and industry. Results show that on average new firm's market increase by 14%.

If the new firm leverage on the marketing network of the business group, affiliation with

a more powerful group would strengthen the above effects. This is in the same spirit of Hochberg et al. (2007)'s finding about VC firms. Table 11 investigate this projection by introducing the group's market share. It is calculated as the sum of revenue generated by group members in the same country and industry, over the total revenue in the respective country and industry. Panel A reports the summary statistics of the group market share. On average, the business group has a market share nine times of the new firm. Specifications in Panel B add an interaction term between the *GroupDummy* and a dummy variable in the specification. The dummy variable indicate whether the group's market share lies in the top quartile. Results show that joining a group with a top quartile market share would double the group affiliation effect on the revenue, gross profit and the market share.

Given that revenue growth is the first order effect of group affiliation, we would expect the increase in profitability is more significant in a revenue oriented sector. Table 10 Column V confirms this projection by focusing on retail and wholesale trade industry. Compared to results in Table 4 Panel A, the magnitudes of group affiliation effect are 60% higher across specifications.

5.2. Labor quality improves

Another important mechanism is that new firms' labor quality improves upon group affiliation. It is reflected in both the top manager level and average employee level.

5.2.1. Top manager turnover and increase in experience

Results in this section show that joining a business group triggers a greater chance of management turnover; a large portion of new top managers comes from other group members; and on average managers become more experienced afterward.

Table 12 presents the cumulative top manager turnover ratio up to three years after joining business groups. Panel A shows results for unintentional group affiliation. One year after unintentionally joining groups, 13.25% of firms experience at least one manager

turnover. The ratio doubles the sample average (5.76%) and further increases to 19.56% within three years after joining business groups. The cumulative percentage of new managers displays a similar patter, gradually increasing from 9.30% to 14.69% within the three years.

It is noteworthy that business group consistently supply a great portion of new managers. More than 28% of new managers are from other firms within the same business group. This ratio is stable regardless of the year turnover happened.

Results in Panel A carry over to Panel B where joining a group is either unintentional or not. Compared to firms directly acquired by business groups, firms unintentionally joining a group may be less visible to group owners. Therefore, explicit reforms, such as manager turnover, may lag behind and occur less frequently. Consistent with the intuition, magnitudes are bigger across different measures in Panel B. Again, business groups are an important source of new managers.

The difference-in-differences results in Table 13 shows that there are significant changes of new manager ratio and average management experience, compared to the control sample. Matching criteria are same as those used in Table 3. Panel A confirms that proportion of new managers significantly increase by 0.022 (53.1% of sample mean) after joining a business group. Panel B investigate the average manager experience, which is measured as the total tenure as top managers across all of the positions. Average change of experience is about three years higher (26.1% of sample mean) compared to the control sample. Panel C focuses on the experience within the same industry. The change of 2.979 years is still both statistically significant and economically significant (27.7% of sample mean).

Results in Table 14 confirm the above findings in a regression setting. To capture any lagged turnover after the event year, I use cumulative number of new managers. The first two columns show that group affiliations leads to more than 0.082 (58% of sample mean) increase in this number. It suggest that there are significant turnovers triggered by group affiliation. The following four columns investigate top manager experience. On average, manager's total tenure increases by 2.2 years (24.2% of sample mean), and same-industry

tenure increases by 2 years (24.2% of sample mean).

5.2.2. More productive employees

Besides the top manager, another part of the labor force is other employees. Active monitoring from business groups may also involve replacements of underperformed employees, more professional training, and more effective incentive package. Although I do not directly observe this change, I investigate the realized productivity of employees, measured by revenue generated per employee, profit generated per employee, and the logarithm of marginal productivity of labor as (Larrain and Stumpner, 2013) for manufacturing firms.[17]

Table 15 shows that the average productivity of employees significantly increases across three measures. Compared to the sample average, revenue generated per employee increases by 13%, profit generated per employee increases by 17%, and marginal productivity of labor increases by 7% in the manufacturing sector.

To better understand the change, I further investigate another three labor related measures in Table 16: number of employees, average yearly wage, and ratio of wage expense against total revenue. Results show that group affiliation leads to slightly more employment and higher wage per person. Also, more revenue are generate by per dollar of wage. Results in Table 15 and Table 16 signal a more effective incentive pay: on average employees get higher wage, while they are better motivated to generate even higher revenue and deliver a higher profit.

6. Robustness Check

My major results about profitability in previous section are robust to alternative sample compositions, alternative group measures (definitions), estimation horizon, industry trends, alternative profitability measure, and other concerns.

[17]It is inappropriate to model productivity based on neoclassical production function outside manufacturing sector.

6.1. Robust to the sample composition and survival bias

One concern is that above results may be based on a biased sample. Generally there are three potential channels contributing to this bias. First, filing criteria vary by countries and time. Under-performed firms may drop off from the sample due to more stringent criteria. Second, data providers in different countries may have agency problem in collecting firms' filings. If it requires more effort to collect information of under-performed firms, better-performed firms are more likely to be included. This concern is severer when filing is not obligatory. Third, if firms ever change group status have a higher failure rate during the first six years, the remaining treatment sample would come from the upper tail of the population distribution of all firms. Thus, long-lived firms occupy the sample.

To address the first two concerns, I first exclude countries ever change filing criteria (Switzerland, Italy) during the sample period, and report the results in Table A.4. Then I only focus on countries where all public and private limited companies are required to file statement (exclude Bulgaria, Finland, and Poland). Results are reported in Table A.5. In both tables, group affiliation effects are similar to the results based on the whole sample. In unreported tables, I repeat estimations by excluding one country each time and find similar results.

The third issue has already been partially addressed, as regressions based only on firms ever change group status generate similar results. To directly investigate it, I check the survival duration of all three samples: always group firms, always non-group firms, and firms ever change group status. I find no significant difference in the survival probability among these three sub-samples.

6.2. Robust to alternative group measure and definitions

Through out the paper, I use a binary dummy variable indicating group affiliation. This only picks up the average homogenous group effect, regardless of the bonding strength among group members. In this section, I show that since new firms are closely owned by groups,

using binary dummy is appropriate. The same set of test also shows that results are robust to alternative group definitions.

I ran three sets of tests in total. First, I find results are not sensitive to the number of group members. Second, I replace the *GroupDummy* with the total group stakes *GroupTotal* (between 0.3 and 1) in the specification 1. Table 17, Panel A reports the summary statistics of the group stake, and Panel B presents results of regressions. The total group stake is highly skewed to 1 when new firms belong to groups. Therefore the continuous measure deliver a similar results as the binary dummy. Third, I change the ownership stake cutoff value α from 15% to 50% and construct business groups respectively. Table 18 presents the result and shows robust results across different definitions. Again, this is due to the high total group stakes in the new firm. Therefore a small cutoff value of α is not binding for most of the new firms.

6.3. Group affiliation effect is beyond the event year

Another concern is that the profitability measure may be tarnished around the group status change. On the one hand, acquisition of parent shareholders may be associated with recognition or write-off of total assets. The denominator of my profitability measure may change due to its parent shareholder's ownership change. On the other hand, private firms profit may suffer from manipulation. To address this concern, I did two sets of tests.

First, I carry out an event study around group status change. In Table 19, I replace the *GroupDummy* with dummies indicating the year since firms unintentionally join business groups. Because in total up to five year observations are available, four dummies are generated indicating the event year to three years after group affiliation ($t+3$). Not only dummies indicating the event years are significant, but also dummies indicating further years after the affiliation. Results show that group affiliation effect is not restricted to the event year, but extends to two years after.

Second, in unreported results, I exclude event year observations from the regressions and

still find a significant group affiliation effect.

6.4. Robust to industry trends

In the specification 1, the country by year fixed effects should absorb any policy variations and trends at the country level. To further control variations in the industry level, I replace it with country-industry-year fixed effects, and report the results in Table 20. Magnitudes of group affiliation effects are similar to those in Table 20.

6.5. Other robustness check

I would describe other robustness check I did. Firstly, I use an alternative measure of profitability, EBIT (earnings before interest and tax) scaled by lagged total assets, and reports the result in Table 21. Second, I only keep firms with at least three-year consecutive observations in the sample. Third, I add parent shareholder characteristics as control variables in the specifications. Results are robust across different specifications.

7. Conclusion

Motivated by the widespread role of business groups in sponsoring new firms, this paper aims to establish causal link between group affiliation and new firms' profitability. Using a comprehensive database of financial and ownership information for firms in 24 European countries, I find that group affiliation leads to 12% increase in the profitability, based on a quasi-experimental setting where firms change group status unintentionally. Further investigations show two major mechanisms contributing to the improvement in profitability. Possibly leveraging the marketing networks of group members, new firms quickly expand revenue and market share in the industry. They also gain more experienced managers and productive employees upon joining groups.

Results of this paper suggest that business groups parallel the role of venture capital firms

in sponsoring new firms in Europe. Business groups not only provide financing by directly investing in new firms, but also cultivating the new firms by sharing operation synergy and promoting labor force productivity. The results are consistent with a Coasian view on firm organization form. As mentioned in Morck (2003),"in an economy with weak institutional support for markets, business groups may be desirable as an optimal 'second best' approach to organizing economic activity in the sense of Coase (1937) and Williamson (1973)."

Consistent with this view, my findings shed light on the lagged development of VC in Europe (Hall and Lerner, 2010). Due to less maturity and a smaller network, European VCs are thought to provide limited benefit to new firms. Raising the ability (Bottazzi and Da Rin, 2002) or power of VCs might be urgently needed. Meanwhile, it is an open question whether VCs or group affiliation are a better instrument to foster growth of new firms.

The results in this paper may also suggest a positive role of conglomerates in cultivating new firms. As the counterpart of business groups in the U.S., conglomerates consist of fully owned subsidiaries instead of legally independent firms. Public information of subsidiaries is not widely available, and as a result there is limited research on the subsidiary level. Although the differences in legal status may lead to different affiliation effects in other dimensions,[18] the independent status is not crucial in this paper. In fact, since new firms are closely owned by the group members, the positive effect of group affiliation is expected to carry forward to new firms in conglomerates.

For future research, an interesting starting point is to study the incentive and effect of group affiliation from the perspective of business groups. Black and Gilson (1998) attributes the success of venture capital in US to the implicit contract over future control, that is permitted by the availability of exit through an IPO. Compared to its counterpart in the U.S., venture capital is much less active in Europe (Hall and Lerner, 2010). There are also less IPO opportunities in Europe. Results in this paper show that entrepreneurs may benefit from group affiliation other than IPO. Further investigation may focus on the implicit

[18] e.g. Belenzon and Berkovitz (2010) document a positive effect of group affiliation on innovation, while Seru (2014) finds that conglomerates stifle innovation.

contract between business groups and entrepreneurs.

References

Almeida, H., Park, S. Y., Subrahmanyam, M. G., Wolfenzon, D., 2011. The structure and formation of business groups: Evidence from Korean chaebols. Journal of Financial Economics 99, 447–475.

Almeida, H. V., Wolfenzon, D., 2006. A theory of pyramidal ownership and family business groups. Journal of Finance 61, 2637–2680.

Arellano, C., Bai, Y., Zhang, J., 2012. Firm dynamics and financial development. Journal of Monetary Economics 59, 533–549.

Belenzon, S., Andrea, P., 2011. Managerial redeployment, ownership structure, and family ties. Working paper .

Belenzon, S., Berkovitz, T., 2010. Innovation in business groups. Management Science 56, 519–535.

Bena, J., Ortiz-Molina, H., 2013. Pyramidal ownership and the creation of new firms. Journal of Financial Economics 108, 798–821.

Black, B. S., Gilson, R. J., 1998. Venture capital and the structure of capital markets: banks versus stock markets. Journal of Financial Economics 47, 243–277.

Bottazzi, L., Da Rin, M., 2002. Venture capital in europe and the financing of innovative companies. Economic Policy 17, 229–270.

Claessens, S., Djankov, S., Lang, L. H., 2000. The separation of ownership and control in east asian corporations. Journal of Financial Economics 58, 81–112, special Issue on International Corporate Governance.

Coase, R. H., 1937. The nature of the firm. Economica 4, 386–405.

Egger, H., Egger, P., Kreickemeier, U., 2013a. Trade, wages, and profits. European Economic Review 64, 332–350.

Egger, P. H., Erhardt, K., Lassmann, A., 2003. Psmatch2: Stata module to perform full mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing. Unpublished Working Paper V. 4.0.6 (`http://ideas.repec.org/c/boc/bocode/s432001.html`).

Egger, P. H., Erhardt, K., Lassmann, A., 2013b. Productivity and r&d as drivers of exports and domestic sales: Semiparametric evidence from french firm-level data. Working Paper .

Gomes, A., 2000. Going public without governance: Managerial reputation effects. Journal of Finance 55, 615–646.

Gompers, P., Lerner, J., 2000. Money chasing deals? the impact of fund inflows on private equity valuation. Journal of Financial Economics 55, 281–325.

Gopalan, R., Nanda, V., Seru, A., 2007. Affiliated firms and financial support: Evidence from indian business groups. Journal of Financial Economics 86, 759–795.

Gopalan, R., Nanda, V., Seru, A., 2014. Internal capital market and dividend policies: Evidence from business groups. Review of Financial Studies 27, 1102–1142.

Gorman, M., Sahlman, W. A., 1989. What do venture capitalists do? Journal of Business Venturing 4, 231–248.

Hall, B. H., Lerner, J., 2010. Chapter 14 - the financing of r&d and innovation. In: Hall, B. H., Rosenberg, N. (eds.), *Handbook of The Economics of Innovation, Vol. 1*, North-Holland, vol. 1 of *Handbook of the Economics of Innovation*, pp. 609–639.

Hamelin, A., 2011. Small business groups enhance performance and promote stability, not expropriation. evidence from french smes. Journal of Banking & Finance 35, 613 – 626.

Hellmann, T., Puri, M., 2002. Venture capital and the professionalization of start-up firms: Empirical evidence. The Journal of Finance 57, 169–197.

Himmerlberg, C. P., Hubbard, R. G., Palia, D., 1999. Understanding the determinants of managerial ownership and link between ownership and performance. Journal of Financial Economics 53, 353–384.

Hochberg, Y. V., Ljungqvist, A., Lu, Y., 2007. Whom you know matters: Venture capital networks and investment performance. The Journal of Finance 62, 251–301.

Hsieh, T.-J., Yeh, R.-S., Chen, Y.-J., 2010. Business group characteristics and affiliated firm innovation: The case of taiwan. Industrial Marketing Management 39, 560–570.

Iacobucci, D., 2002. Explaining business groups started by habitual entrepreneurs in the italian manufacturing sector. Entrepreneurship & Regional Development 14, 31–47.

Iacobucci, D., Rosa, P., 2005. Growth, diversification, and business group formation in entrepreneurial firms. Small Business Economics 25, 65–82.

Ivanov, V. I., Xie, F., 2010. Do corporate venture capitalists add value to start-up firms? evidence from ipos and acquisitions of vc-backed companies. Financial Management 39, 129–152.

Kandel, E., Kosenko, Konstantin, Morck, R., Yafeh, Y., 2013. Business groups in the united states: A revised history of corporate ownership, pyramids and regulation, 1930-1950. Maurice Falk Institute for Economic Research in Israel. Discussion paper series. .

Khanna, T., 2000. Business groups and social welfare in emerging markets: Existing evidence and unanswered questions. European Economic Review 44, 748–761.

Khanna, T., Palepu, K., 1999. Policy shocks, market intermediaries, and corporate strategy: The evolution of business groups in chile and india. Journal of Economics & Management Strategy 8, 271–310.

Khanna, T., Palepu, K., 2000. Is group affiliation profitable in emerging markets? an analysis of diversified indian business groups. Journal of Finance 55, 867–891.

Khanna, T., Yafeh, Y., 2005. Business groups and risk sharing around the world. Journal of Business 78, 301–340.

Khanna, T., Yafeh, Y., 2007. Business groups in emerging markets: Paragons or parasites? Journal of Economic Literature 45, 331–372.

Klapper, L., Laeven, L., Rajan, R., 2006. Entry regulation as a barrier to entrepreneurship. Journal of Financial Economics 82, 591–629.

La Porta, R., Lopez-De-Silanes, F., Shleifer, A., 1999. Corporate ownership around the world. The Journal of Finance 54, 471–517.

Larrain, M., Stumpner, S., 2013. Financial reforms and aggregate productivity: The microeconomic channels. Working Paper .

Lechner, C., Leyronas, C., 2009. Small-business group formation as an entrepreneurial development model. Entrepreneurship: Theory & Practice 33, 645–667.

Masulis, R. W., Pham, P. K., Zein, J., 2011. Family business groups around the world: Financing advantages, control motivations, and organizational choices. Review of Financial Studies 24, 3556–3600.

Morck, R., 2003. Why some double taxation might make sense: The special case of intercorporate dividends. NBER Working Papers .

Morck, R., 2005. How to eliminate pyramidal business groups: The double taxation of intercorporate dividends and other incisive uses of tax policy. NBER/Tax Policy & the Economy (MIT Press) 19, 135–179.

Morck, R., Nakamura, M., 1999. Banks and corporate control in japan. Journal of Finance 54, 319–339.

Morck, R., Wolfenzon, D., Yeung, B., 2005. Corporate governance, economic entrenchment, and growth. Journal of Economic Literature 43, 655–720.

Rosa, P., Scott, M., 1999. The prevalence of multiple owners and directors in the sme sector: implications for our understanding of start-up and growth. Entrepreneurship & Regional Development 11, 21–37.

Sautner, Z., Villalonga, B., 2010. Corporate governance and internal capital markets. Working Paper .

Sea-Jin, C., Chi-Nien, C., Mahmood, I. P., 2006. When and how does business group affiliation promote firm innovation? a tale of two emerging economies. Organization Science 17, 637–656.

Seru, A., 2014. Firm boundaries matter: Evidence from conglomerates and R&D activity. Journal of Financial Economics 111, 381–405.

Villalonga, B., Amit, R., 2006. How do family ownership, control and management affect firm value?. Journal of Financial Economics 80, 385–417.

Williamson, O. E., 1973. Markets and hierarchies: Some elementary considerations. The American Economic Review 63, 316–325.

Figure 1: CHANGE OF THE PROFITABILITY UPON UNINTENTIONALLY JOINING BUSINESS GROUPS

This figure shows the change of EBITDA/Total Assets$_{t-1}$ two years around firms unintentionally join business groups. For each firm unintentionally joins business group at event year = 0, a control sample of always non-group firms is constructed, based on exact matching with the age, legal incorporation form, country, industry, and year. The solid line indicates firms unintentionally join business groups, while the dashed line indicates firms in the control sample.

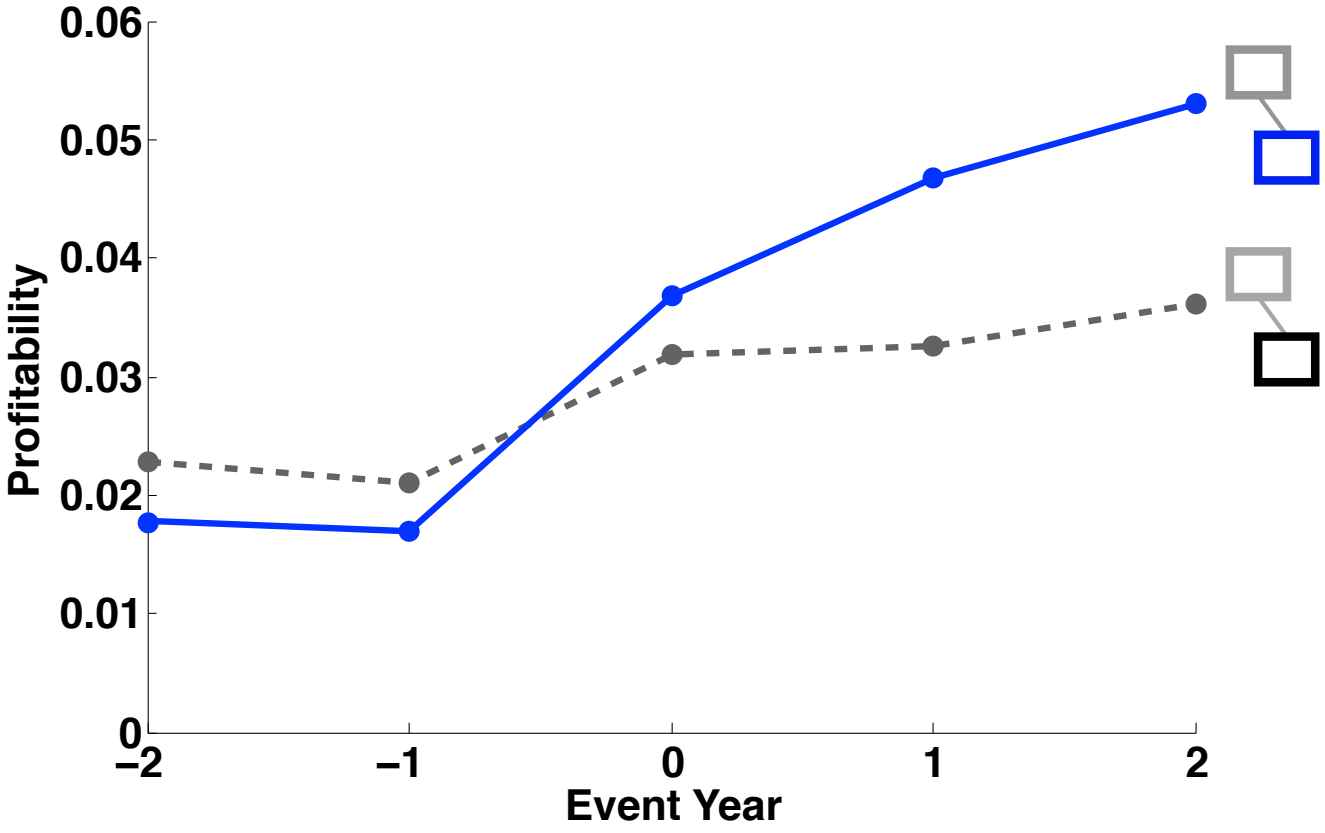


Table 1: SUMMARY STATISTICS FOR FINANCIAL VARIABLES

Firms in the sample are categorized as always non-group affiliated, ever change group status during the first six years, and always group affiliated. For each variable, the mean level is reported, and the standard deviation is shown in the parenthesis. *Tangibility* is the ratio of tangible fixed asset over total asset. *Leverage* is the total asset over equity. The total asset growth rate and total revenue growth rate are gross growth rates, calculated as level at t over the level at $t-1$. Market share is calculated as the ratio of revenue over the total revenue generated in the respective country, industry (4-digit NAICS 2007 codes) and year.

	Always Non-group	Ever Change Group Status	Always Group	All
Number of Observations	1770524	115523	173641	2059688
Number of Firms	927987	39267	81528	1048782
Total Assets (in millions)	1.375	11.308	13.568	2.960
	(5.781)	(18.808)	(20.621)	(9.999)
Fixed Assets (in millions)	0.526	4.545	5.359	1.159
	(2.638)	(8.652)	(9.493)	(4.500)
Tangibility	0.245	0.215	0.210	0.240
	(0.284)	(0.297)	(0.2971)	(0.286)
Revenue (in millions)	3.119	47.295	63.613	10.236
	(465.6)	(1147.4)	(700.4)	(544.6)
Revenue/Total Assets$_{t-1}$	2.628	1.819	1.760	2.516
	(2.823)	(2.172)	(2.190)	(2.762)
Gross Profit/Total Assets	1.326	0.673	0.648	1.238
	(1.875)	(1.156)	(1.214)	(1.824)
Gross Profit Margin (%)	50.291	37.379	39.831	48.784
	(33.626)	(31.339)	(32.741)	(33.692)
EBITDA/Total Assets$_{t-1}$	0.185	0.025	0.013	0.162
	(0.609)	(0.419)	(0.411)	(0.588)
EBIT/Total Assets$_{t-1}$	0.125	−0.032	−0.040	0.102
	(0.702)	(0.495)	(0.483)	(0.678)
Leverage	6.298	8.424	9.691	6.703
	(21.931)	(28.848)	(33.330)	(23.555)
Total Assets Growth Rate	1.481	1.503	1.464	1.481
	(1.407)	(1.623)	(1.636)	(1.446)
Revenue Growth Rate	1.487	1.641	1.591	1.506
	(1.565)	(1.993)	(1.95)	(1.635)
Market Share (4 digit NAICS) (‰)	0.522	2.072	1.962	0.718
	(2.157)	(4.655)	(4.604)	(2.666)

Table 2: SUMMARY STATISTICS FOR PROFILE AND LABOR CHARACTERISTICS

Firms in the sample are categorized as always non-group affiliated, ever change group status during the first six years, and always group affiliated. For each variable, the mean level is reported, and the standard deviation is shown in the parenthesis. $Legalform$ code indicates the incorporation form is public limited company (1), private limited company (2), or other forms (3). ln(Marginal Productivity of Labor) is the logarithm of marginal productivity of labor as Larrain and Stumpner (2013) for manufacturing firms. Top Manager Tenure for each manager indicates the total years serving as a top manager across positions. The firm average is reported in the table. Top Manager Tenure (same industry) further requires the experience is in the same industry (2-digit NAICS 2007 codes).

	Always Non-group	Ever Change Group Status	Always Group	All
Age	2.914	3.058	3.088	2.937
	(1.448)	(1.383)	(1.430)	(1.444)
Age (first enter sample)	2.358	2.004	2.474	2.354
	(1.466)	(1.209)	(1.473)	(1.460)
$Lagalform$ Code	1.947	1.812	2.004	1.944
	(0.508)	(0.658)	(0.677)	(0.535)
Number of Employees	13.301	62.187	70.936	21.4
	(38.629)	(104.502)	(111.873)	(58.484)
Wage per Employee	26.626	55.365	55.922	31.032
(in thousands, per year)	(31.673)	(39.619)	(39.837)	(34.630)
Revenue per Employee	181.104	434.956	464.220	221.302
(in thousands, per year)	(406.454)	(741.028)	(783.361)	(486.928)
Profit per Employee	6.576	7.903	8.116	6.794
(in thousands, per year)	(37.605)	(71.248)	(73.038)	(44.571)
Wage Expense/Revenue (%)	24.708	31.757	32.060	25.714
	(24.010)	(30.273)	(30.135)	(25.161)
ln(Marginal Productivity of Labor)	4.443	5.754	5.871	4.665
(manufacturing sector only)	(1.578)	(1.125)	(1.066)	(1.593)
Number of Top Managers	1.237	1.271	1.2641	1.243
	(0.527)	(0.592)	(0.593)	(0.540)
Proportion of New Manager	0.046	0.106	0.119	0.058
	(0.193)	(0.285)	(0.302)	(0.217)
Top Manager Tenure	7.360	13.541	18.906	9.084
	(16.469)	(22.029)	(29.452)	(19.148)
Top Manager Tenure (Same Industry)	6.887	12.630	17.725	8.499
	(15.061)	(20.642)	(27.690)	(17.698)

Table 3: CHANGE OF PROFITABILITY AROUND THE GROUP STATUS CHANGE: DIFFERCEN-IN-DIFFERENCE ANALYSIS BASED ON NONPARAMETRIC MATCHING

This table shows the change of EBITDA/Total Assets$_{t-1}$ two years around firms unintentionally join (Panel A) and leave (Panel B) business groups. In Panel A, firms in the treatment sample unintentionally join business groups. The control sample includes always non-group firms exactly matched with the age, legal incorporation form, country, industry, and year. In Panel B, firms in the treatment sample unintentionally leaves business groups. The control sample includes always group firms exactly matched with the age, legal incorporation form, country, industry, and year. Column I reports the average level of EBITDA/Total Assets$t-1$ two years before the group status change. Column II reports the average level two years after the change. The third column reports the profitability change, calculated by the difference between the first two columns. The Diff-in-Diff statistics are differences of the profitability change across the treatment sample and control sample. Standard deviation is reported in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of EBITDA/Total Asset$_{t-1}$. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

	EBITDA / Total Assets$_{t-1}$			
	Two Years Before	Two Years After	Difference Across Time	
	(I)	(II)	(II) - (I)	
Panel A. Unintentionally Joining Business Groups				
Treatment Sample (T)	0.017	0.045	0.028***	
	(0.004)	(0.004)	(0.004)	
Control Sample (C)	0.023	0.033	0.010***	
	(0.002)	(0.002)	(0.002)	
			Diff-in-Diff	Mann Witney $\|z\|$
Difference Across Samples (T - C)	-0.006		**0.018*** **	2.362***
	(0.004)		(0.005)	
			[11.11%]	
Panel B. Unintentionally Leaving Business Groups				
Treatment Sample (T)	0.018	0.032	0.014***	
	(0.005)	(0.005)	(0.005)	
Control Sample (C)	0.028	0.041	0.013***	
	(0.002)	(0.003)	(0.003)	
			Diff-in-Diff	Mann Witney $\|z\|$
Difference Across Samples (T - C)	-0.010		**0.001**	0.308
	(0.006)		(0.006)	
			[0.62%]	

Table 4: GROUP AFFILIATION / DETACHMENT EFFECT ON THE PROFITABILITY – UNINTENTIONAL CHANGE OF GROUP STATUS

Panel A and B report results for the group affiliation and group detachment respectively. Column I and II are based on firms ever unintentionally join (leave) business groups. Column III and Column IV add firms always non-group (group) affiliated. Column V and Column VI further add firms always (never) group affiliated. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects and country-year dummies are controlled. Column II, IV, and VI further control the firm level variables, including one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable	EBITDA / Total Assets$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
Panel A. Unintentionally Joining Business Groups						
GroupDummy	**0.015*** **	**0.012** **	**0.020*** **	**0.022*** **	**0.018*** **	**0.019*** **
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
	[9.26%]	[7.41%]	[12.35%]	[13.58%]	[11.11%]	[11.73]
LagParentInd			0.001	0.003	0.000	0.002
			(0.004)	(0.004)	(0.004)	(0.004)
Sample	Ever join group	Ever join group	Ever join group Always non-group	Ever join group Always non-group	Ever join group Always group Always non-group	Ever join group Always group Always non-group
Observations	37447	36160	945169	945129	1042655	1042589
Number of firms	12866	12827	502952	502933	552164	552133
R-squared (Within)	0.011	0.017	0.015	0.015	0.014	0.015
R-squared (All)	0.646	0.653	0.827	0.828	0.827	0.827
Panel B. Unintentionally Leaving Business Groups						
GroupDummy	**-0.001**	**-0.003**	**-0.001**	**-0.006**	**-0.009**	**-0.009**
	(0.008)	(0.008)	(0.005)	(0.006)	(0.006)	(0.006)
	[-0.62%]	[-1.85%]	[-0.62%]	[-3.70%]	[-5.56%]	[-3.70%]
LagParentInd					-0.001	0.001
					(0.004)	(0.004)
Sample	Ever leave group	Ever leave group	Ever leave group Always group	Ever leave group Always group	Ever leave group Always group Always non-group	Ever leave group Always group Always non-group
Observations	18136	17780	191777	111509	1029338	1029300
Number of firms	7019	7004	88547	55981	546669	546656
R-squared (Within)	0.015	0.017	0.006	0.005	0.005	0.010
R-squared (All)	0.717	0.723	0.750	0.784	0.828	0.829
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes

Table 5: GROUP AFFILIATION / DETACHMENT EFFECT ON THE PROFITABILITY – GENERAL CHANGE OF GROUP STATUS

Panel A and B report results for the group affiliation and group detachment respectively. Column I and II are based on firms ever join (leave) business groups. Column III and Column IV add firms always non-group (group) affiliated. Column V and Column VI further add firms always (never) group affiliated. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects and country-year dummies are controlled. Column II, IV, and VI further control the firm level variables, including one year lagged ln(total asset), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable	EBITDA / Total Asset$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
Panel A. Joining Business Groups						
GroupDummy	**0.008*** **	**0.005**	**0.015*** **	**0.016*** **	**0.014*** **	**0.015*** **
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
LagParentInd			0.001	0.003	0.000	0.001
			(0.004)	(0.004)	(0.003)	(0.003)
Sample	Ever join group	Ever join group	Ever join group Always non-group	Ever join group Always non-group	Ever join group Always group Always non-group	Ever join group Always group Always non-group
Observations	97118	94192	991083	991036	1088569	1088496
Number of firms	38086	37964	527217	527193	576429	576393
R-squared (Within)	0.010	0.014	0.014	0.015	0.011	0.013
R-squared (All)	0.686	0.693	0.827	0.828	0.826	0.827
Panel B. Leaving Business Groups						
GroupDummy	**-0.010** **	**-0.009***	**-0.007***	**-0.008** **	**-0.010***	**-0.011** **
	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)
LagParentInd					-0.001	0.001
					(0.004)	(0.004)
Sample	Ever leave group	Ever leave group	Ever leave group Always group	Ever leave group Always group	Ever leave group Always group Always non-group	Ever leave group Always group Always non-group
Observations	73526	72775	247167	240184	1079468	1079428
Number of firms	36366	36329	117894	115680	575605	575590
R-squared (Within)	0.008	0.011	0.006	0.008	0.003	0.009
R-squared (All)	0.754	0.758	0.754	0.758	0.827	0.828
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes

Table 6: EX-ANTE DIFFERENCE BETWEEN FUTURE GROUP FIRMS AND OTHER NON-GROUP FIRMS

This table investigates the ex-ante difference between firms that would unintentionally join business groups next year, and other non-group firms. Regressions are based on all non group firms with at least one parent corporate shareholder. $TreatSample$ is a dummy variable which takes value 1 if the firm would unintentionally join a business group next year, and 0 otherwise. The total asset growth rate and total revenue growth rate are gross growth rates, calculated as level at t over the level at $t-1$. $Tangibility$ is the ratio of tangible fixed asset over total asset. $Leverage$ is the total asset over equity. $Legalform$ code indicates the incorporation form is public limited company (1), private limited company (2), or other forms (3). Firm fixed effects and country-year dummies are controlled. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variables	Revenue (Million)	Revenue Growth	EBITDA/TOAS$_{t-1}$	EBIT/TOAS$_{t-1}$	Asset Growth	No. of Employees
	(I)	(II)	(III)	(IV)	(V)	(VI)
$TreatSample$	**-11.368**	**-0.323**	**0.016**	**0.012**	**-0.202**	**0.213**
	(9.944)	(3.029)	(0.041)	(0.046)	(0.401)	(0.523)
ln(Total Assets)	0.835*	11.69***	0.694***	1.319***	1.039***	5.223***
	(0.481)	(3.716)	(0.144)	(0.285)	(0.021)	(0.223)
$Leverage$	0.013**	-0.109	-0.002***	-0.003***	0.013***	-0.003
	(0.007)	(0.074)	(0.000)	(0.001)	(0.000)	(0.004)
Age	14.871***	10.470	-0.027	-0.025	0.128	3.100
	(4.393)	(10.020)	(0.033)	(0.060)	(0.133)	(3.442)
$Tangibility$	1.574	0.517	-0.958***	-1.392***	-0.474***	4.566***
	(1.506)	(10.770)	(0.323)	(0.403)	(0.074)	(0.854)
$LagalForm$	47.275	3.307	0.162	0.255	-0.133	-3.000
	(48.479)	(2.049)	(0.100)	(0.167)	(0.160)	(5.365)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All Non-group Firms with Corporate Parent Shareholder					
Observations	235671	125651	306834	306802	171603	187081
Number of firms	125597	69889	156462	156445	92931	101149
R-squared (Within)	0.005	0.009	0.012	0.016	0.170	0.072
R-squared (All)	0.992	0.889	0.751	0.604	0.693	0.979

Table 7: EX-ANTE DIFFERENCE BETWEEN FUTURE NON-GROUP FIRMS AND OTHER GROUP FIRMS

This table investigates the ex-ante difference between firms which would leave business groups unintentionally next year, and other group firms. Regressions are based on all group firms. *TreatSample* is a dummy variable which takes value 1 if the firm would unintentionally leave a business group next year, and 0 otherwise. The total asset growth rate and total revenue growth rate are gross growth rates, calculated as level at t over the level at $t-1$. *Tangibility* is the ratio of tangible fixed asset over total asset. *Leverage* is the total asset over equity. *Legalform* code indicates the incorporation form is public limited company (1), private limited company (2), or other forms (3). Firm fixed effects and country-year dummies are controlled. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variables	Revenue (Million)	Revenue Growth	EBITDA/TOAS$_{t-1}$	EBIT/TOAS$_{t-1}$	Asset Growth	No. of Employees
	(I)	(II)	(III)	(IV)	(V)	(VI)
TreatSample	**-6.414**	**9.288**	**-0.206**	**-0.207**	**-0.051**	**0.056**
	(5.371)	(5.796)	(0.158)	(0.158)	(0.055)	(0.744)
ln(Total Assets)	0.525	36.55*	-1.246	-0.865	1.029***	11.720***
	(1.033)	(19.460)	(1.339)	(1.346)	(0.026)	(0.524)
Leverage	-0.003	-0.107	-0.003	0.002	0.002***	-0.021***
	(0.028)	(0.066)	(0.003)	(0.003)	(0.000)	(0.007)
Age	6.692**	-16.930**	0.329	0.231	-1.359***	-1.904
	(3.400)	(6.891)	(0.334)	(0.0334)	(0.061)	(2.127)
Tangibility	40.277***	29.72	4.087	4.587	-0.485***	15.880**
	(10.081)	(45.460)	(4.659)	(4.670)	(0.115)	(2.470)
LagalForm	-218.731	608.200	0.256	0.259	0.310	-49.830*
	(141.144)	(586.3)	(0.291)	(0.285)	(0.328)	(27.010)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sample			All Group Firms			
Observations	150781	81019	178058	178007	97618	104316
Number of firms	73658	42334	85748	85728	50721	152169
R-squared (Within)	0.010	0.006	0.005	0.004	0.180	0.079
R-squared (All)	0.936	0.645	0.948	0.968	0.651	0.976

Table 8: GROUP AFFILIATION EFFECT IS STONGER ON RELATIVELY SMALLER FIRMS

This table investigates the variation of group affiliation effect, based on firms unintentionally join groups. Panel A reports summary statistics for the relative size of new firms, against the forthcoming business group and first layer parent shareholders. Total assets is used as the proxy for size. Panel B reports regression results. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. $I_{\text{rel. group size} > \text{median}}$ indicates whether the relative size (against group) is bigger than the median level reported in the Panel A. $I_{\text{rel. parent size} > \text{median}}$ indicates whether the relative size (against first layer parent shareholder) is bigger than the median level. Through all of the columns, firm fixed effects, country-year dummies and firm-level control variables are included. Firm controls include one year lagged *ln*(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Panel A. Summary Statistics

	No. of Firms	Min.	Median	Max.	Mean	S.D.
Total Assets / Group Total Assets	12866	0	6.1%	98%	11.4%	14.1%
Total Assets / Parent Average Assets	12866	0	17.0%	99%	25.9%	25.5%

Panel B. Regression Results

	Dependent Variable: EBITDA / Total Asset$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**0.028*** **	**0.039*** **	**0.037*** **	**0.019*** **	**0.029*** **	**0.026*** **
	(0.008)	(0.004)	(0.005)	(0.007)	(0.008)	(0.008)
GroupDummy × $I_{\text{rel. group size} > \text{median}}$	**-0.030*** **	**-0.032*** **	**-0.033*** **			
	(0.008)	(0.011)	(0.011)			
GroupDummy × $I_{\text{rel. parent size} > \text{median}}$				**-0.016*** **	**-0.019*** **	**-0.020*** **
				(0.008)	(0.010)	(0.010)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Ever Join group	Ever Join group Always non-group	Ever Join group Always non-group Always group	Ever Join group	Ever Join group Always non-group	Ever Join group Always non-group Always group
Observations	36162	945150	1042615	36162	945150	1042615
Number of firms	12827	502946	552151	12827	502946	552151
R-squared (Within)	0.017	0.015	0.015	0.017	0.015	0.015
R-squared (All)	0.653	0.828	0.827	0.653	0.828	0.827

Table 9: GROUP DETACHMENT EFFECT IS HOMOGENEOUSLY INSIGNIFICANT

This table investigates the variation of group detachment effect, based on firms unintentionally leave groups. Panel A reports summary statistics for the relative size of new firms, against the previous business group and first layer parent shareholders. Total assets is used as the proxy for size. Panel B reports regression results. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. $I_{\text{rel. group size} > \text{median}}$ indicates whether the relative size (against group) is bigger than the median level reported in the Panel A. $I_{\text{rel. parent size} > \text{median}}$ indicates whether the relative size (against first layer parent shareholder) is bigger than the median level. Through all of the columns, firm fixed effects, country-year dummies and firm-level control variables are included. Firm controls include one year lagged ln(total asset), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Panel A. Summary Statistics

	Num. of Firms	Min.	Median	Max.	Mean	S.D.
Total Assets / Group Total Assets	7004	0	6.1%	98.9%	15.5%	21.9%
Total Assets / Parent Average Assets	7004	0	20.9%	99.9%	39.2%	38.9%

Panel B. Regression Results

	Dependent Variable: EBITDA / Total Assets$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**-0.011**	**-0.010**	**-0.013***	**-0.010**	**-0.009**	**-0.012***
	(0.008)	(0.007)	(0.007)	(0.009)	(0.007)	(0.007)
GroupDummy × $I_{\text{rel. group size} > \text{median}}$	**0.009**	**0.008**	**0.010**			
	(0.008)	(0.008)	(0.008)			
GroupDummy × $I_{\text{rel. parent size} > \text{median}}$				**0.009**	**0.011**	**0.010**
				(0.009)	(0.009)	(0.008)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Ever Leave group	Ever Leave group Always group	Ever Leave group Always group Always non-group	Ever Leave group	Ever Leave group Always group	Ever Leave group Always group Always non-group
Observations	17780	185189	1029300	17780	185189	1029300
Number of firms	7004	86352	546656	7004	86352	546656
R-squared (Within)	0.018	0.008	0.009	0.018	0.008	0.009
R-squared (All)	0.723	0.754	0.829	0.723	0.754	0.829

Table 10: GROUP AFFILIATION LEADS TO REVENUE-DRIVEN GROWTH

Regressions are based on all firms unintentionally joining business groups and firms always non-group affiliated. Column I to IV focus on all industries, while Column V only focus on the retail and wholesale trade sectors (NAICS code 42, 44 and 45). Market share is calculated as the ratio of revenue over the total revenue generated in the respective country, industry (4-digit NAICS 2007 codes) and year. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects, country-year dummies, and firm level variables are included. Firm controls include one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. TOAS stands for Total Assets. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variables	Revenue/TOAS$_{t-1}$	Gross Profit Margin (%)	Gross Profit/TOAS$_{t-1}$	Market Share (‰)	EBITDA/TOAS$_{t-1}$
	(I)	(II)	(III)	(IV)	(V)
GroupDummy	**0.125*** **	**0.103**	**0.067** **	**0.115*** **	**0.032*** **
	(0.025)	(0.556)	(0.030)	(0.035)	(0.011)
	[4.97%]	[0.21%]	[5.41%]	[16.02%]	[19.81%]
LagParentInd	0.011	0.352***	0.022	0.000	-0.002
	(0.018)	(0.058)	(0.017)	(0.002)	(0.008)
Country×year dummies	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes
Industry	All	All	All	All	Retail and Wholesale Trade
Sample			Ever Join group + Always non-group		
Observations	852615	825046	825046	852378	237169
Number of firms	458063	449436	449436	457992	128925
R-squared (Within)	0.045	0.033	0.034	0.050	0.029
R-squared (All)	0.873	0.941	0.896	0.920	0.779

Table 11: AFFILIATION WITH POWERFUL GROUPS FURTHER INCREASES REVENUE AND MARKET SHARE

Panel A shows the summary statistics of the group's market share one year before the new firm unintentionally joins the group. It is calculated as the ratio of total revenue generated by all group members within the same industry as the new firm, over the total revenue generated in the respective country, industry (4-digit NAICS 2007 codes) and year. In Panel B, a cross term between *GroupDummy* and an indicator dummy is introduced in the regressions. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. $I_{\text{group share} > 75^{\text{th}} \text{ pctl.}}$ is equal to 1 if the group share is higher than the 75^{th} percentile, and 0 otherwise. Through all of the columns, firm fixed effects, country-year dummies, and firm level variables are included. Firm controls include one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. TOAS stands for Total Assets. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Panel A. Summary Statistics

		Percentile				
	No.	25th	50th	75th	Mean	S.D.
Group's Market Share (‰)	12843	0.069	0.353	1.970	6.462	28.224

Panel B. Regression Results

Dependent Variables	Revenue/TOAS$_{t-1}$	Gross Profit/TOAS$_{t-1}$	Market Share (‰)
	(I)	(II)	(III)
GroupDummy	0.091***	0.059*	0.100***
	(0.030)	(0.031)	(0.035)
	[3.62%]	[4.77%]	[13.93%]
GroupDummy × $I_{\text{group share} > 75^{\text{th}} \text{ pctl.}}$	0.077***	0.079***	0.095**
	(0.038)	(0.033)	(0.047)
	[3.06%]	[6.38%]	[13.23%]
Country×year dummies	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes
Sample	Ever Join group + Always non-group		
Observations	852273	825003	852372
Number of firms	457991	449425	457990
R-squared (Within)	0.049	0.033	0.040
R-squared (All)	0.877	0.897	0.933

Table 12: CUMULATIVE MANAGER TURNOVER RATIO AFTER GROUP AFFILIATION

This table presents the average cumulative turnover ratios of top managers. Panel A shows the statistics for firms unintentionally join business groups. The first row reports the accumulative ratio of firms with at least one turnover, up to three years after joining business groups. The second row reports the accumulative ratio of new managers. The third row reports the percentage of new managers worked as top managers at other firms within the same group, among all new managers. Panel B repeat the statistics for firms join business groups, either unintentionally or not.

	Years After Joining Business Groups		
	First Year	Within Two Years	Within Three Years
Panel A. Unintentionally Join Business Groups			
Ratio of Firms With at least One Turnover[19]	13.25%	17.77%	19.56%
Ratio of New Managers[20]	9.30%	13.10%	14.69%
Ratio of New Managers from the Forthcoming Group	28.21%	28.56%	28.67%
Panel B. Generally Join Business Groups			
Ratio of Firms With at least One Turnover	15.78%	20.36%	22.14%
Ratio of New Managers	10.76%	14.72%	16.40%
Ratio of New Managers from the Forthcoming Group	35.37%	34.13%	33.84%

[19] On average, 7.52% of firms have at least one top manager turnover each year.
[20] On average, 5.8% of top managers are new managers.

Table 13: CHANGES OF TOP MANAGERS' CHARACTERISTICSS UPON UNINTENTIONAL GROUP AFFILIATION: DIFF-IN-DIFF ANALYSIS

This table shows the change of proportion of new managers (Panel A), management tenure (Panel B), and management tenure within the same industry (Panel C) two years around firms unintentionally joins business groups. The treatment sample includes firms unintentionally join business groups. The control sample includes always non-group firms exactly matched with the age, legal incorporation form, country, industry, and year. Column I reports the average level of two years before the group status change. Column II reports the average level two years after the change. The third column reports the change of relative variable, calculated by the difference between the first two columns. The Diff-in-Diff statistics are differences of the above changes across the treatment sample and control sample. Top Manager Tenure for each manager indicates the total years serving as a top manager across positions. The firm average level is reported in the table. Top Manager Tenure (same industry) further requires the experience is in the same industry (2-digit NAICS). ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

	Two Years Before (I)	Two Years After (II)	Difference Across Time (II) - (I)	
Panel A. Proportion of New Managers				
Treatment (T)	0.061	0.101	0.040***	
	(0.002)	(0.002)	(0.003)	
Control (C)	0.058	0.076	0.018***	
	(0.001)	(0.001)	(0.001)	
			Diff-in-Diff	Mann Witney $\|z\|$
Difference Across Samples (T - C)	0.003		**0.022*** **	**3.594*** **
	(0.002)		(0.003)	
Panel B. Top Manager Tenure (*position* × *year*)				
Treatment (T)	13.384	18.909	5.525***	
	(0.209)	(0.250)	(0.078)	
Control (C)	12.831	15.301	2.470***	
	(0.099)	(0.120)	(0.031)	
			Diff-in-Diff	Mann Witney $\|z\|$
Difference Across Samples (T - C)	0.553		**3.055*** **	**18.389*** **
	(0.275)		(0.080)	
Panel C. Top Manager Tenure within the Same Industry (*position* × *year*)				
Treatment (T)	12.279	17.530	5.521***	
	(0.191)	(0.250)	(0.082)	
Control (C)	11.938	14.210	2.272***	
	(0.090)	(0.120)	(0.033)	
			Diff-in-Diff	Mann Witney $\|z\|$
Difference Across Samples (T - C)	0.341		**2.979*** **	**21.671*** **
	(0.197)		(0.084)	

Table 14: CHANGES OF TOP MANAGERS' CHARACTERISTICSS UPON UNINTENTIONAL GROUP AFFILIATION: REGRESSION ANALYSIS

The dependent variable is the Cumulative Number of New Managers (Column I and II), the Top Manager Tenure (Column III and IV), and the Top Manager Tenure within the same industry (Column V and VI). Top Manager Tenure for each manager indicates the total years serving as a top manager across positions. The firm average level is used in the analysis. Top Manager Tenure (same industry) further requires the experience is in the same industry (2-digit NAICS). Regressions are based on firms unintentionally join business groups, and all non-group firms. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects, country-year dummies, and firm level variables are included. Firm controls include one year lagged *ln*(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

	Cum. No. of New Manager		Top Manager Tenure		Top Manager Tenure (Same Industry)	
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**0.082*** **	**0.081*** **	**2.205*** **	**2.202*** **	**2.064*** **	**2.060*** **
	(0.007)	(0.007)	(0.109)	(0.109)	(0.117)	(0.117)
	[58.43%]	[57.72%]	[24.27%]	[24.24%]	[24.28%]	[24.24%]
LagParentInd	0.018***	0.018***	0.359***	0.352***	0.377***	0.368***
	(0.004)	(0.004)	(0.058)	(0.058)	(0.067)	(0.06)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes
Sample	Ever Join Group + Always Non-group					
Observations	379129	379123	379129	379123	378357	378351
Number of firms	200662	200660	200662	200660	200076	200074
R-squared (Within)	0.140	0.141	0.336	0.336	0.273	0.274
R-squared (All)	0.891	0.891	0.975	0.975	0.975	0.975

Table 15: CHANGES OF LABOR PRODUCTIVITY UPON UNINTENTIONAL GROUP AFFILIATION: REGRESSION ANALYSIS

The dependent variable is Revenue per Employee (Column I and II), Profit per Employee (Column III and IV), and the ln(Marginal Productivity of Labor) (Column V and VI). ln(Marginal Productivity of Labor) is the logarithm of marginal productivity of labor as Larrain and Stumpner (2013) for manufacturing firms. Regressions are based on firms unintentionally join business groups, and all non-group firms. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects, country-year dummies, and firm level variables are included. Firm controls include one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

	Revenue Per Employee		Profit Per Employee		ln(Marginal Productivity of Labor)	
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**28.34*** **	**28.06*** **	**1.174*** **	**1.195*** **	**0.290*** **	**0.304*** **
	(7.122)	(7.114)	(0.465)	(0.466)	(0.011)	(0.011)
	[12.81%]	[12.68%]	[17.28%]	[17.59%]	[6.22%]	[6.52%]
LagParentInd	10.62**	9.915**	0.340	0.374	-0.006	-0.008
	(4.536)	(4.534)	(0.602)	(0.603)	(0.019)	(0.019)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes
Industry	All	All	All	All	Manufacturing	Manufacturing
Sample	Ever Join Group + Always Non-group					
Observations	487619	487613	533446	533440	75281	75281
Number of firms	270130	270128	293338	293336	41788	41788
R-squared (Within)	0.051	0.054	0.009	0.009	0.128	0.132
R-squared (All)	0.932	0.933	0.817	0.817	0.965	0.965

Table 16: CHANGES OF LABOR CHARACTERISTICS UPON UNINTENTIONAL GROUP AFFILIATION: REGRESSION ANALYSIS

The dependent variable is number of employees (Column I and II), average wage (Column III and IV), and the percentage of wage expense over total revenue for the firm (Column V and VI). The average wage is the yearly average at per employee level, and in thousands. Regressions are based on firms unintentionally join business groups, and all non-group firms. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects, country-year dummies, and firm level variables are included. Firm controls include one year lagged *ln*(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

	Number of Employees		Average Wage		Wage / Revenue (%)	
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**0.840****	**0.814****	**1.468*****	**1.452*****	**-1.068*****	**-1.076*****
	(0.401)	(0.399)	(0.373)	(0.373)	(0.280)	(0.280)
	[3.93%]	[3.8%]	[4.73%]	[4.68%]	[-4.15%]	[-4.18%]
LagParentInd	0.281	0.201	0.623**	0.589*	-0.006	-0.008
	(0.225)	(0.225)	(0.314)	(0.314)	(0.019)	(0.019)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes
Sample	Ever Join Group + Always Non-group					
Observations	533368	533362	515029	515023	624819	624813
Number of firms	293304	293302	293338	293336	337572	337570
R-squared (Within)	0.026	0.036	0.139	0.142	0.047	0.048
R-squared (All)	0.978	0.978	0.935	0.935	0.896	0.896

Table 17: GROUP AFFILIATION EFFECT ON THE PROFITABILITY - USING GROUP'S TOTAL HOLDING

This table shows the results when group's total holding is used to capture group affiliation. Panel A shows the summary statistics for Group Total Holding, which is total ownership stakes on the new firm from all group members. Panel B shows the regression results. Column I is based on firms ever unintentionally join business groups. Column II adds firms always non-group affiliated. Column III further adds firms always group affiliated. $GroupTotal$ is equal to the group total holding when the firm is in a business group and 0 otherwise. $LagParentInd$ is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects and country-year-industry (2-digit NAICS) dummies are controlled. Column II, IV, and VI further control the firm level variables, including one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Panel A. Summary Statistics

	No. of Obs.	Min.	Median	Max.	Mean	S.D.
Group Total Holding	12827	0.328	0.980	1	0.865	0.226

Panel B. Regression Results

	Dependent Variable: EBITDA / Total Assets$_{t-1}$		
	(I)	(II)	(III)
$GroupTotal$	0.014***	0.027**	0.023***
	(0.007)	(0.006)	(0.006)
$LagParentInd$		0.005	0.003
		(0.004)	(0.004)
Country×year	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes
Sample	Ever Joining group	Ever Joining group Always non-group	Ever Joining group Always non-group Always group
Observations	36162	945140	1042608
Number of firms	12827	502936	552138
R-squared (Within)	0.025	0.020	0.015
R-squared (All)	0.652	0.828	0.827

Table 18: GROUP AFFILIATION EFFECT IS ROBUST TO DIFFERENT DEFINITIONS OF BUSINESS GROUPS

This table shows regression results when different cut-off values (α) for total group holding are imposed. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects and country-year (2-digit NAICS) dummies, and firm-level control variables are included in the regression. Firm-level controls include one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable	EBITDA / Total Assets$_{t-1}$							
	$\alpha = 15\%$	$\alpha = 20\%$	$\alpha = 25\%$	$\alpha = 30\%$	$\alpha = 35\%$	$\alpha = 40\%$	$\alpha = 45\%$	$\alpha = 50\%$
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
GroupDummy	**0.019*** **	**0.019** **	**0.020*** **	**0.022*** **	**0.020*** **	**0.022*** **	**0.022*** **	**0.021*** **
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
	[11.76%]	[11.76%]	[12.38%]	[13.62%]	[12.38%]	[13.62%]	[13.62%]	[13.00%]
Country×year dummies	Yes							
Firm fixed effects	Yes							
Firm controls	Yes							
Sample	Ever Joining Group + Always Non-group							
Observations	910019	913177	917831	945129	929807	932447	936043	940310
Number of firms	483911	485419	487761	502933	493548	494801	496551	498621
R-squared (Within)	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.014
R-squared (All)	0.829	0.829	0.829	0.828	0.828	0.828	0.828	0.828

Table 19: GROUP AFFILIATION EFFECT IS BEYOND THE EVENT YEAR

The dependent Variable is EBITDA/Total Assets$_{t-1}$. $I_{group,t=k}$ take value of 1 if the firm is group affiliated and the observation is at k years after indirectly joining the group, and 0 otherwise. $LagParentInd$ is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Column I and II are based on firms ever unintentionally join business groups. Column III and Column IV add firms always non-group affiliated. Column V and Column VI further add firms always group affiliated. Through all of the columns, firm fixed effects and country-year (2-digit NAICS) dummies are controlled. Column II, IV, and VI further control the firm level variables, including one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

	Dependent Variable: EBITDA / Total Assets$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
$I_{group,t=0}$	0.017***	0.016***	0.019***	0.020***	0.017***	0.018***
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
$I_{group,t=1}$	0.012**	0.012**	0.023***	0.028***	0.020***	0.023***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
$I_{group,t=2}$	0.006	0.006	0.021**	0.022**	0.021**	0.024**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
$I_{group,t=3}$	-0.056	-0.034	0.007	0.001	0.001	0.004
	(0.071)	(0.074)	(0.017)	(0.017)	(0.017)	(0.017)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes
Sample	Ever Joining group	Ever Joining group	Ever Joining group Always non-group	Ever Joining group Always non-group	Ever Joining group Always non-group Always group	Ever Joining group Always non-group Always group
Observations	37447	36162	1042608	945140	1042655	1042608
Number of firms	12866	12827	552138	502936	552164	552138
R-squared (Within)	0.026	0.026	0.013	0.019	0.015	0.015
R-squared (All)	0.646	0.653	0.827	0.829	0.827	0.811

Table 20: GROUP AFFILIATION EFFECT ON THE PROFITABILITY IS ROBUST TO INDUSTRY TRENDS

Regressions in this table further include country level industry trends. Column I and II are based on firms ever unintentionally join business groups. Column III and Column IV add firms always non-group affiliated. Column V and Column VI further add firms always group affiliated. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects and country-year-industry (2-digit NAICS) dummies are controlled. Column II, IV, and VI further control the firm level variables, including one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

	Dependent Variable: EBITDA / Total Assets$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**0.014*** **	**0.011** **	**0.019*** **	**0.021*** **	**0.017*** **	**0.018*** **
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
	[8.67%]	[6.81%]	[11.76%]	[13.00%]	[10.52%]	[11.14%]
LagParentInd			0.001	0.004	-0.001	0.000
			(0.004)	(0.004)	(0.004)	(0.004)
Country×year ×industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes
Sample	Ever Join group	Ever Join group	Ever Join group Always non-group	Ever Join group Always non-group	Ever Join group Always non-group Always group	Ever Join group Always non-group Always group
Observations	37447	36162	945169	945140	1042608	1042608
Number of firms	12866	12827	502952	502936	552138	552138
R-squared (Within)	0.083	0.087	0.014	0.015	0.013	0.014
R-squared (All)	0.672	0.678	0.828	0.829	0.827	0.828

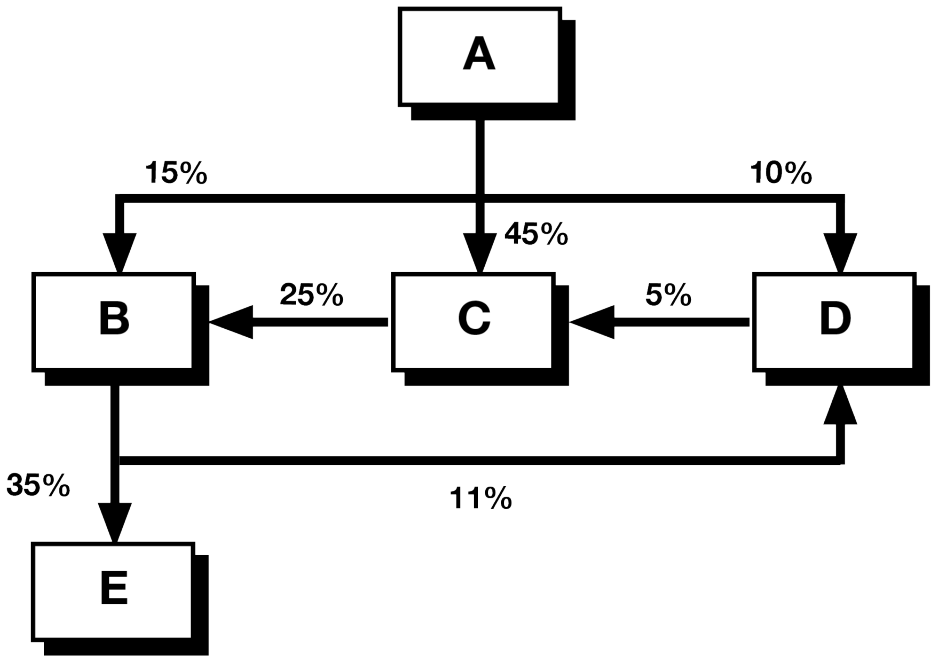
Table 21: GROUP AFFILIATION EFFECT ON PROFITABILITY IS ROBUST TO ALTERNATIVE PROFITABILITY MEASURE

The dependent variable is EBIT/Total Assets$_{t-1}$. Column I and II are based on firms ever unintentionally join business groups. Column III and Column IV add firms always non-group affiliated. Column V and Column VI further add firms always group affiliated. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects and country-year (2-digit NAICS) dummies are controlled. Column II, IV, and VI further control the firm level variables, including one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable	EBIT / Total Assets$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**0.013****	**0.012****	**0.019*****	**0.021*****	**0.016*****	**0.018*****
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
	[12.72%]	[11.74%]	[18.59%]	[20.54%]	[15.65%]	[17.61%]
LagParentInd			0.002	0.004	0.001	0.003
			(0.005)	(0.005)	(0.005)	(0.005)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes
Sample	Ever Joining group	Ever Joining group	Ever Joining group Always non-group	Ever Joining group Always non-group	Ever Joining group Always non-group Always group	Ever Joining group Always non-group Always group
Observations	37446	36165	945125	945119	1042586	1042568
Number of firms	12865	12827	502930	502928	552132	552125
R-squared (Within)	0.010	0.015	0.014	0.015	0.014	0.014
R-squared (All)	0.639	0.646	0.822	0.823	0.821	0.822

Appendix A. An Example of Cluster Construction

In this section, I present an example of cluster construction through iterations. For a given sample of firms, I first identify potential ultimate owners. Then starting from the bottom of the ownership chain, I assign firms to different clusters by checking the fixed point requirements. When a firm has multiple parent shareholders, it will be assigned to the cluster with highest total cluster holding.



In the above graph, A, B, C, and D are four firms. Arrows are pointing from shareholders to subsidiaries. Numbers beside arrows indicate ownership stakes. Given the preset cutoff value $\alpha = 30\%$, clusters are constructed after three rounds.

- Iteration 1: Firm A, B and D do not have any corporate shareholder with ownership stake more than 30%. They are potential ultimate owners. For firm C, the total stake from cluster formed by A is 45%, while the total stake from cluster formed by D is 5%. Thus, C is assigned to Cluster A.[21] Firm E only has one corporate shareholder B. It is assigned to Cluster B. Therefore, after the first iteration, the five firms are assigned

[21] The cluster with ultimate owner X is referred to "Cluster X".

to three different clusters:

$$A, C \rightarrow \text{Cluster } A$$

$$B, E \rightarrow \text{Cluster } B$$

$$D \rightarrow \text{Cluster } D$$

- Iteration 2: Firm A is still the ultimate owner. Firm B has two corporate shareholders, A and C. Notice that firm C has been assigned to Cluster A. Therefore the total holding from the cluster formed by A is 15%+25% = 40% > 30%. Thus B is assigned to Cluster A. Nothing changed for firm C. Firm D has two corporate shareholders, A and B. They belong to Cluster A and Cluster B respectively. The total holding from cluster A is 10% < 30%. The total holding from cluster B is 11% < 30%. Therefore it is still assigned to the cluster formed by itself. For firm E, since firm B was identified as a potential ultimate owner in the last round, the firm E is still assigned to Cluster B. After the second iteration, the five firms are still assigned to three different clusters:

$$A, B, C \rightarrow \text{Cluster } A$$

$$E \rightarrow \text{Cluster } B$$

$$D \rightarrow \text{Cluster } D$$

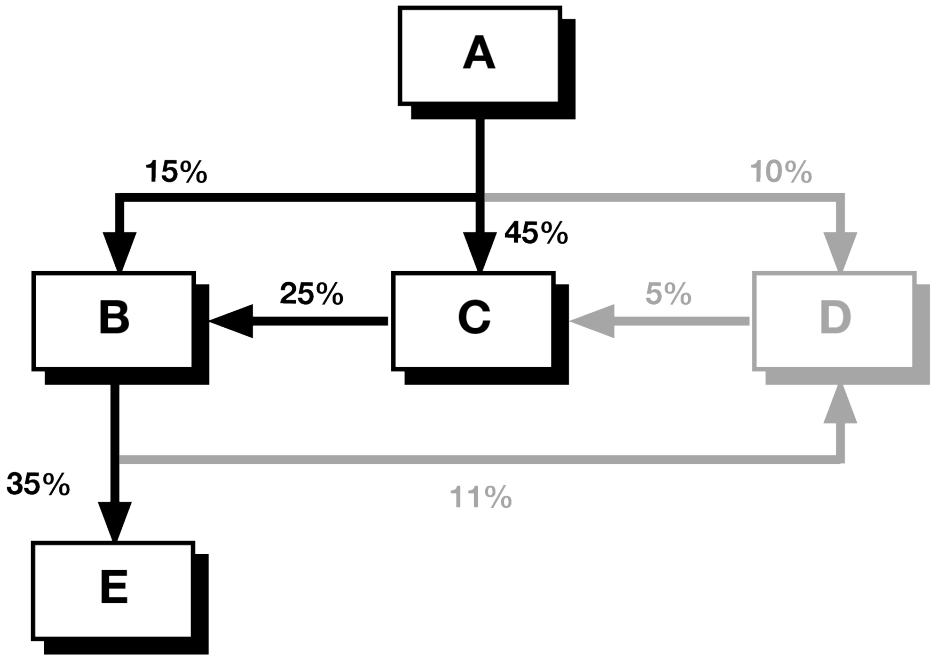
- Iteration 3: Nothing changed for firm A, B, C. For firm E, since B was assigned to Cluster A, the total holding from the Cluster A is 35% > 30%. B is also assigned to cluster A. For firm D, its two corporate shareholders, A and B, both belong to cluster A. The total holding from Cluster A is 10% + 11% = 21% < 30%. Thus, it is still assigned to Cluster D. After this round, five firms are assigned to two clusters.

$$A, B, C, E \rightarrow \text{Cluster } A$$

$$D \rightarrow \text{Cluster } D$$

Following calculations double check the total cluster holdings for each firms:

- Firm A: the ultimate owner for Cluster A.



- Firm B: $15\% + 25\% = 40\% > 30\%$.
- Firm C: $45\% > 30\%$.
- Firm E: $45\% > 30\%$.
- Firm D: the ultimate owner for itself.

Appendix B. An Example of Unintentional Group Affiliation – Active Audio

Active Audio is founded in 2002 by Xavier Meynial, at that time Professor and researcher at the Acoustics Laboratory of the Universit du Maine (France). Active Audio's objective was to create a commercial application of research work patented under Rflecteur Sonore Actif, which can be applied to the Public Address system.

Before 2005, Active Audio was jointly owned by Electronatec (33% of ownership stake), the founder, and other private individual investors. Electronatec, including its other subsidiaries, has considerable expertise in power electronics, motor design and piloting of ships.

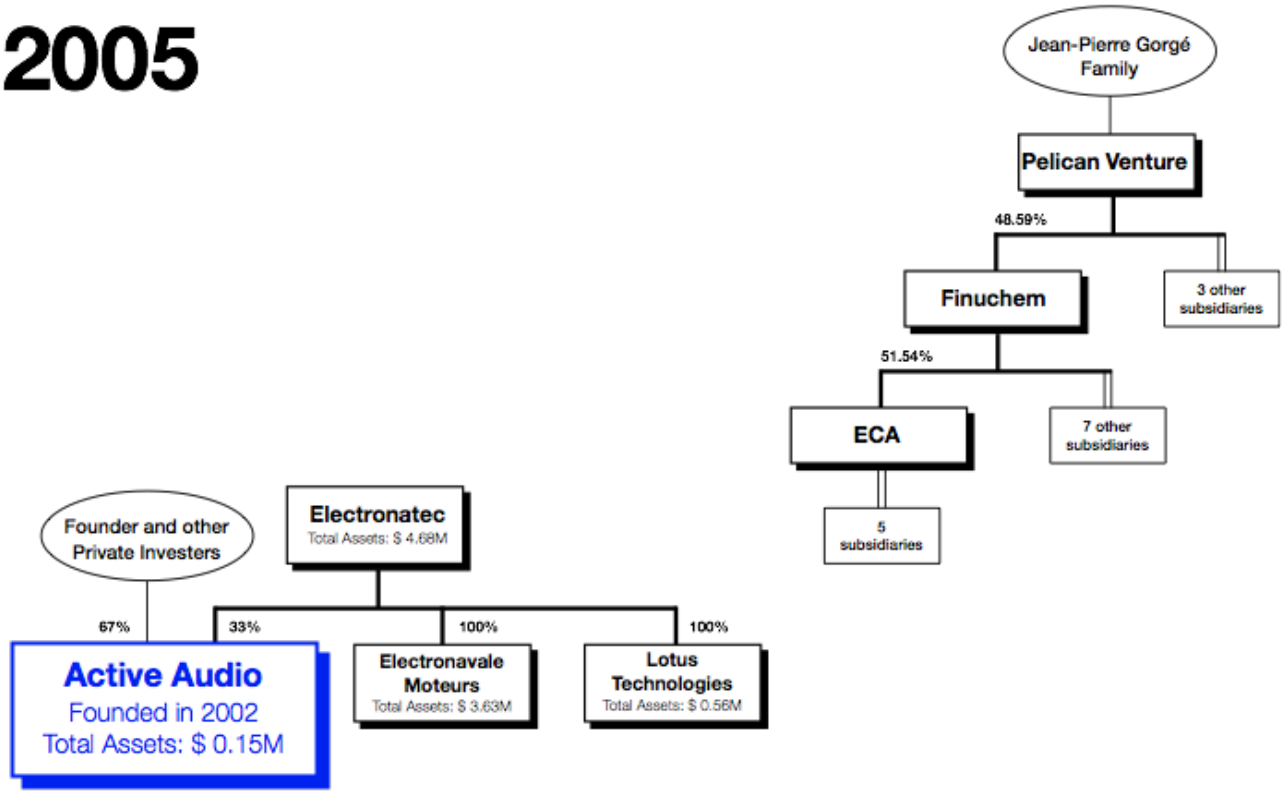
In 2006, Electronatec was acquired by ECA, a leader in the market of intelligence robotics. ECA is a subsidiary of Finuchem. Finuchem is a major player in the intelligent safety system. They both belonged to a huge business group held by Jean-Pierre George family, through its family holding company Pelican Venture. One side effect of this acquisition is that Active Audio also joins the big business group.

According to ECA's filing, the acquisition is driven by the synergies between ECA and Electronatec. Electronatec was very present on the market for naval facilities in France, a sector in which ECA wanted to develop. Conversely, little Electronatec exported its solutions. ECA would help achieve the export growth particulary in the framework of the European shipbuilding industry. Active Audio was very small compared to Electronatec and its other subsidiaries. Besides, Active Audio was not mentioned as any part of the stated acquisition synergies.

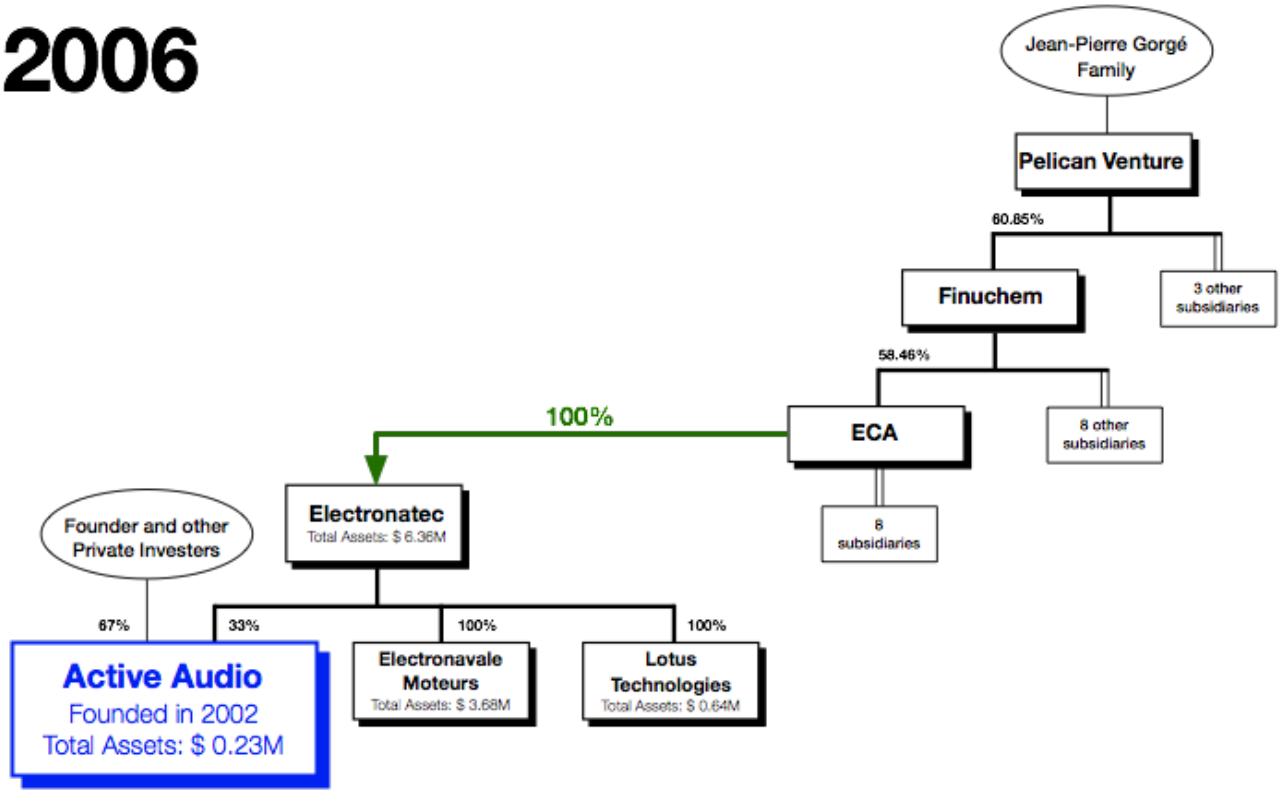
Two years after unintentionally joining the group, Active Audio's profitability doubled. Its adjusted revenue and market share tripled.

The graph in the next page shows the ownership structures in 2005 and 2006.

2005


Jean-Pierre Gorgé Family
Pelican Venture
48.59%
Finuchem
3 other subsidiaries
51.54%
ECA
7 other subsidiaries
5 subsidiaries
Founder and other Private Investers
Electronatec
Total Assets: $ 4.68M
67%
33%
100%
100%
Active Audio
Founded in 2002
Total Assets: $ 0.15M
Electronavale Moteurs
Total Assets: $ 3.63M
Lotus Technologies
Total Assets: $ 0.56M

2006


Jean-Pierre Gorgé Family
Pelican Venture
60.85%
Finuchem
3 other subsidiaries
58.46%
100%
ECA
8 other subsidiaries
8 subsidiaries
Founder and other Private Investers
Electronatec
Total Assets: $ 6.36M
67%
33%
100%
100%
Active Audio
Founded in 2002
Total Assets: $ 0.23M
Electronavale Moteurs
Total Assets: $ 3.68M
Lotus Technologies
Total Assets: $ 0.64M

Appendix C. Supplemental Tables

Table A.1: BUSINESS GROUP IS THE DOMINANT OWNERSHIP STRUCTURE FOR NEW FIRMS ACROSS COUNTRIES

This table show the contributions of business groups affiliated firm-year observations across countries. The second column shows the total number of firm-year observations across countries. The third column reports ratios of group affiliated firm-year observations. The fourth column is the sum of group affiliated firms' total assets over the sum of all new firms' total assets for the respective country. The last two columns show the similar ratios using total revenue and number of employees.

		Percentage Contributed by Group Affiliated Observations			
Country	No. of Obs.	No. of Obs.	Total Assets	Total Revenue	No. of Employees
Austria	1,925	43.48%	56.69%	56.23%	55.34%
Belgium	41,600	31.73%	58.83%	63.97%	54.79%
Bulgaria	9,958	6.09%	21.92%	17.34%	13.52%
Czech Republic	15,884	5.41%	33.29%	30.70%	22.10%
Crotia	3,295	14.90%	36.21%	39.98%	34.18%
Denmark	120,668	11.20%	42.94%	55.61%	33.88%
Estonia	7,362	6.32%	24.15%	21.07%	19.12%
Finland	6,323	45.52%	68.51%	65.80%	64.10%
France	313,177	20.22%	62.69%	53.11%	52.60%
Germany	75,541	23.05%	50.49%	48.42%	50.14%
Greece	29,149	6.90%	20.98%	19.99%	14.70%
Hungary	8,855	4.21%	23.22%	21.58%	15.47%
Hungary	750	10.67%	22.76%	20.17%	14.40%
Iceland	2,064	8.38%	27.95%	24.62%	17.11%
Italy	26,389	39.49%	43.19%	39.15%	41.18%
Luxemburg	347	19.02%	35.65%	36.07%	30.19%
Latvia	66	24.24%	40.59%	52.05%	39.29%
Norway	234,165	10.06%	40.65%	32.79%	24.61%
Poland	14,969	8.63%	29.91%	24.57%	23.06%
Portugal	89,542	2.79%	30.92%	24.82%	13.31%
Romania	385,711	0.85%	15.69%	13.33%	5.88%
Spain	254,775	13.39%	48.19%	41.06%	32.97%
Switzeland	283	37.46%	40.38%	38.34%	61.26%
United Kindom	416,890	9.58%	56.58%	53.01%	56.48%
Total	2,059,688	11.24%	50.57%	46.28%	38.85%

Table A.2: BUSINESS GROUP IS THE DOMINANT OWNERSHIP STRUCTURE FOR NEW FIRMS ACROSS YEARS

This table show the contributions of business groups affiliated firm-year observations across years. The second column shows the total number of firm-year observations across years. The third column reports ratios of group affiliated firm-year observations. The fourth column is the sum of group affiliated firms' total assets over the sum of all new firms' total assets for the respective year. The last two columns show the similar ratios using total revenue and number of employees.

		Percentage Contributed by Group Affiliated Observations			
Year	No. of Obs.	No. of Obs.	Total Assets	Total Revenue	No. of Employees
1999	52,270	12.85%	36.87%	33.71%	28.44%
2000	146,747	9.44%	45.37%	40.83%	31.36%
2001	162,418	13.01%	52.41%	49.39%	39.03%
2002	175,255	13.43%	54.92%	51.54%	41.46%
2003	226,217	11.61%	53.54%	49.56%	41.29%
2004	321,052	9.27%	50.12%	45.49%	38.36%
2005	391,810	9.71%	52.16%	47.62%	39.00%
2006	258,663	14.05%	51.82%	47.45%	44.13%
2007	298,953	10.98%	48.15%	43.42%	38.39%
2008	26,303	11.52%	52.66%	49.18%	48.45%
Total	2,059,688	11.24%	50.57%	46.28%	38.85%

Table A.3: BUSINESS GROUP IS THE DOMINANT OWNERSHIP STRUCTURE FOR NEW FIRMS ACROSS INDUSTRIES

This table show the contribution of business groups affiliated firm-year observations across industries. The second column shows the total number of firm-year observations across industries. The third column reports ratios of group affiliated firm-year observations. The fourth column is the sum of group affiliated firms' total assets over the sum of all new firms' total assets for the respective industry. The last two columns show the similar ratios using total revenue and number of employees. Industry is categorized as 2-digit NAICS (2007) codes.

		Percentage Contributed by Group Affiliated Observations			
Industry (NAICS 2 digits)	No. of Obs.	No. of Obs.	Total Assets	Total Revenue	No. of Employees
Accommodation and Food Services	76,832	9.51%	49.18%	46.28%	36.92%
Administrative and Support and Waste Management and Remediation Services	141,826	11.97%	55.39%	50.75%	44.58%
Agriculture, Forestry, Fishing and Hunting	41,522	4.99%	26.11%	27.05%	14.37%
Arts, Entertainment, and Recreation	27,994	10.37%	44.86%	42.96%	40.67%
Construction	279,715	7.53%	46.71%	41.10%	28.36%
Educational Services	13,060	8.40%	38.28%	32.81%	31.13%
Finance and Insurance	40,261	23.73%	53.62%	48.16%	47.16%
Health Care and Social Assistance	29,874	12.69%	40.27%	35.32%	37.35%
Information	68,220	16.46%	55.86%	54.01%	50.60%
Management of Companies and Enterprises	34,451	41.75%	66.44%	66.38%	67.17%
Manufacturing	258,344	11.40%	47.84%	48.04%	36.53%
Mining, Quarrying, and Oil and Gas Extraction	7,652	19.94%	50.92%	56.21%	38.53%
Professional, Scientific, and Technical Services	239,488	9.93%	51.23%	49.39%	43.99%
Public Administration	1,844	13.23%	36.73%	38.58%	44.80%
Other Services (except Public Administration)	62,829	6.87%	48.08%	42.53%	36.53%
Real Estate and Rental and Leasing	131,109	17.91%	49.73%	51.14%	41.68%
Retail Trade	231,265	6.23%	39.18%	34.64%	29.29%
Transportation and Warehousing	82,647	12.86%	53.47%	50.81%	43.63%
Utilities	15,331	39.80%	60.22%	61.38%	49.86%
Wholesale Trade	268,626	9.50%	40.98%	37.48%	32.95%
Other	6,798	25.49%	58.27%	55.34%	58.60%
Total	2,059,688	11.24%	50.57%	46.28%	38.85%

Table A.4: GROUP AFFILIATION EFFECT IS ROBUST IN THE SUMSAMPLE WHERE DATA COLLECTION CRITERIA DID NOT CHANGE

This table presents results based on countries where data collection criteria did not change during the sample period. The dependent variable is EBITDA/Total Assets$_{t-1}$. Column I and II are based on firms ever unintentionally join business groups. Column III and Column IV add firms always non-group affiliated. Column V and Column VI further add firms always group affiliated. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects and country-year (2-digit NAICS) dummies are controlled. Column II, IV, and VI further control the firm level variables, including one year lagged ln(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable	EBITDA / Total Assets$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**0.016*** **	**0.013*** **	**0.020*** **	**0.021*** **	**0.017*** **	**0.018*** **
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
	[9.90%]	[8.05%]	[12.38%]	[13.00%]	[10.52%]	[11.14%]
LagParentInd			0.001	0.003	0.000	0.002
			(0.004)	(0.004)	(0.004)	(0.004)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes
Sample	Ever Joining group	Ever Joining group	Ever Joining group Always non-group	Ever Joining group Always non-group	Ever Joining group Always non-group Always group	Ever Joining group Always non-group Always group
Observations	36780	35509	940768	940762	1035274	1035266
Number of firms	12583	12545	499598	499596	546527	546523
R-squared (Within)	0.011	0.016	0.014	0.015	0.013	0.014
R-squared (All)	0.646	0.652	0.827	0.827	0.826	0.827

Table A.5: GROUP AFFILIATION EFFECT IS ROBUST IN THE SUM-SAMPLE WHERE ALL PUBLIC AND PRIVATE FIRMS ARE REQUIRED TO FILE FINANCIAL STATEMENT

This table presents results based on countries where all public and private firms are required to file financial statements. The dependent variable is EBITDA/Total Assets$_{t-1}$. Column I and II are based on firms ever indirectly join business groups. Column III and Column IV add firms always non-group affiliated. Column V and Column VI further add firms always group affiliated. *GroupDummy* is equal to 1 when the firm is in a business group and 0 otherwise. *LagParentInd* is equal to 1 if the firm had at least one parent corporate shareholder one year before, and 0 otherwise. Through all of the columns, firm fixed effects and country-year (2-digit NAICS) dummies are controlled. Column II, IV, and VI further control the firm level variables, including one year lagged *ln*(total assets), leverage ratio, tangibility, age, and legal incorporation form. The standard deviation is clustered at country-industry (2-digit NAICS), and is presented in the parenthesis. The number in the bracket indicates the ratio of the estimator over the sample average of the dependent variable. ***, ** and * denote significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable	EBITDA / Total Assets$_{t-1}$					
	(I)	(II)	(III)	(IV)	(V)	(VI)
GroupDummy	**0.016*** **	**0.013** **	**0.021*** **	**0.022*** **	**0.018*** **	**0.019*** **
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
	[9.90%]	[8.05%]	[13.00%]	[13.62%]	[11.14%]	[11.76%]
LagParentInd			0.001	0.003	0.000	0.002
			(0.004)	(0.004)	(0.004)	(0.004)
Country×year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls		Yes		Yes		Yes
Sample	Ever Joining group	Ever Joining group	Ever Joining group Always non-group	Ever Joining group Always non-group	Ever Joining group Always non-group Always group	Ever Joining group Always non-group Always group
Observations	36833	35570	933984	933978	1029589	1029571
Number of firms	12654	12616	496439	496437	544653	544646
R-squared (Within)	0.011	0.016	0.014	0.015	0.013	0.014
R-squared (All)	0.646	0.652	0.827	0.828	0.826	0.827