Do Business Groups Use Dividends to Fund Investments?*

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Abstract

We offer a novel internal capital market explanation for dividend payments by business group firms by relating the dividends of a group firm to insiders' direct investment in *other* firms in the group. We develop a simple model in which group insiders operate a type of internal capital market and channel resources to profitable investments across the group. In contrast to intra-group investments, dividend payout and its reinvestment by group insiders provides a transparent means of transferring cash across group firms. The trade-off from the insiders' perspective is that while the dividend channel reduces private benefits, it is also associated with lower auditing and monitoring costs than the more opaque intra-group channel. The model generates a number of empirically testable predictions: (i) dividends by a group firm are predicted to be correlated with investments by *other* firms in the group and the correlation is expected to be stronger when the investments are smaller, are more profitable, and when the legal regime is more protective of shareholder rights and (ii) insider holding in a group firm is predicted to be positively related to dividend distributions by *other* member firms. We find strong support for our predictions in firm level panel data from 23 countries spanning Asia and Europe.

Do Business Groups Use Dividends to Fund Investments?

I. Introduction

Emerging economies are characterized by weak legal systems and poor investor protection. A well-documented consequence is that firms in these economies – many of them organized as business groups – are subject to severe agency conflicts between inside and outside equity holders (e.g., Bertrand, Mehta, and Mullainathan (2002)). It may seem surprising, therefore, that group firms in these countries consistently pay dividends and have dispersed outside equity ownership.[1] In this paper, we offer a novel, internal capital market explanation for these dividend payments by relating the dividends of group firms to insiders' direct investment in other firms in the group.

Our explanation for dividends focuses on the internal organization of business groups and complements the existing explanations such as those that emphasize the role of the legal environment for dividend policies around the world (e.g., La Porta et al. (2000)). At a broad level, our notion is that group insiders use their share of dividend flows to invest directly in the equity of group firms with profitable investments – constituting a type of internal capital market. Our emphasis on insiders' direct investment also sets us apart from the extant literature on business groups, which has predominantly focussed on the cross-holding and pyramiding in groups (e.g., Faccio et al. (2001)).[2]

We formalize our intuition in a simple model whose main purpose is to contrast two alternative channels of group internal capital markets – the dividend channel and the intra-group investment channel (a group firm directly investing in other member firms), and to identify the conditions under which each will operate. More specifically, we consider a business group with two firms controlled by a wealth-constrained insider. The legal regime is assumed to be weak,

[1] For instance, in our cross-country sample of business group firms, we observe positive dividends in more than 44% of the firm-years and find that dividends are on average, 3.4% of firms' sales. Furthermore, the average group firm has 61% shareholding with outside investors. To put this in perspective, over a similar time frame, US firms with financial data in Compustat paid dividends in about 33% of firm-years, and the US dividends averaged only 1.9% of sales.

[2] A typical business group consists of a set of affiliated firms controlled by a common group of insiders, usually comprised of a founding family and its associates. A notable feature of business group firms is their complex ownership patterns, with insiders typically owning equity both directly and also indirectly through pyramiding and cross-holdings (see La Porta et. al (1999), in particular their example from the Samsung Group).

making it possible for the insider to divert firm resources for his private benefit. The downside is that diversion entails dissipative costs and since the possibility of diversion is anticipated by investors, it also raises the cost of external capital. Insiders have little incentive to divert, however, if their equity stake is sufficiently high. In the scenario we consider, one group firm has surplus cash, and the other has an investment opportunity needing finance. Financing from within the group is preferable because it helps maintain the insiders' equity stake and reduces diversion – thereby lowering the cost of external financing. The problem the insider faces, therefore, is how best to transfer resources between the firms and how to finance the project.

The insiders' choice between two alternative modes of transferring resources across group firms – the dividend channel and the intra-group investment channel – is based on the following tradeoff. The dividend channel involves paying of some cash to outside shareholders, thereby reducing the extent to which the insider can divert resources from the cash-rich firm. On the other hand, the intra-group investment channel is more opaque and easily manipulated to tunnel resources across group firms. Consequently, when insiders employ that route, outside investors require additional information disclosures and monitoring regarding the terms of the intra-group investment. This may impose dissipative auditing costs on the insider.[3] Exploring the tradeoff between dividend leakage and auditing costs provides us with a rich set of testable predictions about the dividend policies of group firms and their relation to group investments. We note that to keep the model simple and to focus attention on the dividend channel, we abstract from frictions such as taxes and asymmetric information, and preclude non-equity financing. Despite simplifications, the importance of the dividend channel and the validity of our basic approach are, in the end, empirical questions that we investigate by testing the model's predictions.

The first implication that comes out of the model is that *on average*, group firms will pay more dividends than stand alone firms. The reason is that business group insiders may use the dividend channel to invest in member firms, thereby giving groups an additional motive to pay dividends. Second, given that dividends are partly reinvested by insiders, we predict that dividend payments from a group firm will be positively associated with investments and equity-financed investments in other firms in the group. Third, the model helps us pin down the situations in which the dividend channel will dominate. Since the cost of dividend leakage decreases with an increase in the profitability of the investment project and the strength of the legal regime or with a decrease in the size of the investment, we expect the dividend

[3]The auditing costs with the indirect route may arise from covenants in loan contracts that require auditing of the pricing of inter-corporate investments. These are routinely found in loan contracts in India. One of the authors has personal experience enforcing some of those covenants.

channel to be used in these situations. Finally, if a firm uses dividends to finance insider equity investments it also implies that the insider holding in group firms will be positively associated with dividends paid by the other firms in the group.

We conduct detailed tests of our predictions using a panel data of more than 80,000 firm-year observations from 23 countries spanning Asia and Europe. Our data comes from three main sources: (a) Prowess (Indian firms); (b) Claessens et al. (2000) complemented with financial data from Worldscope (Other Asian Firms) and (c) Faccio et al. (2001) complemented with financial data from Worldscope (European Firms). We first compare the dividend payout by group and non-group firms. Our empirical specification uses firm level characteristics that are likely to affect a firm's dividend policy as controls (e.g., firm size, investments, profitability, and time-specific effects). The results indicate that group firms consistently pay more dividends than stand alone firms.

Consistent with our model, we find that dividends from group firms are significantly positively correlated with both aggregate investments and equity-financed investments in other firms in the group. Interestingly, the investments by the other firms in the group fully explain the higher dividend payments by the group firms; i.e., once we control for investments by other firms in the group, a group firm no longer pays more dividends than its stand alone counterpart. The positive correlation between dividends and group investments is robust to firm fixed effects and is present in groups of all sizes. Our results are also economically significant. In particular, we find that a one standard deviation increase in equity-financed investments in other group firms is preceded by a 5.3% increase in group firm dividends in the prior year. Taking the dividends and the number of firms in a group at their sample average values, this implies that more than 10% of the insiders' initial dollar of equity investment in member firms is financed by the insiders' share of the previous year's dividends. This suggests that group dividends are an important source of financing for insider investment in other firms in the group.

In line with our empirical predictions, we also find that dividends are more important for smaller and more profitable investments and for investments by firms in stronger legal regimes. In addition, we find that on average, insider cash flow rights are higher in group firms than in stand alone firms and the dividends paid by the group firms in the previous year can explain more than 15% of the difference in insider holding between group and stand alone firms. Our results thus broadly support our theory.

Our results are robust to alternative explanations such as tunneling, model specifications (e.g., Tobit instead of OLS), variable definitions (e.g., alternative measures of dividends) and sub-period and sub-sample analysis.[4] Furthermore, we obtain consistent results with industry-adjusted dividends and group investments. This ensures that our results are not driven by correlation between investment opportunities across group firms.

We view our approach as complementary to other existing explanations of dividend policy such as legal environment and reputation concern. While some of our predictions are consistent with alternative theories of dividends, others are unique. For instance, it could be argued that group firms may have a greater incentive to pay dividends in order to establish and preserve their "group reputation." However, other predictions, such as the expected greater correlation between dividends and group investments for smaller and more profitable investments, do not follow in any obvious way from the alternative explanations of dividend policy. Overall, the empirical evidence is consistent with our theory and not, as a whole, easily explained on the basis of other approaches.

The rest of the paper is organized as follows: In Section II, we present a survey of the related literature. In Section III, we present our model, while Section IV formalizes our main predictions. In Section V, we describe our data and present the summary statistics. All the empirical results are in Section VI and we conclude in Section VII. All proofs are in the Appendix.

II. Related Literature

Our paper is related to two strands of the extant literature – one dealing with agency theories of dividends, especially in the context of emerging economies and one dealing with business groups and internal capital markets. The literature on agency theories of dividends is vast (e.g., Easterbrook (1984), Jensen (1986), Fluck (1998; 1999), Hart and Moore (1994), Myers (2000), Gomes (2000) and Zwiebel (1996)). The main idea of these papers is that cash inside the firm can be wasted by insiders in enhancing their private benefits. Dividends reduce surplus cash inside the firm and hence are optimal. Outside shareholders will be able to extract the dividends either by directly exercising their control rights (e.g., Fluck (1998)) or by indirectly exercising them through the market for corporate control (e.g., Jensen (1986)). In our model, on the other hand, insiders' enjoy absolute control rights over their firms and cannot be forced to pay dividends. Insiders pay dividends only to maintain their ownership stake in member firms and to avoid the auditing costs of intra-group investments.

[4]Since there is a large difference between the size of our Indian and non-Indian samples, we conduct separate tests on the two sub-samples.

Our paper adds to prior empirical work that tests the agency theory of dividends. In an influential study of the dividend policies of firms around the world, La Porta et al. (2000) contrast a reputation-based theory of dividends, where firm insiders pay dividends to retain the ability to access the financial markets in the future, with a legal regime based theory, in which outside shareholders are empowered by the legal regime to extract dividends from insiders. They find significant support for the legal regime based theory. In another paper on firm dividend policies, Faccio et al. (2001) contrast the dividend policies of firms belonging to business groups in East Asia and Western Europe and establish a relationship between dividend policies and the amount of pyramiding– the ratio of ownership to control rights– in the business group firms. Our paper contributes to this literature by investigating an additional internal capital market motive for business group firms to pay dividends in environments where the legal regime does not provide sufficient protection to minority shareholders. Our analysis also sheds light on the relationship between insider stake in a group firm and dividends paid by the rest of the group.

The other strand of literature related to our work is that on internal capital markets in business groups. This literature has highlighted the role of internal capital markets in enabling risk sharing across group member firms. In a comprehensive study of business groups in 15 countries, Khanna and Yafeh (2005) document that Indian business groups engage in liquidity smoothing. Another potential benefit of the financial linkages among business group firms is in overcoming credit rationing problems. With a larger interlinked reputation at stake, business groups may refrain from reneging on contracts with lenders and thus enable extension of credit (see Kali (2002)). In a recent study of Indian business groups, Gopalan, Nanda and Seru (2006) find that group members support each other in times of distress via intra-group loans. The financial linkages among group firms has also been argued to exacerbate the agency conflicts between the insiders and minority shareholders. According to Claessens et al. (2002), groups are associated with minority shareholder expropriation in Asia. Freidman et al. (2003) as well as Bertrand et al. (2002) similarly view groups as institutions that poorly protect property rights, enabling 'tunneling' of funds from minority shareholders to the group insiders. Thus, risk sharing and easier access to capital on the one hand, and tunneling on the other, provide the two contrasting images of intra-group behavior. We add to this literature by providing a novel internal capital market explanation for dividend payments by group firms.

Almeida and Wolfenzon (2006) offer a model that is the closest to our approach, though their focus is on group structure rather than on dividends. They develop a theory of vertical groups that highlights the ability of insiders to use all the retained earnings of group firms for future investments. They also consider an alternative horizontal group structure that has similarities to the dividend channel in our model. The models differ in the initial group structure and in the insider diversion possibilities. We consider an existing group with independent firms and an ownership structure with both direct holdings and cross-holdings, and we allow for diversion from both firms. In a sense, we are concerned with the incremental investment and dividend decisions of an existing group, while they are more concerned about the process of group formation.

III. Model

In this section, we develop a simple model of a quasi-internal capital market in which business groups use the cash in one group firm to finance new investments in another. The fund transfer can either take the form of the insider using dividends from one firm to invest in the equity of the firm raising capital or as a direct investment by one firm in another. The model allows us to develop several testable predictions about the dividend policies of group firms.

III.A Model Set-up

We analyze a business group that consists of two all-equity financed firms, A and B, managed by a common insider. We begin with a situation in which the insider directly owns $\alpha \geq 0$ and $\beta \geq 0$ fractions of the equity of firms A and B respectively. In addition, firm A owns a fraction $\gamma \geq 0$ of firm B's equity.[5] The remaining equity of both firms is held by atomistic outside investors. We normalize the total number of shares outstanding in each firm to be 1. All agents are taken to be risk neutral, and there is no time discounting. There are two relevant dates — the start date 0 and the terminal date 1.

To generate intra-group flows, we assume that there is a mismatch in terms of cash availability and investment opportunities between the two firms. Specifically, we assume that at date 0, firm A has cash $S > 0$ and no positive NPV investments. Firm B, on the other hand, has no cash but has a positive NPV project that requires an investment of $I > 0$ at date 0 and which produces a cash flow of $X > I$ at date 1. Firm B is also assumed to have ongoing projects that generate a cash flow of $V > 0$ at date 1. The new project is specific to firm B and cannot, for instance, be transferred to firm A. Hence, to finance the project, firm B has to arrange for I dollars external financing, part of which may come from firm A. The flow of

[5]We would like to note that the assumption that A owns shares in B – and not vice-versa – does not affect any of the results, though some expressions are modified. As we discuss, our notion is that A is the more mature firm, with cash and few investment opportunities – while B has opportunities, but lacks cash. This is consistent with firm A having made past investments in the younger firm.

resources from firm A to B represents a type of internal capital market, and we now turn to its potential benefits.

If the insiders have better information about investment projects, then, as shown by Stein (1997), internally-financed investments can be more efficient than externally-financed ones. Furthermore, internal financing may enable the insider to maintain his shareholding in the firm. In the case of business groups in weak legal regimes, this can improve firm value by limiting resource diversion. This second advantage provides the motivation for internal financing in our model. As we argue, when the legal system is weak, low insider ownership may make it expensive to raise outside capital – providing a strong motivation for the insider to participate either directly or otherwise in equity financing rounds.

We make some important assumptions about the legal and regulatory environment. The first assumption is that insiders *de facto* have substantial control rights over the firms which – depending on the extent of investor protection – may be far in excess of their cash flow rights. This is a natural assumption to make in the context of emerging markets, where governance mechanisms such as hostile takeovers or activist shareholders are underdeveloped and do not offer a credible threat to control by insiders.[6] The weakness of the legal regime also allows insiders to divert some resources for their private benefit. We do however put some limits on insider diversion. Specifically, depending on the nature of the legal regime, insiders can divert up to a fraction $\mu < 1$ of the cash from either firm for private consumption. This diversion takes place at date 1 and comes with a dissipative cost. For simplicity, we assume a proportional cost of diversion. That is, δ represents the dissipative cost of diverting a dollar from the firm. Thus for every dollar diverted, the insider receives only $1 - \delta$.

The parameters δ and μ characterize the difficulty of diversion or the stringency of the legal and regulatory regime in the country. In countries with lax regulations, where diversion is easier, δ (μ) is likely to be low (high); whereas in countries with tighter regulations, the opposite is likely to be true.

III.B Insider Stake and Diversion

We first analyze the insiders' problem of whether or not to divert from either firm in the absence of the new project in firm B. Subsequently, we introduce the project and analyze both the financing and diversion problems. It is assumed that at date 1, the terminal date, any cash not diverted is paid out as dividends. We first consider firm A and illustrate the insiders' diversion

[6] Furthermore, insiders can also increase their control rights in excess of cash flow rights with dual class shares, through friendly institutional investors, by filling the board of directors with insiders, friends and family etc, (Almeida and Wolfenson (2006), Burkart, Panunzi and Shliefer (2003)).

problem. The insider gets $1-\delta$ of every dollar he diverts, while he receives α if the dollar is paid out as dividends. Comparing diversion with dividends, the insider will not divert from firm A iff $1-\delta<\alpha$. A similar rule can be derived for firm B as well. The insiders' effective holding in firm B is the sum of his direct holding, β, and his indirect holding through firm A. The insiders' indirect holding in turn depends on what happens to the marginal dollar in firm A. If the insider does not divert and uses the marginal dollar to pay dividends from firm A, then his indirect holding in firm B is $\gamma\alpha$; alternatively, if the insider diverts a fraction μ of the marginal dollar, then his indirect holding is $\gamma\alpha'$, where $\alpha'=[\mu\{1-\delta\}+\{1-\mu\}\alpha]$. The interesting case is one in which the insider diverts from firm A at date 1 and does not divert from firm B. In this case, there is a tension between the insiders' incentives to divert from firm A and his incentives to pay dividends to finance his investment in firm B. For this purpose, we make the following assumptions about the insiders' holding in the two firms.

Assumption 1 *$\alpha<1-\delta$ and $\beta+\gamma\alpha'>1-\delta$.*

If there is no new project to be funded (NP), the values of firms A and B for the insider can be characterized as follows:

Lemma 1 *In the absence of a new project in firm B, the insider diverts from firm A and does not divert any money from firm B. The insiders' payoffs from A and B are:*

$$\begin{aligned} U_A^* &= \alpha' S, \\ U_B^* &= [\beta+\gamma\alpha']V \quad \textit{and}, \\ U_{NP}^* &= U_A^*+U_B^* = \alpha' S+[\beta+\gamma\alpha']V. \end{aligned} \tag{1}$$

We now extend the analysis by considering the project in firm B and analyze the role of this project in moderating insider diversion from firm A. We first consider the case in which B funds its project by selling equity to the insider and outside investors. This is then compared to the case in which the insider maintains his stake in B indirectly by having firm A invest in firm B's equity.

III.C Dividend Payout and Investment by the Insider

Before we analyze the two firms together, we consider firm B in isolation and analyze the insiders' decision to purchase shares. The insiders' participation will impact his ultimate shareholding in firm B and affect the level of diversion from the firm at date 1. The insiders' anticipated level of diversion will, in turn, impact the price of B's shares.

Let firm B raise I through an equity offering, and let the insider invest $W\in[0,I)$ in the issue. Let P_B denote the price of B's shares. The number of shares sold in the equity offering are $\frac{I}{P_B}$, of which the insider receives $\frac{W}{P_B}$. Given the assumption about diversion from firm A, the insiders' shareholding in firm B prior to the equity sale is $\beta + \gamma\alpha'$. The insiders' fractional holding in firm B after the SEO is hence $[\beta + \gamma\alpha'][1 - \frac{I}{P_B}] + \frac{W}{P_B}$. With fair pricing, P_B depends on the anticipated level of insider diversion from firm B. If the insider does not divert, then the total firm value and B's share price will be $P_B = V + X$. On the other hand, if the insider is expected to divert, then the share price – reflecting the value of the shares to outside investors – will be $P_B = [1 - \mu][V + X]$.[7] As we have discussed, the insider will refrain from diverting from firm B only if his effective holding is greater than or equal to $1 - \delta$. We now state the following lemma.

Lemma 2 *If firm B raises outside equity financing, the insider will maintain sufficient ownership to not divert from firm B only if* $W \geq W_{min} \equiv \max\{0, [\beta+\gamma\alpha']I - [\beta+\gamma\alpha' - \{1-\delta\}][V+X]\}$.

The intuition for the lemma is as follows. An equity issue with less than proportional insider participation dilutes the insiders' holding in firm B. The above lemma identifies the minimum amount the insider needs to invest in the equity offering so as to ensure an effective holding of at least $1 - \delta$. If $W_{min} = 0$, this implies that insider participation in the equity issue is not necessary to maintain a holding greater than $1 - \delta$. In the following analysis, we assume $W_{min} > 0$. The following lemma formalizes the insiders' incentives to invest W_{min} in firm B's equity issue.

Lemma 3 *The insider will want to invest* $W \geq W_{min}$ *in firm B's equity issue if he has sufficient funds available.*

The intuition for this lemma is as follows. Since the equity issue is fairly priced, the dissipative costs of diversion, if any, are borne by the existing shareholders of firm B. Note that the dissipative cost of diverting a fraction μ of the final cash flows, $V + X$, is $\delta\mu[V + X]$. The insider bears a fraction $\beta + \gamma\alpha'$ of this cost. Assumption 1 ensures that the insiders' fraction of the dissipative cost is greater than his benefit from diverting the cash flows of firm B. Hence the insider will wish to avoid these costs and will seek to invest to the extent of W_{min} in the equity issue.

We now extend the analysis and consider firm A along with firm B. To invest W_{min} in firm B, the insider will have to pay a minimum dividend of $\frac{W_{min}}{\alpha}$ at date 0 from firm A. We will assume that A has the resources required to pay such a dividend. Now, if firm A pays a

[7] Our assumption that the equity is sold at a fair price can be justified as follows. The issue will not be underpriced unless the insider can preferentially allocate the underpriced shares to himself. This can be ruled out if equity sales are required to be first offered to existing shareholders in the form of a rights offer. This is usually the practice in many countries. On the other hand, overpricing is ruled out since it will not result in any subscription by outside shareholders – which we have assumed is required to finance the investment.

dividend of $\frac{W_{min}}{\alpha}$, the insiders' total payoff from firm A is

$$U_A^* \quad = \quad \alpha'[S - \frac{W_{min}}{\alpha}] + W_{min}$$

The first term represents the date 1 payoff to the insider from firm A (including cash diverted) and the second term represents the insiders' share of date 0 dividends from firm A. The insiders' date 1 payoff from firm B can similarly be given as

$$U_B^* \quad = \quad [\beta + \gamma\alpha'][V + X - I].$$

The expression above reflects the fact that since the equity issue is fairly priced, the existing shareholders of firm B retain the full NPV of the new project. Thus the insiders' payoff from firm B is the sum of the value of the existing project V, and the NPV of the new project $X - I$, times his initial shareholding $\beta + \gamma\alpha'$. The insiders' total payoff if firm B raises financing through an outside equity issue (OE) can be obtained by summing his payoff from firms A & B as

$$\begin{aligned} U_{OE}^* &= U_A^* + U_B^*, \\ &= \alpha'[S - \frac{W_{min}}{\alpha}] + W_{min} + [\beta + \gamma\alpha'][V + X - I], \\ &= \alpha' S - W_{min}[\frac{\alpha'}{\alpha} - 1] + [\beta + \gamma\alpha'][V + X - I]. \end{aligned} \tag{2}$$

Comparing (2) with (1), we see that apart from the insiders' share of the NPV of the new project, given by $[\beta + \gamma\alpha'][X - I]$, U_{NP}^* and U_{OE}^* differ by the term $W_{min}[\frac{\alpha'}{\alpha} - 1]$.[8] This term represents the cost to the insider of paying dividends from firm A at date 0. The cost is in terms of lower diversion at date 1. This reduction in diversion benefits ensures that the insider will always want to pay the minimum dividends at date 0 required to ensure an effective stake in firm B at or above $1 - \delta$.

III.D Investment Modes: Intra-group vs. Dividend Channel

We now consider the case in which firm B raises financing by placing shares with firm A – *i.e.,* maintaining the insiders' stake by increasing the cross-holdings rather than by paying dividends accompanied by a public sale of equity. Since the route involves private dealings between affiliated firms, it will lack the transparency of the dividend channel. For simplicity, we consider only the polar case of raising all financing through intra-group investments.

When a firm sells equity to another group firm, it presents a potential opportunity for the insider to tunnel by mispricing the shares. Since his stake is lower in firm A than in firm B, the

[8] It can be shown that Assumption 1 implies $\frac{\alpha'}{\alpha} > 1$.

insider will always want, if he can, to tunnel resources to firm B by selling over-priced shares to firm A. To prevent such tunnelling, banks and institutional investors will usually require intra-group equity sales to be appraised and audited. For example, loan contracts often specify auditing requirements for inter-corporate investments. Furthermore, insiders may also have incentives to signal their good intentions and strengthen reputation by providing information and establishing mechanisms to verify transfers between the firms. We assume that such auditing is costly and represent the costs by M.[9]

Thus in the intra-group investment channel, firm A invests I in firm B's equity. The insiders' share of this investment is $\alpha' I$. We assume that $W_{min} < \alpha' I$, so that with intra-group investment, the insider maintains, in effect, shareholding greater than $1 - \delta$ in firm B. The trade-off between the insider directly investing in firm B using the dividend channel and intra-group investment can be characterized as follows. With the dividend channel, firm A pays a higher than optimal dividend at date 0, and this results in a loss of private benefits for the insider to the extent of $W_{min}[\frac{\alpha'}{\alpha} - 1]$. However, if the insider uses the intra-group investment channel, he will be able to preserve his private benefits from firm A, but will have to incur additional auditing costs M. The following proposition characterizes the insiders' choice between the dividend channel and intra-group investment channel.

Proposition 1 *The choice between the dividend channel, with the insider investing in B's equity, vs. the intra-group investment channel with firm A investing in B's equity, can be characterized as follows. Ceteris Paribus, the dividend channel will be favored for:*

1. *Smaller values of I, the project investment level,*
2. *Larger values of project cash flow X and*
3. *Larger (smaller) values of δ (μ), the cost of diversion (fraction diverted).*

The insider will choose the dividend channel if the loss of private benefits from firm A, given by $W_{min}[\frac{\alpha'}{\alpha} - 1]$, is less than the auditing costs M. Since $W_{min}[\frac{\alpha'}{\alpha} - 1]$ is increasing in I, the size of the investment, *ceteris paribus*, an increase in I, increases the required dividend from firm A and makes the dividend channel less attractive. By an analogous argument, since the loss of private benefits is decreasing in the profitability of the new project X, *ceteris paribus* an increase in X makes the dividend channel more attractive. Similarly, an increase in δ or a decrease in μ reduces the cost of the dividend channel (in terms of diversion benefits) and promotes its use.

We next consider the empirical predictions of the model. In some of our predictions, we compare the behavior of group firms with that of stand alone firms. Stand alone firms for the

[9] While we take M to be fixed for simplicity, assuming that M is lower in weaker legal environments only strengthens our result that the dividend route is less likely to be adopted in such regimes.

purpose of the predictions refer to firm A on a stand alone basis. From Lemma 1, we know that on a stand alone basis, the insider will divert a fraction μ of all the cash flows from firm A and pay the rest as dividends. Thus in our model, the level of diversion in a stand alone firm will be greater than that when the project is financed through the dividend channel and will be comparable to the level of diversion when financing is done through intra-group investment. In discussing the empirical predictions, we will also highlight the extent to which some of these may also be implied by other reasons for dividend payments, such as reputation considerations.

IV. Empirical Predictions

The central argument of the model is that business groups pay out dividends which are reinvested by insiders in the equity of other group firms to fund investments. Clearly, firms (stand alone or group) may have other motives to pay dividends, such as maintaining their reputation and access to external capital financing. Assuming that these motives do not vary systematically across stand alone and group firms, our model predicts that group firms will have greater incentive to pay dividends than stand alone firms. Moreover, the higher dividend payout in a group firm relative to a stand alone firm should be on account of investments and more specifically equity financed investments in other firms in the group.[10] Stated formally, our first prediction is:

Prediction 1: *Ceteris Paribus, group firms will distribute more dividends than stand alone firms on account of investments and specifically equity-financed investments in other member firms in the group.*

A follow up prediction of the model is that even among group firms, we should find cross-sectional differences in dividend payments depending on the investments and equity-financed investments in the other firms in the group. Thus:

Prediction 2: *Ceteris Paribus, among group firms, dividends by a firm will be positively associated with both the investments and equity-financed investments in the other member firms in the group.*

[10] Note that we do not have information on individual equity offerings. Moreover, the fraction of insider holding in a firm does not vary with time and hence does not allow us to estimate the exact incremental investment of insiders. However, we can obtain estimates of the amount of investments financed through external equity financing. If insider investment in group firm's equity is correlated with the incremental outside equity capital raised by group firms, we would expect a positive association between dividend payments by group firms with the investments financed through external equity capital in the group. These measures will be perfectly correlated if group insiders purchase the same fraction in all new equity offerings as their initial equity holding.

The central empirical prediction of our model is about the nature of cross-sectional differences in dividend payments across group firms. As stated in Proposition 1 and in the discussion that follows, the insiders' loss of private benefits from firm A, when financing is done through the dividend channel, increases in the size of the investment and decreases in the profitability of the investment, and in the strength of the legal regime. Hence the insider prefers the dividend channel when the investment project in firm B is of a smaller size, is more profitable, or when the legal regime is stronger. Thus:

Prediction 3: *Ceteris Paribus, the correlation between dividends and investments and equity-financed investments in other firms in the group will:*

- *decrease with the size of the investment,*
- *increase with the profitability of the investment,*
- *and increase with the strength of the legal regime.*

Finally, our model also predicts a relationship between the distribution of insider holding and dividend payment within group firms. In particular, since insiders use dividends from existing firms to finance their equity investment in new firms, *ceteris paribus*, we expect the level of insider holding in younger firms in the group to be positively associated with dividends paid out by older firms in the group. Our final prediction then is:

Prediction 4: *Insider holding of younger firms in the group will be positively associated with dividend payments from older firms in the group.*

IV.A Alternative Hypotheses

There are competing arguments that may generate some predictions that are similar to ours. However, as we discuss, none gives rise to the full set of our predictions. In presenting our empirical results we consider possible alternative explanations for specific findings and discuss our attempts to control for and distinguish our hypothesis from the alternatives. Here, for ease of reference, we briefly mention the main alternative explanations and their relation to our predictions.

First, it has been argued that the strength of the legal regime is a primary factor in explaining differences in dividend payments across countries (e.g., La Porta et al. (2000)). The notion is that a stronger legal regime empowers outside shareholders to extract dividends from insiders. In our empirical analysis, we control for such cross-country differences in legal regime (and possible changes over time) using group/firm/country and time fixed effects. The specific prediction concerning the role of the legal regime that we test (*Prediction 3*) envisions a greater correlation between dividends and investments in stronger legal regimes – which does not follow directly from existing arguments about the effect of legal regimes on dividend payout.

It is argued that even firms in weak legal environments may pay dividends if they care sufficiently about their reputation. Business groups may care more about their reputation than stand alone firms since they have multiple firms which might have occasion to access the financial markets in the future. Such a reputation argument could suggest that: (1) groups with more investment opportunities might pay more dividends than stand alone firms and (2) the dividend payments of firms in the group may be linked with future investment opportunities faced by the group as a whole. However, our model offers several sharp predictions on the cross-sectional patterns (*Predictions* 3 and 4) between group dividends, investments and insider ownership that do not follow directly from the reputation argument.[11] Moreover, our model clearly implies that flow of dividends and investments will tend to occur fairly closely in time – an implication that does not follow obviously from a reputation approach.

A third argument with some predictions similar to ours is that in a world with correlated industry shocks across group firms, dividend payments from a group firm might proxy for, or be used as a signal of, investment opportunities in member firms. This would also lead to a positive relationship between a group firm's dividends and investments by other firms in the group. We repeat our empirical tests using industry adjusted values to control for such industry effects. In any event, the presence of correlated industry shocks would not lead to our *Predictions* 3 and 4.

V. Data and Summary Statistics

V.A Sample Construction

We test our predictions with data from several sources on group and stand alone firms from 23 countries in Asia and Europe. The data for Hong Kong, Indonesia, Japan, Korea, Malaysia, Phillipines, Singapore, Thailand, and Taiwan, are from the database of group firms provided by Classenius et al. (2000), found at the web site of the *Journal of Financial Economics*. This

[11] In fact, in some cases, a reasonable argument can be made that reputation considerations alone might suggest a weaker correlation between investments and dividends. For instance, in stronger legal environments, a reputation argument, in contrast to our prediction, would suggest that there may be less need to establish reputation through dividend payments.

is a database of the largest firms in these countries and identifies the specific business group to which firms belong to, the identity of the controlling insider and the insiders' effective cash flow and control rights in individual firms. We are constrained in our choice of the sample since this is the only publicly available data source on Asian firms that identifies the specific group to which firms belong, as well as the extent of insider holding. We complement the Classenius et al.'s data with detailed financial information from Thompson Analytics' Worldscope database, using the SEDOL identifier to match firms. To augment our sample, we also match manually by company names. For identifying industry affiliation, we adopt Classenius et al. classification of firms (15 industries). Note that the industry affiliation may not be strictly comparable across the different sub-samples in our data. Hence, in the regressions where we require industry controls, we use country-specific industry classification. Our sample of Asian firms spans the period 1996-2005 and includes over 17,000 firm-year observations.

For the Indian sample, we obtain firm financials, stock prices, group and industry affiliation, and insider holding data from Prowess, a database maintained by CMIE, Centre for Monitoring the Indian Economy. Prowess provides annual financial statements of public and private Indian firms including balance sheet, profit and loss statements, and cash flow statements starting from 1989. For identifying group affiliation, we adopt Prowess's classification. This group affiliation has been previously used by Bertrand et al. (2002), Gopalan, Nanda, and Seru (2006), and Khanna and Palepu (2000). For identifying industry affiliation, we adopt Prowess' classification of firms into industries based on their principal line of activity. We code the industry classification at a level equivalent to the 4-digit SIC. We have data on firms from 95 such industries. For our analysis, we consider all non-government and non-foreign firms. Although Prowess has data starting from 1989, to be comparable to the data for the other countries, we limit the sample to firms that have positive sales during any of the years from 1996 to 2005. The sample on Indian firms, with over 57,000 firm-year observations, is the largest of any country in our data.

The sample of firms for Austria, Belgium, The Czech Republic, Germany, Spain, Finland, France, Ireland, Italy, Luxemburg, Norway, Portugal, and Sweden are from data graciously provided by Mara Faccio. This database, used in Faccio et al. (2001), also identifies the specific group to which firms belong as well as the identity of the controlling insider and the insiders' effective cash flow rights. We complement this data with detailed financial information from the Thompson Analytics' Worldscope database, using the SEDOL identifier to match firms. To augment our sample, we also match manually by company names. For identifying industry affiliation, we adopt the Faccio et al. (2001) classification of firms. The European sample also spans the period 1996-2005 and includes over 6,300 firm years.

V.B Empirical Specification and Key Variables

In the first three predictions, we are broadly interested in examining how dividend payments in the firms covary with group- and firm-level characteristics. Accordingly, our regression equation in the first three predictions will be a variant of the following form:

$$y_{it} \quad = \quad \beta_0 + \beta \mathrm{X}_g + \gamma \mathrm{X}_i + \mu_t + \mu_{c \text{ or } i}, \tag{3}$$

where the i indicates the firm, g and c indicate respectively the group and the country to which firm i belongs, and the t subscript refers to time in years. μ_t and $\mu_{c \text{ or } i}$ refer to time fixed effects and country or firm fixed effects respectively. Note that we control for country fixed effects to account for the legal strength of the countries in which the firm is located. Firm fixed effects are included in some of our tests to ensure that our results are not driven by slow moving firm- or group-specific characteristics like reputation. Finally, following the approach in Berger and Ofek (1995), we also replicate our tests using industry-adjusted variables to account for correlated industry shocks across group firms.

The dependent variable y in most of our analysis is *Log*(1 + *Dividend*), a measure of dividend payment. We use several firm-level characteristics (X_i) that are likely to impact a firm's dividend policy.[12] *Size* is the book value of total assets and proxies for resources of the firm, while $\frac{Debt}{TA}$ is the ratio of total debt outstanding to total assets and serves as a measure of financial leverage. We use *Sales Growth* and $\frac{Investment}{TA}$ as measures of firm growth and investment levels. These variables are expected to proxy for the resources needed by a firm for investment purposes and could be correlated with dividend payout. We measure *Investment* as the year-on-year change in the book value of total assets. $\frac{EBIDTA}{TA}$ is the ratio of Earnings Before Interest Depreciation, Taxes, and Amortization to total assets, and we use this as a measure of firm profitability. *Insider Holding* is a measure of the cash flow rights of the controlling insider in the firm. *Ownership/Control Rights* is the ratio of cash flow rights to the control rights of insiders. This represents the extent of pyramiding in the group, with a smaller number indicating greater pyramiding. We use this variable only in the non-Indian sample since this information is not available for the Indian firms in our sample.

Among the group level variables (X_g) that we use, *Group Investment* represents, for any group firm, the aggregate investments made by the rest of the firms in the group. Specifically, it is measured as the logarithm of the investments made by the rest of the group plus 1. To

[12] Note that we choose to regress dividends by a group firm on investments in other firms in the group. For our purpose, estimating the regression with investments by a group firm as an explanatory variable would also work. However, such a specification would require us to control for firm's investment opportunities. This is usually done using the market to book ratio. Since we do not have reliable data on market values for most of the group firms, we choose to stick with the specification with dividends as a dependent variable.

measure only positive investment, all negative values are replaced with 0. *Group Inc. Equity* is a measure of the aggregate investment by the other firms in the group financed through new equity capital. It is calculated in a manner similar to *Group Investment*: by aggregating investments across the rest of the group less the sum of the increase in total debt and retained earnings for the year. Here again, to measure only positive investments, all negative values are replaced with 0.

Note that the key variables used in most of the analysis – *Dividends*, *Group Investments* or *Group Inc. Equity* – are unscaled. There are two reasons for this. First, changes in the scaled measure can occur both due to changes in the numerator and also changes in the denominator. Since our theory has predictions only about changes in the numerator, a scaled measure is imperfect for our purpose. Additionally, the results from an analysis with an unscaled measure are easier to interpret.

Second, there is no obvious choice of scaling variable for dividends and investments. In particular, scaling by measures of firm profitability (say for dividends) can result in negative values when the firm is making a loss and may not be meaningful. Normalizing by assets is more reasonable, though it is unclear whether firm or group assets should be taken. For comparison purpose we do estimate all our tests with these variables scaled by assets (firm and group) and find that the qualitative nature of our results is unaffected. In addition, we do two more tests which ensure that results with unscaled measure are not disproportionately affected by the larger firms in the sample. First, we use firm level fixed effects and, in most of our tests, introduce a cubic polynomial in *Size* as a control. Second, we also estimate the main regressions on quintiles based on group size. Our results from both these tests will show that large firms do not drive our results with the unscaled variables.

V.C Summary Statistics

Table I provides the country wise distribution of our sample. From 23 countries, we have over 80,700 firm year observations, consisting of about 31,800 group firm years and 48,900 stand alone firm years. More than 70% (57,000 out of 80,700) of our sample is from India. To ensure that our results are not unduly influenced by the Indian sample, we re-estimate all our regressions without the Indian firms as well. For Indian firms, we use the percentage shareholding of promoters given in Prowess to measure *Insider holding*, while for the Asian and European firms we use the insider cash flow rights provided in Classenius et al. (2000) and Faccio et al. (2001) respectively. The average insider holding among the sample firms is 39.2% and firms pay dividends in more than 41% of the firm-years in the sample. The average

Dividend/Sales ratio in our sample is comparable to those in La Porta et al. (2000) and Faccio et al. (2001).

Table II provides the summary statistics for the key variables used in our analysis. We keep the firm financials in the local currencies. This is unlikely to create any problems since our regressions include fixed effects at the country or firm level. The average dividend to asset ratio of 1.9% and debt to total assets ratio of 33% in our sample is comparable with other studies that use similar data. Consistent with our model, we find that group firms pay more dividends than stand alone firms. The higher dividend rate is independent of the way we measure dividends. Consistent with the evidence in Gopalan, Nanda, and Seru (2006) and elsewhere, we find that group firms are larger, have more leverage, and are more profitable than stand alone firms. While group firms have a lower mean sales growth than stand alone firms, the ordering is reversed when we look at medians. Group firms also invest more than stand alone firms. Consistent with our model predictions, we also find that group firms have a higher insider holding than stand alone firms. Also note that in the sample, a large proportion of observations have no dividend payment by firms. To ensure that this truncation does not affect our inferences with an OLS model, we will be employing a Tobit model for robustness.

Table III provides the correlations between the key variables for the group firms in our sample. Consistent with our second prediction, we find that *Log(1+Dividends)* is highly correlated with both *Group Investments* and *Group Inc. Equity*. Furthermore, *Log(1+Dividends)* is also correlated with *Insider Holding*, *Size*, *Debt/TA*, and $\frac{EBIDTA}{TA}$; firms with lower insider holding, larger firms, firms with lower leverage, and the more profitable firms pay more dividends. In our regressions, we will control for these correlations using suitable proxies.[13] To make more meaningful inferences, we now proceed to the formal tests of our predictions.

VI. Empirical Results

VI.A Dividends of Stand Alone vs. Group Firms

Our first prediction compares the dividend rates of group firms and stand alone firms. To test this prediction, we estimate the following panel OLS regression:

$$y_{it} = \beta_0 + \beta_1 \text{Group}_i + \beta_2 \text{Insider Holding}_i + \gamma \text{Controls}_{it} + \mu_t + \mu_c \ X \ \mu_k, \tag{4}$$

[13] The strong negative correlation between *Log(1+Dividends)* and *Insider Holding* can be explained by the fact that firms that pay more dividends are typically the larger firms – and these firms also have low levels of insider holding.

where the i subscript indicates the firm, the t subscript refers to time in years, μ_t refers to time fixed effects and μ_c X μ_k refers to country times industry fixed effects respectively. The last fixed effects, while controlling for any crosscountry differences, also allow the industry specific effects to vary across countries. This ensures that our results are not affected by industry characteristics and differences in industry definitions across countries. The dependent variable y_{it} is *Log(1+Dividends)*, a measure of dividends paid by firm i in year t. *Group* is a dummy variable that takes a value 1 for firms belonging to a group and 0 otherwise. In the regression, we use the variables discussed earlier to control for firm size, insider holding, leverage, growth, and profitability. Since the variable of interest, *Group*, is time invariant we are unable to use firm fixed effects. We report robust standard errors clustered at the individual firm level.

Consistent with *Prediction 1*, the results in Column (1) and (2) show that group firms pay more dividends than stand alone firms. As we might expect, dividends increase with firm size and profitability as measured by $\frac{EBIDTA}{TA}$. The dividends tend to decrease with firm leverage and sales growth. Insider holding does not appear to significantly affect dividend payout in this specification. In Columns (3) and (4), we repeat the regressions using $\frac{Dividend}{TA}$ as the measure of dividends. In this specification, insider ownership becomes statistically significant though the economic significance of the coefficient is small. The scaling of dividend by asset value also causes the size variable to flip signs. Importantly though, the estimate on group dummy still remains significant. Our final tests in this table address the concern that a significant number of observations have firms paying 0 dividends. For these observations, the dependent variable (*Log(1+Dividends)*) has a value of 0. To control for any bias this truncation at 0 may cause, we repeat the estimation using a Tobit model with heteroskedastic consistent standard errors. The results, reported in Columns (5) and (6), are similar to the other regression results and show that Group firms indeed pay more dividends. In particular, we find that the coefficient estimates on the *Group* indicator variable are similar in magnitude to those in models (1) and (2). Our results are also economically significant. In particular, the results in Column (2) indicate that a group firm with mean sample characteristics pays 6% more dividends *in a year* as compared to a similar stand alone firm.

Next, in Table V, we test the second part of *Prediction 1*, which states that a primary motivation for group firms to pay larger dividends is to finance investment opportunities in other member firms. To investigate this, we re-estimate equation 4 after including *Group Investment*$_{-it}$ and *Group Investment*$_{-it+1}$ i.e., investments in the years concurrent with and subsequent to the dividend payout in year t made by all the other firms in the group. For stand alone firms, *Group Investment* is set equal to 0.

For ease of comparison, Column (1) of Table V reproduces the results reported in Table IV (Column (2)). Comparing the results of Column (2) and Column (1) of Table V, we find that not only are *Group Investment*$_{-it}$ and *Group Investment*$_{-it+1}$ significantly positively related to firm dividends, but that their inclusion makes the sign of the coefficient on *Group* change from positive to negative. This is a striking result since it supports the notion that the higher dividends paid by group firms can be explained largely by the correlation between group firm dividends and investments undertaken in other member firms. This offers evidence consistent with *Prediction 1*. The coefficients on the other variables in Column (2) are quite similar to those in Column (1).

To mitigate the concern that our results so far are affected by a disproportionate presence of Indian firms, we estimate the regression for the sub-sample of non-Indian firms in Column (3). Again we find that both *Group Investment*$_{-it}$ and *Group Investment*$_{-it+1}$ are significantly positively related to firm dividends, and their inclusion results in a negative coefficient on *Group*. In Columns (4) and (5) we repeat the regression with *Group Inc. Equity* in place of *Group Investment* and get similar results.

Overall, the results in Tables IV and V support our first prediction – group firms indeed pay more dividends than stand alone firms. Moreover, we are able to show that higher dividends paid by group firms can be explained largely by the correlation between group firm dividends and investments undertaken in other member firms. These results are robust to alternative measures of dividend payments and to different specifications. Notably, since firm size and profitability is controlled for in these regressions, the higher dividend payments by group firms is not a result of the firms being larger or more profitable.

VI.B Variation of Dividends by a Group Firm with Investments and Equity-Financed Investments of Member Firms

In Table VI, we test *Prediction 2*, which says that *among group firms*, dividend payments by a group firm will be positively associated with investments in other member firms in the group. In other words, dividend payments by firm i at time t should be positively associated with investments in other firms in its group made at time t and/or time $t+1$.[14] To test this prediction, we use equation (4), replacing country and industry effects ($\mu_c\ X\ \mu_k$) with

[14] We include both investments at time t and at time $t+1$ because we are not sure about the timing of the dividend payments. As indicated in the data section, we only observe investments and dividends at the end of the financial year. Dividends are sometimes paid quarterly and often times the final dividend for a year is not declared and paid until much after the year end. These complications might indicate that either contemporaneous or lagged dividends may be related to group investments.

firm fixed effects (μ_i). Doing so helps us control for any unobserved, time-invariant firm level differences which might have influenced the results reported in Tables IV and V.[15] Any positive association we capture after including firm fixed effects would only be on account of changes in firm dividends over time being correlated with changes in the rest of the group's investments.

More specifically, we test this prediction by estimating the following panel OLS model only for group firms and present the results in Panel A of Table VI:

$$\begin{aligned} y_{it} &= \beta_0 + \beta_1 \text{Group Investment}_{-it} + \beta_2 \text{Group Investment}_{-it+1} + \gamma \text{Controls}_{it} \\ &\quad + \mu_t + \mu_i, \end{aligned} \tag{5}$$

where the dependent variable y is *Log(1+Dividends)*. *Group Investment*$_{-i}$ is a measure of the aggregate investment made by all the other firms in the group. The regression includes all the control variables used in earlier regressions other than the insider ownership variable for which there is only one value per firm in our sample. We report standard errors that are robust and clustered at the individual firm level. The coefficients of interest are β_1 and β_2 and our model predicts that $\beta_1 > 0$ and/or $\beta_2 > 0$. To conserve space, Table VI reports only β_1 and β_2 for the various specifications.

The results in Column (1) indicate that both β_1 and β_2 are individually positive and significant, offering strong support for *Prediction 2*. The magnitude of the coefficients are, however, somewhat smaller than in regressions without firm fixed effects in Table V. For robustness, in Column (2) we repeat the regression restricting the sample to non-Indian firms. Consistent with our predictions, we find that in the non-Indian sub-sample, β_1 is insignificant but β_2, the coefficient on group investment in the following year, is positive and significant. For robustness, we re-estimate the regressions after industry adjusting dividends and group investments. This ensures that our results are not driven by some correlation between investment opportunities across group firms. We follow the methodology of Berger and Ofek (1995) to industry adjust investments of all the firms in a group. Our results (reported in Column (3)) are similar to those reported in the first two columns.[16]

Although we control for the size of the firm, we next examine whether the observed correlation between dividends and group investments is affected by the size of the group (especially

[15] For instance, firms that are more able and/or more concerned about their reputation might be paying more dividends and making more investments – while groups that are less able and less concerned about reputation might be doing neither. Inclusion of firm fixed effects helps us overcome this problem by controlling for unobserved firm level effects.

[16] Firm dividends may be correlated with group investments if group firms pay a fraction of their profits as dividends and transfer the balance internally to other firms in the group to finance investments. To control for this possibility, in additional tests, we control for the flow of intra-group loans and investments from the firm paying dividends to the rest of the group. Our results are qualitatively similar to those reported.

since the dependent variable is unscaled). The size of a group may proxy for the extent of industry diversification of the group with the larger groups being more diversified and hence better able to transfer resources across member firms. This would suggest a higher correlation between dividends and investments for the larger groups. To examine this, we divide our sample into quintiles based on Group size, and report the regression results for the individual sub-samples in Columns (4) to (8). As can be seen, in all specifications at least one of β_1 or β_2 (or both) is (are) positive, suggesting that our results are robust to any relationship that group size alone might be causing.

Finally, in Panel B of Table VI, we test the second part of *Prediction 2* by looking at the association between group firm dividends and equity-financed investments in other firms in the group. Here again, by including firm fixed effects in our tests, we measure the correlation between time series changes in firm dividends and equity-financed investments. We use a model similar to (5) to test this prediction. Formally, we replace *Group Investment* in (5) with equity-financed investments (*Group Inc. Equity*) and re-estimate the model. *Group Inc. Equity* is a measure of the aggregate investment by the group financed through new equity capital. Our model again predicts that $\beta_1 > 0$ and/or $\beta_2 > 0$. The results indicate that in the full sample, while β_1 is not significant, β_2 is significant and positive. The results on non-Indian firms and in the Group size quintiles also show that at least one of β_1 or β_2 is positive and significant in all the specifications. This provides evidence consistent with the second prediction.

Our results are both statistically and economically significant. For instance, the coefficient estimate β_2 in Column (1) in Panel B indicates that group firm dividends are 5.3% higher when there is a one standard deviation increase in the book value of equity in the other member firms in the next year. For dividends and the number of firms in a group at their sample average values, this implies that more than 10% of the insiders' initial dollar of equity investment in member firms is financed by the insiders' share of the previous year's dividends.[17]

[17] The details of the calculation are as follows. For simplicity, let us assume that insider ownership in all firms is 100%. As will be apparent, this is unlikely to affect the calculations. Let all firms pay dividends at the sample mean value, and, let no firm raise any equity. Now let one group firm raise one unit of equity. This will result in *Group Inc. Equity* going up from 0 to .6931 for all the other firms in the group. From the regression results, this will mean that *Log(1+Dividend)* will increase by .006931 (.01*.6931). Given the sample mean value of *Log(1+Dividend)* of .9918, this implies that the dividends of every firm in the group will increase by .02. Given that there are, on average, six firms in a group, this implies that the total dividends by all *other* firms in the group will increase by .1 (5*.02) or 10% of the increase in equity. Our assumption on average insider ownership will not affect this calculation because it will affect both the numerator (the amount of dividends obtained) and the denominator (the amount of equity investment).

VI.C Variation of Dividends by a Group Firm with Investment Characteristics and Legal Environment

Next, we test *Prediction 3* and examine whether the correlation between dividends and group investments varies systematically with profitability, investment size and the legal environment as predicted.

First, we investigate whether group firm dividends tend to be more correlated with investments that are made by the more profitable firms in the group. To test this prediction, we construct two measures of group investments. One measure aggregates the investments by group firms in industries with above-median profitability the previous year, *High Profits*, and the other aggregates the investments by group firms in industries with below-median profitability the previous year, *Low Profits*. We then re-estimate equation (5) after including the contemporaneous and the lead values of both the modified investment measures. More specifically, we estimate:

$$\begin{aligned} y_{it} &= \beta_0 + \beta_{1h}\text{Investment}_{-it}^{HighProfits} + \beta_{2h}\text{Investment}_{-it+1}^{HighProfits} + \beta_{1l}\text{Investment}_{-it}^{LowProfits} \\ &\quad + \beta_{2l}\text{Investment}_{-it+1}^{LowProfits} + \gamma\text{Controls}_{it} + \mu_t + \mu_i. \end{aligned} \tag{6}$$

We have four coefficient estimates of interest: $\beta_{1h},\ \beta_{2h},\ \beta_{1l},\ \beta_{2l}$. We present the results of the regression in Row (1) of Panel A of Table VII. To conserve space, we only present the four coefficients of interest. To read the table, please note that the coefficient in the column titled *Year t* and *High Profits* is the coefficient on the investments by high profit firms in year t. Column (5) compares the sum of the coefficients on the *High Profits* ($\beta_{1h} + \beta_{2h}$) variables with the sum of the coefficients on the *Low Profits* ($\beta_{1l} + \beta_{2l}$) variables. The results indicate that firm dividends are significantly more responsive to investments in more profitable industries. In Row (2) we repeat the regression with equity-financed investments in the other group firms instead of investments by other group firms and get similar results, i.e., firm dividends are more responsive to equity-financed investments in more profitable industries. The results of Panel A support the notion that dividend payments are significantly more responsive to both investments and to equity-financed investments in more profitable industries.

In Panel B of Table VII, we test if firm dividends respond differentially to large and small investments by other firms in the group. *Prediction 3* indicates that dividends should be more responsive to small investments. To test this prediction we again construct two measures of group investments. One measure aggregates the above-median values of investments, *Large*, and the other aggregates the below-median values of investments, *Small*. We then re-estimate equation (7) after including the contemporaneous and the lead values of both the modified investment measures. We present the results in Row (3) of Table VII. Column (5) again compares the sum of the coefficients on the two large investment variables ($\beta_{1L} + \beta_{2L}$) with the sum of the coefficients on the two small investment variables ($\beta_{1S} + \beta_{2S}$). The results indicate that firm dividends respond more to smaller investments in other group firms. In Row (4) we repeat the regression with equity-financed investments in the other group firms instead of investments by other group firms and get similar results, i.e., firm dividends are more responsive to smaller equity-financed investments in the other firms in the group. The results of Panel B suggest that dividend payments are significantly more responsive to smaller investments and smaller equity-financed investments in the other firms in the group.

In Panel C, we examine whether the correlation between *Log(1+Dividend)* and *Group Investment* depends on the stringency of a country's shareholder rights. We use the anti-director index of Pagano and Volpin (2005) as a proxy for shareholder rights. This index takes a value from 0 to 5, with a higher number indicating stronger shareholder rights. To test our prediction, we re-estimate (5) after including four interaction terms, i.e. we interact *Group Investment*$_{it}$ and *Group Investment*$_{it+1}$ with *Strong Governance* and {*1- Strong Governance*}, where *Strong Governance* is a dummy variable that takes a value 1 for the years in which the country's anti-director index is equal to 5 and 0 otherwise. The results in Row (5) indicate that the sum of the coefficients on the interaction terms with *Strong Governance* ($\beta_{1St} + \beta_{2St}$) is statistically bigger than the sum of the coefficients on the interaction terms with {*1-Strong Governance*} ($\beta_{1We} + \beta_{2We}$). In Row (6) we repeat the estimation with equity-financed investments in the other group firms instead of investments by other group firms and get similar results. For robustness, we also define *Strong Governance* to take a value of 1 when the country's anti-director index takes a value of 5 and 4 and 0 otherwise. We find similar results. Our results in Panel C provide evidence that firm dividends are more responsive to investments in other group firms in countries with stronger shareholder rights.

In summary, the results in Table VII support our third prediction. We are able to show that dividends by a group firm respond more to investments in other firms in the group when the investments are more profitable, when they are smaller and when they are in countries with stronger shareholder rights.

VI.D Variation of Dividends by a Group Firm and Insider Equity Stake

Prediction 4 states that insider holding will be higher in firms belonging to groups that pay more dividends. This prediction is based on the notion that a higher insider ownership will result if the dividends are parlayed into greater ownership of group firms. Before we test this prediction, please note that the group insider builds up his resources with successive projects and uses the resources to acquire a higher fraction of the equity of subsequent projects. This suggests that on average group firms are likely to have a higher insider holding than stand alone firms. In Table VIII, we first test this implication by estimating the following cross-sectional model:

$$y_{it} = \beta_0 + \beta_1 \text{Group}_i + \beta_2 \text{Group Dividend}_{-it-1} + \gamma \text{Controls} + \mu_c, \qquad (7)$$

Where y is the level of insider holding, *Insider Holding*. Unlike in earlier regressions, a panel analysis is not possible here since we have only a single value for insider holding for any firm. We proceed by including firms only in the first year in which they enter the sample. *Group Dividend*$_{-i}$ is the aggregate dividends paid by all the other firms in the group during the previous year. This variable is coded 0 for stand alone firms. We also include controls for firm size, using *Size*, *Size*^{2}, and *Size*^{3}, leverage (*Debt/TA*) and firm profitability ($\frac{EBIDTA}{TA}$). Standard errors reported in parenthesis are heteroskedasticity consistent and are clustered at a group level.

In Columns (1) and (2), we estimate the regression on all firms in our sample. Our results in Column (1) indicate that, consistent with *Prediction 4*, group firms have a higher insider holding than stand alone firms. Next, we examine whether consistent with *Prediction 4*, we also find that group firms that pay higher dividends also have higher insider holding. The results in Column (2) show that this is indeed the case. Inclusion of *Group Dividend* reduces the size of the coefficient on *Group* from 2.7 to 2.3, indicating that about 15% of the difference in insider holdings between the group and the stand alone firms in Column (1) can be explained by the dividends that the group firms paid the previous year. In Column (3), we repeat the regression only on group firms and find that even among group firms, firms belonging to groups that pay more dividends have a higher insider holding.[18]

Overall, the results in this section are consistent with our model and show that insider holding is significantly higher in group firms than stand alone firms and an important reason for the difference is the dividends paid by the other firms in the group.

VI.E Robustness Tests

We now discuss some additional tests that we conduct to check the robustness of our findings. Using a sample of Indian firms similar to ours, Bertrand et al. (2002) document that Indian

[18]We also estimate the regression after including an interaction between *Group Dividend* and *Strong Governance*. Consistent with our expectation, we find some evidence that the effects shown in Column (3) are stronger in countries countries with stronger share holder rights.

business groups tunnel cash from firms in which insiders have low cash flow rights into firms in which they have high cash-flow rights. An implicit assumption in the tunnelling hypothesis is that the cash accumulated in the high cash flow rights firms will (eventually) be distributed in the form of dividends. The tunnelling hypothesis predicts that groups pay dividends predominantly from the high insider holding firms and that these dividends should be related to the profits of low insider holding firms in the group. As we saw in Table IV, after controlling for firm size, insider holding does not seem to have a significant impact on firm dividends. Moreover, we repeat the analysis in Table VII to see if insiderholding both in the firm making investments and in the firm paying dividends has an impact on the correlation between dividends and group investments. We find that neither insider holding measure has a significant affect.

Notwithstanding this, it is possible that the association we find between firm dividends and group investments may be due to omitted tunneling variable(s). In particular, we could get a correlation between group investments and dividends on account of tunneling if group investments are correlated with the profits of the low insider holding firms in the group. To evaluate this possibility, we re-estimate (5) for firms in the group with insider ownership in the top 75^{th} percentile. In our estimation, we also include total profits of the low 25^{th} percentile insider ownership firms in the group, *LowProf*, normalized by their assets. We find that our results are qualitatively unchanged. Hence, the results do not appear to be caused by dividend patterns that may be predicted by the presence of tunneling.

In additional robustness tests, we examine alternative proxies for investment opportunity, such as growth rates of assets and cash flows, and find that our results are unaffected. Next, instead of firm fixed effects we use the first difference procedure (Wooldridge (2002)) for testing our second and third predictions. We re-estimate (5) using first differences and find that our results are unchanged. Finally, to alleviate concerns that our results may be affected by a particular time period in the sample, we re-estimate all regressions for the subperiods 1996-2000 and 2001-2005. The results are qualitatively similar in the two subperiods.

VII. Conclusion

We offer a theory of dividends for business groups in weak legal environments. We argue that business groups can be viewed as operating a form of internal capital market – with the dividends received by business group insiders channelled into equity investments in other firms of the group in a transparent manner. We formalize this intuition in a model and develop predictions for dividends and their relation to investments and insider holding in group firms.

We test our predictions using firm-level data from 23 countries in Asia and Europe. As predicted, we find that business group firms tend to pay more dividends than stand alone firms. We can explain these higher dividends using investments by the other firms in the group. The economic magnitude of our results is large and suggests that the aggregate dividends group firms pay in a year finance 10% of insider equity investment in the next year. In line with our predictions, we also find substantial cross-sectional differences in dividend payment across group firms. The relation between dividends and investments by the rest of the group is stronger when the investments are more profitable, when the investments are smaller, and when the legal environment is more supportive of the rights of outside equity investors. We also find that insider stake in group firms tends to be positively related to the dividend payout by the other firms in the group.

In our view, our results indicate a type of "second best" equilibrium. Weak legal rights and poor enforcement make it difficult for firms to raise outside financing. However, firms may be able to partially offset some of these limitations by developing suitable organizational structures and policies – including the use of dividends as a transparent way to finance equity investments and maintain insider stake. In the paper we have not discussed the insider's choice between the business group structure with independent firms and the stand alone firm structure. However, the expectation of more dividend payments from business group firms in comparison to stand alone firms, provides a possible rationale – in addition to other explanations such as group reputation – for the business group structure. Given their greater dividend payments, business groups will find it easier to raise external equity capital in environments with weak protection for investor rights.

Our paper generates some policy implications. It may be important, for example even without an improvement in investor rights, to make it difficult for insiders to consume or invest significant sums without disclosing the source of the funds. The rationale is that if insiders are unable to reinvest or consume the resources they divert, they may limit their diversion and employ more transparent means like dividends to transfer resources. In the end, the use of such dividend channel by firms makes it easier to raise outside capital.

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Appendix

A Proofs

AA Proof of Lemma 1

The amount of diversion in the two firms is obvious from the discussion preceding lemma 1. The insiders' payoff from the firms is

$$\begin{aligned} U_A &= \alpha[1-\mu]S + \mu S - \mu * S * \delta \\ &= \alpha[1-\mu]S + \mu S[1-\delta] \end{aligned}$$

Since the insider does not divert from firm B, the insiders' payoff is his effective holding times the total firm value V. Since the insider diverts a fraction μ of the marginal dollar in firm A, the insiders' effective holding in firm B is $\beta + \gamma\alpha'$. Thus the insiders' payoff from firm B is $[\beta + \gamma\alpha']V$. Q.E.D.

AB Proof of Lemma 2

The insider will divert from firm B if his effective shareholding is less than $1-\delta$. The insiders' effective shareholding in firm B if he invests W in the SEO is $[\beta + \gamma\alpha'][1 - \frac{I}{P_B}] + \frac{W}{P_B}$. Thus the insider will not divert from firm B iff

$$\begin{aligned} & [\beta + \gamma\alpha'][1 - \frac{I}{V+X}] + \frac{W}{V+X} \geq 1-\delta \\ \text{or if} \quad & W \geq [1-\delta][V+X] - [\beta + \gamma\alpha'][V+X-I] \qquad \text{Q.E.D.} \end{aligned}$$

AC Proof of Lemma 3

If the insider does not invest in the SEO, from Lemma 2 we know that he will divert at date 1. This implies that the SEO will be priced at $P_B = [1-\mu][V+X]$, and the insiders' effective holding in firm B will be $[\beta + \gamma\{1-\delta\}][1 - \frac{I}{[1-\mu][V+X]}]$. The insiders' total payoff from firm B will then be

$$[\beta + \gamma\alpha'][1 - \frac{I}{[1-\mu][V+X]}][V+X][1-\mu] + [1-\delta]\mu[V+X] \tag{A-8}$$

Alternatively, if the insider invests $W \geq W_{min}$ in the SEO then he will not divert at date 1. In this case the price of the shares in the SEO will be $P_B = V + X$. The insiders' total payoff can be given as:

$$\{[\beta + \gamma\alpha'][1 - \frac{I}{V+X}] + \frac{W}{V+X}\}[V+X] - W \tag{A-9}$$

The insider will invest in the SEO iff

$$\begin{aligned} & \{[\beta + \gamma\alpha'][1 - \frac{I}{V+X}] + \frac{W}{V+X}\}[V+X] - W \geq [\beta + \gamma\alpha'][1 - \frac{I}{[1-\mu][V+X]}][V+X][1-\mu] + [1-\delta]\mu[V+X] \\ \text{or if} \quad & \mu[\beta + \gamma\alpha'][V+X] \geq [1-\delta]\mu[V+X] \\ \text{Simplifying} \quad & \beta + \gamma\alpha' \geq 1-\delta \qquad \text{(A-10)} \end{aligned}$$

But we know that the last inequality is true from Assumption 1. Q.E.D.

AD Proof of Proposition 1

As discussed in the text, the insider will choose the direct investment route if

$$W_{min}[\frac{\alpha'}{\alpha} - 1] \leq M \tag{A-11}$$

Substituting for W_{min} and α' we have:

$$\{[1 - \delta - \beta - \gamma\alpha'][V + X] + [\beta + \gamma\alpha']I\}\mu[1 - \delta - \alpha] \leq M$$

To prove the proposition, it is sufficient to show that the left hand side (LHS) of the above inequality is decreasing in X, V, α, β, δ and increasing in I. From Assumption 1, we know that $\beta + \gamma\alpha' > 1 - \delta$. This proves that the LHS is decreasing in V and X. It is obvious the LHS is decreasing in α, β and δ and increasing in μ and I. Q.E.D.

Table I: Country Wise Sample Distribution

This table summarizes the country wise distribution of our sample. *Insider holding* is the percentage insider shareholding in the firms. *Dividend Payers* is a dummy variable that takes a value 1 for the firm years in which the firm pays equity dividend and 0 otherwise. $\frac{Dividend}{TA}$ is the ratio of the equity dividends to total assets. *Dividend/Sales* is the ratio of equity dividends to total sales. Both $\frac{Dividend}{TA}$ and *Dividend/Sales* are winsorized at 1% level. All information on Indian firms is from Prowess database; information on insider holding and group affiliation for firms from Hong Kong, Indonesia, Japan, Korea, Malaysia, Phillipines, Singapore, Thailand and Taiwan is from Classenius et al. (2000) which is available at the website of the *Journal of Financial Economics*; information on insider holding and group affiliation for firms from other countries was graciously provided by Mara Faccio. Financial data on firms from countries other than India is from Worldscope database. Data for all countries is for the period 1996 to 2005.

	All Firms[1]	Group Firms[1]	% Insider Holding	% Dividend Payers	% $\frac{Dividend}{TA}$	% $\frac{Dividend}{Sales}$
Hong Kong	1,867	1,377	27.6	58.1	1.30	3.37
Indonesia	681	528	27.6	32.5	.007	.06
Japan	8,395	1,080	6.9	57.9	.05	.06
Korea	1,431	1,098	17.2	44.3	.003	.002
Malaysia	1,498	1,178	27.6	53.0	3.59	8.16
Phillipines	842	447	24.6	29.3	.13	.49
Singapore	1,106	591	23.6	60.3	7.07	16.00
Thailand	652	393	34.3	33.1	.48	1.07
Taiwan	884	502	19.5	33.1	.12	.20
India	57,057	22,504	48.0	31.5	.76	1.49
Austria	309	88	46.8	53.3	12.21	19.29
Belgium	319	149	32.7	58.6	11.46	26.39
Check Republic	379	75	33.1	56.9	9.66	16.77
Germany	1,682	559	49.3	39.6	8.92	13.93
Spain	505	253	31.7	44.3	7.38	13.03
Finland	377	114	29.0	61.7	14.23	24.57
France	1,566	445	48.0	50.8	10.13	16.99
Ireland	188	98	20.4	59.5	6.91	11.93
Italy	370	138	44.2	52.4	10.26	17.76
Luxemburg	5	5	29.6	0.0	0.00	0.00
Norway	215	95	17.9	28.1	3.06	5.21
Portugal	185	55	37.3	45.2	7.99	17.83
Sweden	200	56	20.9	41.4	3.71	4.60
Total	80,713	31,828	39.2	41.57	1.42	2.70

[1] Number of Firm Years

Table II: Summary Statistics

This table reports the summary statistics of the key variables for firms in our sample. The first three Columns report the summary for all firms, the next three for group firms and the final three for stand alone firms. *Dividend* is the total equity dividend paid by a firm during the year, *EBIDTA* is the Earnings Before Interest, Depreciation, Taxes, and Amortization, *Size* is the logarithm of the book value of total assets of the firm, *Debt* is the book value of total short term and long term debt, *Investment* is the total investment in fixed assets during the year. *Insider holding* is the percentage insider shareholding in the firms. *Ownership/Control Rights* is the ratio of cash flow rights to control rights of insiders. This information is available only for non-Indian firms. *Group Investment* is a measure of the aggregate investment made by all the firms in the group. We measure investment by a firm during any year as the change in total assets during the year. To measure only positive investment, all negative values are replaced with 0. *Group Inc. Equity* is a measure of the aggregate investment by the group financed through new equity capital. It is calculated as the total investments during the year less the sum of the increase in total debt and retained earnings for the year. Here again, to measure only positive investments, all negative values are replaced with 0. All information on Indian firms is from Prowess database; information on insider holding and group affiliation for firms from Hong Kong, Indonesia, Japan, Korea, Malaysia, Phillipines, Singapore, Thailand and Taiwan is from Classenius et al. (2000) which is available at the website of the *Journal of Financial Economics*; information on insider holding and group affiliation for firms from other countries was graciously provided by Mara Faccio. Financial data on firms from countries other than India is from Worldscope database. Data for all countries is for the period 1996 to 2005.

	All Firms			Group Firms			Stand Alone Firms		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
Log(1+Dividend)	80713	0.852	0	31828	0.984***	0	48885	0.766	0
$\frac{Dividend}{TA}$	80651	0.014	0	31799	0.016***	0	48852	0.013	0
Size	80651	4.911	3.924	31799	5.464***	4.950	48852	4.551	3.264
$\frac{Debt}{TA}$	80648	0.328	0.270	31799	0.359***	0.309	48849	0.307	0.244
Sales Growth	68155	0.305	0.054	27455	0.269***	0.068	40700	0.328	0.046
$\frac{\text{Investment}}{\text{TA}}$	78820	0.089	0.018	31388	0.101***	0.024	47432	0.081	0.014
$\frac{\text{EBIDTA}}{\text{TA}}$	79261	0.069	0.065	31290	0.078***	0.079	47971	0.063	0.056
Insider Holding (%)	61002	37.528	36.420	22649	40.639***	39.140	38353	35.690	35.130
Ownership/Control Rights[1]	23656	0.774	1	9324	0.820***	1	14332	0.745	1
Group Investment[2]	77511	1.496	0	28626	4.052	1.246	48885	0	0
Group Inc. Equity[2]	77213	1.055	0	28328	2.877	0	48885	0	0

*** Indicates significant difference from the mean values for stand alone firms at less than 1% level.

[1] Only for Non-Indian Firms.

[2] Only for Family Owned Group Firms

Table III: Sample Correlations

This table reports the correlation coefficient between the key variables for the group firms in our sample. *Dividend* is the total equity dividend paid by a firm during the year, *Size* is the logarithm of the book value of total assets of the firm, *Debt* is the book value of total short term and long term debt, *Insider holding* is the percentage insider shareholding in the firms. In the case of Indian firms this variable refers to the shareholding of the Directors of the firm. *Group Investment* is a measure of the aggregate investment made by all the firms in the group. We measure investment by a firm during any year as the change in total assets during the year. To measure only positive investment, all negative values are replaced with 0. *Group Inc. Equity* is a measure of the aggregate investment by the group financed through new equity capital. It is calculated as the total investments during the year less the sum of the increase in total debt and retained earnings for the year. Here again, to measure only positive investments, all negative values are replaced with 0. *Investment* is the total investment in fixed assets during the year, *EBIDTA* is the Earnings Before Interest, Depreciation, Taxes, and Amortization. All information on Indian firms is from Prowess database; information on insider holding and group affiliation for firms from Hong Kong, Indonesia, Japan, Korea, Malaysia, Phillipines, Singapore, Thailand and Taiwan is from Classenius et al. (2000) which is available at the website of the *Journal of Financial Economics*; information on insider holding and group affiliation for firms from other countries was graciously provided by Mara Faccio. Financial data on firms from countries other than India is from Worldscope database. Data for all countries is for the period 1996 to 2005.

	Log(1+Dividend)	Group Investment	Group Inc. Equity	Insider Holding	Size	$\frac{Debt}{TA}$	Sales Growth	$\frac{Investment}{TA}$	$\frac{EBIDTA}{TA}$
Log(1+Dividend)	1.000								
Group Investment	0.345	1.000							
Group Inc. Equity	0.278	0.836	1.000						
Insider Holding	-0.213	-0.280	-0.243	1.000					
Size	0.358	0.445	0.361	-0.435	1.000				
Debt/TA	-0.310	-0.186	-0.164	0.042	-0.034	1.000			
Sales Growth	-0.018	0.028	0.032	0.050	-0.048	-0.013	1.000		
$\frac{\text{Investment}}{\text{TA}}$	0.007	-0.054	-0.054	0.159	-0.155	-0.189	0.014	1.000	
$\frac{\text{EBIDTA}}{\text{TA}}$	0.221	0.039	0.003	0.154	-0.086	-0.217	0.092	-0.001	1.000

Table IV: Dividends of Stand Alone and Group Firms

This table reports the results of the regression relating the dividend payments by group and non-group firms to firm characteristics. Specifically, we estimate: $y_{it} = \beta_0 + \beta_1 Group_{it} + \beta_2 \text{Insider Holding}_{it} + \gamma \text{Controls} + \mu_t + \mu_c \ X \ \mu_k$, where y is *Log(1+Dividend)* in Columns 1-2 , 5-6 and $\frac{Dividend}{TA}$ in Columns 3-4. In Columns 5-6 we estimate a Tobit model. The *Controls* include *Size* and its square and cubic terms, *Debt/TA*, *Sales Growth*, $\frac{Investment}{TA}$, $\frac{EBIDTA}{TA}$. *Group* is a dummy variable that takes a value 1 for firms belonging to family groups, *Insider holding* is the percentage insider shareholding in the firms. In the case of Indian firms this variable refers to the shareholding of the Directors of the firm. *Size* is the logarithm of the book value of total assets of the firm, *Debt* is the book value of total short term and long term debt, *Investment* is the total investment in fixed assets during the year, *EBIDTA* is the Earnings Before Interest, Depreciation, Taxes, and Amortization. Data comes from sources described in Tables I to III. Data is for the period 1996 to 2005. The standard errors are robust and clustered at individual firm level.

	OLS				Tobit	
	Log(1+Dividend)		$\frac{\text{Dividend}}{\text{TA}}$		Log(1+Dividend)	
	(1)	(2)	(3)	(4)	(5)	(6)
Group	.054	.054	.004	.004	.058	.047
	(.022)**	(.022)**	(.001)***	(.001)***	(.020)***	(.020)**
Insider Holding		.00003		.00006		.005
		(.0004)		(.00002)***		(.0005)***
Size	1.218	1.218	-.013	-.012	2.113	2.133
	(.040)***	(.040)***	(.001)***	(.001)***	(.020)***	(.020)***
Size^2	.206	.206	-.002	-.002	-.359	-.350
	(.019)***	(.019)***	(.0003)***	(.0003)***	(.017)***	(.017)***
Size^3	-.301	-.301	.006	.005	-.123	-.132
	(.018)***	(.017)***	(.0006)***	(.0006)***	(.014)***	(.014)***
Debt/TA	-.589	-.589	-.009	-.009	-2.690	-2.694
	(.031)***	(.031)***	(.001)***	(.001)***	(.045)***	(.045)***
Sales Growth	-.010	-.010	-.0004	-.0004	-.076	-.073
	(.002)***	(.002)***	(.0001)***	(.0001)***	(.009)***	(.009)***
$\frac{\text{Investment}}{\text{TA}}$	.211	.211	.010	.009	.592	.558
	(.040)***	(.040)***	(.002)***	(.002)***	(.071)***	(.071)***
$\frac{\text{EBIDTA}}{\text{TA}}$	1.437	1.436	.057	.056	8.773	8.682
	(.054)***	(.054)***	(.003)***	(.003)***	(.115)***	(.115)***
Observations	50870	50870	50871	50871	50870	50870
Time Fixed Effects (FE)	Yes	Yes	Yes	Yes	Yes	Yes
Country X Industry FE	Yes	Yes	Yes	Yes	No	No
Country FE					Yes	Yes
R^2	.641	.641	.601	.601		

Table V: Dividends of Stand Alone and Group Firms: Investments and Equity Financed Investments of Other Firms in the Group

This table reports the results of the regression relating the dividend payments by group and non-group firms to firm characteristics. Specifically, we estimate: $y_{it} = \beta_0 + \beta_1 Group_i + \beta_3 \text{Insider Holding}_{it} + \beta_5 \text{Group Investment}_{-it} + \beta_6 \text{Group Inc. Equity}_{-it} + \gamma \text{Controls} + \mu_t + \mu_c \ X \ \mu_k$, where y is *Log(1+Dividend)*. The *Controls* include *Size* and its square and cubic terms, *Debt/TA*, *Sales Growth*, $\frac{Investment}{TA}$, $\frac{EBIDTA}{TA}$. *Group* is a dummy variable that takes a value 1 for firms belonging to family groups. *Group Investment* is a measure of the aggregate investment made by all the other firms in the group. We measure investment by a firm during any year as the change in total assets during the year. To measure only positive investment, all negative values are replaced with 0. *Group Inc. Equity* is a measure of the aggregate investment by the group financed through new equity capital. It is calculated as the total investments during the year less the sum of the increase in total debt and retained earnings for the year. Here again, to measure only positive investments, all negative values are replaced with 0. *Insider holding* is the percentage insider shareholding in the firms. In the case of Indian firms this variable refers to the shareholding of the Directors of the firm. *Size* is the logarithm of the book value of total assets of the firm, *Debt* is the book value of total short term and long term debt, *Investment* is the total investment in fixed assets during the year, *EBIDTA* is the Earnings Before Interest, Depreciation, Taxes, and Amortization. In Column 3 & 5 the sample is limited to non-Indian firms. Data comes from sources described in Tables I to III. Data is for the period 1996 to 2005. The standard errors are clustered at individual firm level.

	Log(1+Dividend)				
	All Firms	All Firms	Non-Indian Firms	All Firms	Non-Indian Firms
	(1)	(2)	(3)	(4)	(5)
Group	.054	-.097	-.283	-.045	-.215
	(.022)**	(.022)***	(.071)***	(.022)**	(.071)***
Group Investment$_{-it}$		.022	.015		
		(.002)***	(.003)***		
Group Investment$_{-it+1}$		.020	.010		
		(.002)***	(.002)***		
Group Inc. Equity$_{-it}$				.015	.004
				(.002)***	(.003)
Group Inc. Equity$_{-it+1}$				.021	.013
				(.002)***	(.003)***
Insider Holding	.00003	.00007	-.001	-.00005	-.002
	(.0004)	(.0004)	(.002)	(.0004)	(.002)
Size	1.218	1.220	1.075	1.247	1.114
	(.040)***	(.041)***	(.109)***	(.041)***	(.110)***
Size^2	.206	.189	-.072	.203	-.069
	(.019)***	(.020)***	(.092)	(.020)***	(.092)
Size^3	-.301	-.305	-.040	-.313	-.045
	(.017)***	(.018)***	(.050)	(.019)***	(.050)
Debt/TA	-.589	-.630	-2.424	-.627	-2.457
	(.031)***	(.036)***	(.117)***	(.036)***	(.119)***
Sales Growth	-.010	-.010	-.058	-.009	-.064
	(.002)***	(.002)***	(.034)*	(.002)***	(.036)*
$\frac{\text{Investment}}{\text{TA}}$	.211	.246	3.204	.239	3.167
	(.040)***	(.044)***	(.375)***	(.044)***	(.386)***
$\frac{\text{EBIDTA}}{\text{TA}}$	1.436	1.412	1.959	1.440	2.021
	(.054)***	(.058)***	(.216)***	(.058)***	(.227)***
Observations	50870	42602	15247	41676	14321
Time FE	Yes	Yes	Yes	Yes	Yes
Country X Industry FE	Yes	Yes	Yes	Yes	Yes
R^2	.641	.648	.469	.655	.484

Table VI: Dividends by a Group Firm and Investments and Equity Financed Investments of Member Firms

This table reports the results of the regression relating the dividend payments by group firms to investments and equity infusions by other firms in the group. Specifically, we estimate: $y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 X_{it+1} + \gamma \text{Controls} + \mu_t + \mu_i$, where y is *Log(1+Dividend)* and X is *Group Investment* in Panel A and *Group Inc. Equity* in Panel B. The *Controls* include *Size* and its square and cubic terms, *Debt/TA*, *Sales Growth*, $\frac{Investment}{TA}$ and $\frac{EBIDTA}{TA}$. *Group Investment* is a measure of the aggregate investment made by all the other firms in the group. We measure investment by a firm during any year as the change in total assets during the year. To measure only positive investment, all negative values are replaced with 0. *Group Inc. Equity* is a measure of the aggregate investment by the group financed through new equity capital. It is calculated as the total investments during the year less the sum of the increase in total debt and retained earnings for the year. Here again, to measure only positive investments, all negative values are replaced with 0. Data comes from sources described in Tables I to III. Data is for the period 1996 to 2005. The standard errors are clustered at individual firm level.

Panel A: Dividends and Investments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All Group Firms	Non-Indian Firms	All Group Firms	All Group Firms Size Quintiles				
				Q_1	Q_2	Q_3	Q_4	Q_5
Group Investment$_{-it}$	.007 (.002)***	.0001 (.002)		.011 (.006)**	.012 (.005)**	.002 (.003)	.020 (.005)***	.019 (.005)***
Group Investment$_{-it+1}$	.011 (.002)***	.006 (.002)***		.013 (.005)***	.017 (.004)***	.006 (.002)**	.023 (.005)***	.024 (.005)***
Group Investment$^{Indadj}_{-it}$			.006 (.002)***					
Group Investment$^{Indadj}_{-it+1}$			.012 (.002)***					
Observations	19683	5625	19683	4291	4564	5387	2642	2799
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	.823	.739	.835	.787	.825	.799	.893	.859

Panel B: Dividends and Equity Financed Investments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All Group Firms	Non-Indian Firms	All Group Firms	All Group Firms Size Quintiles				
				Q_1	Q_2	Q_3	Q_4	Q_5
Group Inc. Equity$_{-it}$	.003 (.002)	-.003 (.002)		.004 (.005)	.007 (.006)	-.003 (.003)	.017 (.006)***	.020 (.005)***
Group Inc. Equity$_{-it+1}$	.010 (.002)***	.005 (.002)**		.011 (.005)**	.014 (.005)***	.005 (.003)**	.023 (.005)***	.017 (.005)***
Group Inc. Equity$^{Indadj}_{-it}$			.003 (.002)*					
Group Inc. Equity$^{Indadj}_{-it+1}$			.009 (.002)***					
Observations	18944	4886	18944	4129	4404	5005	2624	2782
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	.841	.787	.769	.816	.831	.829	.891	.86

Table VII: Variation of Dividends by a Group Firm with Investment Characteristics and Legal Environment

This table reports the results of the regression investigating how the relationship between dividends and investments and equity-financed investments by other firms in the group varies across the group. Specifically, we estimate: $y_{it} = \beta_0 + \beta_1 X^1_{it} + \beta_2 X^2_{it} + +\beta_3 X^1_{it+1} + \beta_4 X^2_{it+1} + \gamma\text{Controls}+\mu_t + \mu_i$, where y is *Log(1+Dividend)*. The *Controls* include *Size* and its square and cubic terms, *Debt/TA*, *Sales Growth*, $\frac{Investment}{TA}$ and $\frac{EBIDTA}{TA}$. In Row 1, X^1 (X^2) is the aggregate investments made by all the group firms which are in industries with above (below) median profitability. We measure investment by a firm during any year as the change in total assets during the year. To measure only positive investment, all negative values are replaced with 0. In Row 2, X^1 (X^2) is the aggregate investments financed through equity by all the group firms which are in industries with above (below) median profitability. It is calculated as the total investments during the year less the sum of the increase in total debt and retained earnings for the year. Here again, to measure only positive investments, all negative values are replaced with 0. In Row 3, X^1 (X^2) is the aggregate investments of all the other group firms which are above (below) median *Group Investment* values for the group for that year. In Row 4, X^1 (X^2) is the aggregate investments financed through equity by all the group firms which are above (below) median *Group Inc. Equity* values for the group for that year. In Row 5, X^1 (X^2) is an interaction term between *Group Investment* and *Strong Governance* (1-*Strong Governance*), where *Strong Governance* is a dummy variable that takes a value 1 for the group firms in countries where the Anti Director Index of Pagano and Volpin (2005) is equal to 5. In Row 6, X^1 (X^2) is an interaction term between *Group Inc Equity* and *Strong Governance* (1-*Strong Governance*). Data comes from sources described in Tables I to III. Data is for the period 1996 to 2005. The standard errors are clustered at individual firm level.

		Year t	Year $t+1$	Year t	Year $t+1$	(1)+(2)-(3)-(4)	Firm FE	Time FE	R^2	Obs
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Panel A: Variation with Profits								
		High Profits		Low Profits						
		β_{1h}	β_{2h}	β_{1l}	β_{2l}					
Investment	(1)	.01 (.003)***	.012 (.003)***	.002 (.002)	.009 (.002)***	.011 (.005)***	Yes	Yes	.815	13685
Inc. Equity	(2)	.002 (.003)	.01 (.003)***	-.0007 (.003)	.008 (.002)***	.004 (.006)***	Yes	Yes	.838	12946
		Panel B: Variation with Investment Size								
		Large		Small						
		β_{1L}	β_{2L}	β_{1S}	β_{2S}					
Investment	(3)	.003 (.002)	.008 (.002)***	.026 (.004)***	.029 (.004)***	-.044 (.006)***	Yes	Yes	.812	14688
Inc. Equity	(4)	-.0008 (.002)	.008 (.002)***	.032 (.007)***	.032 (.007)***	-.056 (.011)***	Yes	Yes	.833	13949
		Panel C: Variation with Legal Regime								
		X Strong Governance		X [1-Strong Governance]						
		β_{1St}	β_{2St}	β_{1We}	β_{2We}					
Group Investment	(5)	.022 (.004)***	.019 (.003)***	-.0003 (.003)	.006 (.003)**	.035 (.007)***	Yes	Yes	.824	13865
Group Inc. Equity	(6)	.017 (.004)***	.019 (.003)***	-.004 (.003)	.006 (.003)**	.034 (.007)***	Yes	Yes	.844	13219

Table VIII: Variation of Dividends by a Group Firm and Insider Equity Stake

This table reports the results of the regression relating the insider holding of firms to other characterestics. Specifically, we estimate: $y_i = \beta_0 + \beta_1 X_i + \gamma$Controls $+\mu_c$, where y is *Insider Holding*. The *Controls* include *Size* and its square and cubic terms, *Debt/TA* and $\frac{EBIDTA}{TA}$. Firms are included only for the first year they enter the sample. *Group* is a dummy variable that takes a value 1 for the firms that belong to family groups and 0 otherwise. *Strong Governance* is a dummy variable that takes a value 1 for those countries for which the country level anti-director index of Pagano and Volpin (2005) is equal to 5. *Group Dividend$_{t-1}$* is the aggregate dividend paid in the previous year by all the other firms in the group. Data comes from sources described in Tables I to III. Data is for the period 1996 to 2005. The standard errors are robust and clustered at individual firm level.

	Insider Holding		
	All Firms	All Firms	Group Firms
	(1)	(2)	(3)
Group	2.704	2.304	
	(.642)***	(.653)***	
Strong Governance	3.285	3.299	19.030
	(3.640)	(3.636)	(16.382)
Group Dividend$_{t-1}$		.143	.083
		(.049)***	(.048)*
Observations	7403	7403	2568
Country Fixed Effects	Yes	Yes	Yes
R^2	.274	.275	.284