Does Group Affiliation Facilitate Access to External Financing? Evidence from IPOs by Family Business Groups*

Ronald W. Masulis
Australian School of Business
University of New South Wales,
Sydney, NSW 2052, Australia
Phone: +61-2- 9385-5860,
ron.masulis@unsw.edu.au

Peter Kien Pham
Australian School of Business
University of New South Wales,
Sydney, NSW 2052, Australia
Phone: +61 2-9385-5889
peter.pham@sydney.edu.au

Jason Zein
Australian School of Business
University of New South Wales,
Sydney, NSW 2052, Australia
Phone: +61 2-9385-5875
j.zein@unsw.edu.au

Stephanie Dash
Deutsche Bank AG Australia & New Zealand
Phone: +61-2-8258-2739
stephanie.dash@db.com

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Abstract

Although the literature has identified important benefits associated with group affiliation, the channels through which business groups provide support to members remain relatively unexplored. Using IPO data from 44 countries, we investigate how family groups create financing advantages for young member firms by facilitating their entry into the equity capital market. Our evidence suggests that internal capital accumulated by a group in the form of retained earnings can enable new members to go public by bridging significant funding gaps associated with costly external financing. Consistent with this channel of group support, we also find that group-affiliated IPOs tend to possess firm characteristics generally associated with serious external financing constraints and that they are better able to go public under weak IPO market conditions and incur lower flotation costs compared to independent firms. After listing, group affiliation continues to benefit IPO firms by enabling them to overcome adverse external capital market conditions. Our results are most pronounced for affiliated firms controlled through pyramids, consistent with the theory that this organizational structure provides a mechanism for controlling families to leverage their internal capital and alleviate external financing constraints of affiliated new ventures.

Across the world, the growth of new ventures is often severely constrained by their inability to raise external equity capital. In developed economies, this funding gap can be bridged by angel investors and venture capitalists. In most emerging economies, however, contracting mechanisms and property right protections are often insufficiently developed to support sizable venture capital activity. One alternative source of financing for young firms facing external capital constraints is equity capital investments by other corporations (Bena and Ortiz-Molina (2013)), in many cases structured as business groups, which are dominant in many countries, especially those with underdeveloped equity markets. While the extant literature has extensively analyzed the roles of venture capitalists in developed economies, much less is known about such group support for new firms and how their control structures can facilitate access to external capital markets.

Prior studies on business groups suggest that they can have both a dark side, arising from ownership structures that facilitate the extraction of private benefits through generating voting rights in excess of cash flow rights (see La Porta, Lopez-de-Silanes, Shleifer and Vishny (2002) and Morck, Wolfenzon and Yeung (2005) for a review), and a bright side, stemming from groups having financing advantages associated with their reputation and internal capital (see Khanna and Palepu (2000), Gomes (2000), Almeida and Wolfenzon (2006) among others). For young, high growth firms, recent evidence indicates that the aggregate effect of group affiliation can be positive (Almeida, Wolfenzon, Park and Subrahmanyam (2011), Masulis, Pham and Zein (2011), and Bena and Ortiz-Molina (2013)). However, the specific channels through which groups provide financing advantages to these types of firms remain largely unexplored. One exception is Gopalan, Nanda and Seru (2007, 2013), who show that intra-group loans and dividends can be used to transfer internal capital

within groups. Yet, to date there is no evidence on how group financing advantages directly assist member firms in the process of raising external funding.

Our study focuses on initial public offerings (IPOs) of group-affiliated firms. These events offer us a window on how business groups expand over time, and more importantly provide insights into how groups help alleviate external funding constraints for their younger, high growth members. IPOs provide a highly informative empirical setting because in the pre-listing stage, barriers to accessing equity markets are severe due to the high level of information asymmetry inherent in young private firms and the high moral hazard risk associated with how the new equity capital raised by an IPO firm is employed. As a result, a young firm's access to new equity can be constrained by the size of the equity price discount required to compensate investors for these inherent risks. Such price discounts can excessively dilute the entrepreneur's shareholdings or else prevent the firm from raising sufficient capital to fund its investment plans.

Existing theories posit that wealthy families and individuals who control groups possess certain financing advantages over independent entrepreneurs in bringing firms public. Almeida and Wolfenzon (2006), for example, argue that in the presence of external financing needs, independent firms with low pledgeable cash flows and high capital requirements may be unable to obtain the necessary funding from outside investors. As part of a business group, such a financially constrained firm can be placed within a pyramidal structure where the controlling shareholder can deploy some of the group's internal capital from existing affiliated firms to help meet the external capital needs of its new member firm. Gomes (2000) develops a theoretical model which predicts that in a weak governance environment, a controlling family's retained ownership percentage in an IPO firm serves as a positive signal and an

effective bonding mechanism to commit the family not to expropriate minority shareholders. Without large share holdings by IPO insiders, it will be difficult for such firms to go public, which further highlights a pyramidal structure's financing advantages, as the ability to raise external capital through successively creating new firms, rather than selling stakes in existing firms, allows the group to maintain highly concentrated ownership positions in its members.

Several recent studies (Almeida et al. (2011), Masulis, Pham, and Zein (2011), Bena and Ortiz-Molina (2013)) uncover evidence consistent with these theories by comparing the characteristics and activities of firms at different layers in a business group and under alternative ownership structures. Importantly, our analysis of the IPO process provides a more direct, transaction-based examination of one major benefit of groups, namely their ability to facilitate a member firm's direct access to the external equity market. In this IPO setting, we can examine several important, but as yet untested predictions of these theories in relation to how groups utilize their internal capital to bridge the funding gap of an IPO firm before and after it goes public. We hypothesize that retained earnings by family groups are important resources that support their young difficult-to-finance affiliate firms and bring them public and that the dominant approach that controlling families use to raise external equity capital for these firms is a pyramidal structure. Further, if group support enables young member firms to rely less on costly external equity capital, then they should be able to go public under a wider range of capital market conditions and to do so at lower flotation costs than other non-group firms. Finally, since newly listed firms typically face serious financing constraints in their early post-listing years, the benefits of group financial support for younger members should extend well beyond when they go public, both in terms of continued solvency and longer term access to external capital markets.

To test the predictions of these theories, our empirical analysis focuses on IPOs by *family* business groups. For comparison purposes, non-family business groups are also examined. However, we expect that the extent of financing advantages associated with group affiliation, such as those discussed in Almeida and Wolfenzon (2006), are less obvious for non-family groups because they are not as tightly controlled as are family groups. Using a sample of 13,542 IPOs from 44 countries over the 1997-2007 period, we identify 540 IPO firms affiliated with family-controlled business groups and 322 IPO firms affiliated with non-family groups (controlled by widely held firms, financial institutions or governments). For IPOs not affiliated with any groups, we also identify the types of their pre-IPO controlling owners to determine the extent to which they facilitate access to capital markets. All in all, these sample firms are analyzed across an array of important dimensions of the IPO process.

First, we explore whether differences in country-level environments can explain the proportion of group versus non-group firms going public and find the relative frequency of family group IPOs is greater in countries with greater external financing contraints. Within a country, we find the proportion of group firms going public peaks in weak IPO markets and declines in hot markets. This indicates that group firms are able to exploit their financing advantages to facilitate external capital raising by young affiliates under less robust capital market conditions than independent firms require.

Second, we examine the characteristics of family business groups that enable them to conduct IPOs to provide new insights into the sources of their competitive advantage when raising external capital. We find groups sponsoring new member IPOs are distinguishable from groups without IPOs by their higher average member growth opportunities, and more importantly by their greater retention rate on profits generated inside the group. Across time, an IPO event is more likely to occur in periods when a group experiences large additions to its

members' aggregate retained earnings. Looking within sponsoring groups, we find that the specific group member selected to parent an IPO also tends to have larger additions to retained earnings than do other group members. These additions to retain earnings arise from both improvements in operating performance and decisions to limit cash dividends, indicating that the decision of where within a group the IPO event should take place and when is strongly influenced by level of available internal capital and where it exists within the group, rather than simply to take advantage of a period of strong operating performance by the entire group or a specific IPO parent candidate. We also find that such internal capital accumulation plays a significant role in facilitating the going public process of member firms by reducing the external equity funding requirements of these firms. In particular, family group firms on average raise fewer new (primary) shares as a percentage of outstanding shares than do non-group firms. Among family group firms, IPO firms that raise proportionally fewer primary shares are those whose parents have experienced greater additions to retained earnings.

Third, we document several important facts with regards to the types of firms family groups take public and where these firms are placed within a group's organizational structure. Relative to independent IPO firms, group affiliates going public tend to be younger and riskier firms with fewer tangible assets and lower pledgeable cash flows, and higher capital expenditure needs. In other words, these firms have high information asymmetry and large funding needs, which are the types of firms that face great difficulties in going public. Examining the placement of these IPOs within the group structure, we find these IPO firms are twice as likely to be placed at the bottom of a pyramid as they are to be directly owned by a controlling family. IPOs with these firm and ownership characteristics stand to realize greater benefits from a group's internal capital support than would the typical unaffiliated IPO firm.

Fourth, we examine differences in underpricing and underwriter fees across IPO firms to test whether group support translates into an ability of affiliates to go public at lower cost. Compared to independent IPO firms, we find group-affiliated issuers have significantly lower underpricing and lower underwriting fees. These findings do not arise simply because group affiliated IPO firms are essentially "carve-outs", which could have lower flotation costs because as divisions of listed firms, they are relatively more established than independent IPO firms. This conclusion is based on the fact that we do not find that other IPO firms carved out of widely held corporations or even privatizations of government-owned firms have lower flotation costs than independent IPO firms. More interestingly, among family group IPOs, those controlled through a pyramid realize lower underpricing than IPOs controlled through a holding company. Further, IPOs controlled with dual-class shares experience higher underpricing than other types of IPOs. This is consistent with Almeida and Wolfenzon's (2006) argument that pyramidal groups provide a unique financing advantage, not offered by other control enhancing mechanisms such as dual-class shares.

Finally, we analyze group support of affiliated IPO firms in the post-listing period, where we document evidence that in the five years after listing, group firms are less likely to fail than independent firms and their failure rates are less sensitive to external market capital conditions. In the post-listing period, we find on average that family group IPO firms are less capital constrained, as indicated by more frequent seasoned equity offers and larger capital investment expenditures, which are less sensitive to external capital market conditions than are either non-group IPO firms generally or IPO firms employing dual-class shares as a control enhancing device. Thus, financing advantages of groups appear to alleviate significant frictions faced by young firms in the external capital market, which pure control enhancing mechanisms such as dual-class shares fail to provide.

We also examine whether in the long run, group support enhances the market values of member firms going public. This exercise requires some adjustment for potential endogeneity associated with the choice of group affiliation. An endogeneity problem can arise because the observed listed non-group firms are likely to be the most promising firms that can raise external capital by themselves, whereas group firms could be unable to raise funds independently. As such, group firms may exhibit lower valuation by virtue of this self-selection effect, and not because of their affiliation. Using instruments that capture IPO market conditions around a firm's listing date to adjust for endogeneity, we estimate a treatment effects model on the Tobin's Qs of IPO firms, measured five years after listing. The results of this estimation indicate that group affiliation enhances an IPO firm's valuation relative to the counter-factual situation in which the same firm raises funds as an independent firm.

Our study is the first to utilize a multi-country IPO dataset to investigate the financing advantages associated with business group affiliation. There are few prior studies analyzing IPOs in business groups such as Dewenter, Novaes and Pettway (2001) and Marisetty and Subrahmanyam (2010) who both study IPO underpricing within single countries. In contrast, our analysis covers a much broader set of market environments across 44 countries, examines multiple issues in the going public process for different types of group structures, and investigates important subsequent outcomes and actions of IPO firms, such as exchange delistings, capital expenditures and subsequent SEOs.

Our evidence has an important implication for the ongoing debate on the raison d'être for family business groups. Various studies pointed out that a deviation of cash flow rights and control rights, which is an inherent characteristic of business groups, can increase the risk of minority shareholder expropriation (Bae, Kang, and Kim (2002), Claessens, Djankov, Fan and Lang (2002), La Porta et al. (2002), Lemmon and Lins (2003)). Thus, it is quite puzzling why

minority investors continue to co-invest alongside controlling shareholders. Our study adds to the body of research addressing this issue by documenting an important external financing channel through which group structures benefit both existing members and capital market participants: namely, by helping young firms raise needed capital by going public.

Our findings, which are based on a large international sample of IPOs, complement recent studies documenting the positive roles of pyramids in alleviating financing constraints of high growth affiliated firms (Masulis et al. (2011), Bena and Ortiz-Molina (2013)). In contrast to Bena and Ortiz-Molina, who examine privately held firms across Europe, our focus on new public firms allows the financing advantages of pyramids to be magnified because of the ability of a group to leverage its internal capital to control a significantly larger pool of external capital contributed by dispersed public investors. This means that pyramidal groups are able to support much larger firms and can be very significant players in an economy. Further, from the vantage point of an IPO setting, the weight of evidence we uncover fails to support expropriation motives as being the primary reason for incorporating new firms into family controlled pyramidal groups. Such results suggest that on average the private benefits of control in young, high growth firms are small and that more efficient structures exist for maintaining corporate control, such as dual-class shares.

Finally, our paper is related to the literature on the financing of innovation. Belenzon and Berkovitz (2010) find that business groups can spur innovation in industries where access to external capital is typically poor. Our IPO findings provide a clearer picture of the particular channel through which this can be achieved. To the extent that projects carried out by IPO firms are innovation-intensive, family groups can play an important role in supporting the growth of these ventures by facilitating their access to external capital markets, particularly in emerging markets where financing innovation is particularly challenging.

This paper proceeds as follows. Section I describes the IPO sample and identification procedures. Section II examines the prevalence of group relative to non-group IPOs at the country level. Section III focuses on group characteristics that facilitate an IPO event. Section IV investigates differences between group and non-group IPOs. Section V presents evidence on the long-term post-listing impact of group affiliation. Section VI concludes.

I. Data and Sample Selection

Our initial sample consists of international initial public offerings obtained from Thomson Reuter's *SDC Platinum New Issues* database during the period of January 1997 to December 2007. IPOs by closed-end funds, unit trusts, investment companies and real estate investment trusts are excluded from the sample, as the structure and investment objectives of these entities and their regulatory constraints are very different to those of industrial firms. Firms that raise less than US$500,000, which are termed back-door listings, are also excluded. For each IPO, we extract from *SDC Platinum* the IPO's key filing information, including parent firm identity (if available), issue amount, offer price, underwriter identity, fee information, number of shares offered, and an indicator for venture capital backing. Post-listing market performance and firm operating characteristics are primarily obtained from Thomson Reuter's *Datastream* and *Worldscope* databases.

In order to identify group-affiliated IPOs, the new issues data are matched to the business group database constructed by Masulis et al. (2011), containing a snapshot of ownership information for 27,987 international firms from 45 countries as of 2002. Masulis et al. (2011) define a group as two or more listed firms in the same market, linked together by one common controlling shareholder, where control is defined as having a minimum of 20

percent of a firm's voting rights, or 10 percent if the shareholder also holds other forms of control such as holding the position of founder, CEO or chairman of the board.

Based on this data, IPOs occurring during and prior to 2002 are matched to member firms of known business groups in 2002. This allows us to identify whether an IPO is group-affiliated. Group firms are further classified according to their ultimate owner into two broad categories, family groups (those controlled by an individual entrepreneur or a family) and non-family groups (those controlled by a widely-held company, financial institution or government). This distinction is made because the incentives and degree of centralized control can differ across these ultimate owner types.

Firm delisted before 2002 and those listed after 2002 do not appear in the Masulis et al. (2011) business group database, and therefore to assess whether they are group-affiliated, we examine the parent companies of these IPOs. For those IPOs where a parent company is listed in *SDC Platinum*, we match the parent company to known group firms in the Masulis et al. (2011) business group database. If the parent company is not listed in *SDC Platinum*, we examine the ownership structure of the IPO firm in the year immediately after its listing date using the 2003-2006 ownership files from *Worldscope* and *Osiris*, and from their annual reports (obtained from the *Mergent Online* database) if available, assuming that the post-listing controlling shareholder (if one exists) is also the firm's parent at the IPO date. If the parent company is not part of a known group based on the 2002 group data, we employ the same group identification procedures used in Masulis et al. (2011) to determine whether it is listed and if so, who is its ultimate owner. This allows us to connect a number of post-2002 IPOs to new groups that emerge after the Masulis et al. (2011) sample period.

To investigate the characteristics of each business group immediately before a member

firm undertakes an IPO, we trace the evolution of each family (and non-family) business group in terms of their affiliated firms from 1997 up to 2007 in order to obtain an annual snapshot of each group over our sample period. This task is aided by using information from our IPO data, which identify additions to each group as well as information on other transactions that connects a new firm or disassociates an existing member from a group. Specifically, we download mergers and acquisitions data from *SDC Platinum* to identify group firms that are either acquired or divested from a group, and delistings data from *Datastream* to identify firms no longer in a group for other reasons (e.g. bankruptcy, re-acquisition by the group). This procedure allows us to assemble a yearly snapshot of all business groups in our dataset, even those that do not conduct IPOs during the sample period.[2]

Using the data described above, we identify the organizational structure which directly facilitates the going public of a family group firm. There are two possible ways a family group can form or expand by listing a new firm. The first is where a public firm controlled by a family lists a subsidiary, in a 'carve-out' or 'partial spin-off', creating or expanding a pyramid. The second method by which a group's organizational structure can evolve is horizontally, where a family takes public a privately held firm currently under its control, and retains a substantial direct ownership position. Since the Masulis et al. (2011) database provides the position of each member firm in the business group organization, we can identify which of the two structural choices are made for taking public a new firm, captured by an indicator variable for IPO firms controlled through a pyramid (as opposed to being part of a holding company).[3] Our final sample consists of 13,542 IPOs, of which 903 are group-affiliated and they come from 44 countries. Table I provides details on the sample by country and highlights the cross-

[2] This is further discussed in section III.
[3] We also use an alternative variable to capture the extent of pyramiding base on the number of layers that exist between a group firm and the controlling family. This variable provides similar results to the pyramid indicator.

country differences in the number of IPOs and total gross proceeds of family group IPOs, non-family group IPOs and those going public without group backing.

[INSERT TABLE I HERE]

II. Analysis of IPO Market Conditions

In this section we examine the factors that can explain variations in the relative prevalence business group IPOs across countries and time. We hypothesize that the ability of groups to supply internal capital to support external capital raising efforts becomes more important in markets with high external financing constraints. Further, time-varying market conditions within a country can also explain when group firms realize the greatest advantages. In cold markets however, the ownership dilution required to raise the necessary amount of capital may become prohibitively high, forcing non-affiliated firms to delay their IPOs. However, the internal capital available to group-supported IPOs and the implicit group guarantees of future financial support to these firms minimizes such capital raising costs and therefore, we expect to observe a higher proportion of group IPOs in cold markets.

A. Country-level independent variables

We construct several measures of country-level financing constraints as of 2002 to examine the role they play in providing a competitive advantage to group affiliated firms seeking initial access to external capital markets. Our first measure represents an index of corporate governance regulations (*GOVERNINDEX*), which captures the possibility that better investor protection can discourage the consumption of private benefits of control and therefore increase the willingness of outside investors to supply equity capital to young going public

firms. This index is calculated by aggregating three dimensions of a country's governance environment using principal component analysis. These three dimensions are: (i) the extent of shareholder rights (based on the anti-director index from La Porta (1997) and updated by Pagano and Volpin (2005)),[4] (ii) the effectiveness of the legal enforcement of these rights (based on the average of the strength of rule of law, regulatory quality and control of corruption taken from Kaufmann, Kraay and Mastruzzi (2003)), and (iii) the quality of corporate disclosure (based on a survey variable measuring disclosure standards from the World Economic Forum's *Global Competitiveness Report* 2003).

In addition to strong investor protection, access to external capital can also be affected by the pool of investment capital in the economy. Thus, a number of other variables are used to measure the strength of the external capital market in a country.[5] Our first measure (*INSTOFUNDS*), taken from Li, Moshirian, Pham and Zein (2006), measures the portion of domestic institutional investor investment available to the local equity market, measured by the total equity invested locally and internationally by domestic banks, insurance companies, pension funds and mutual funds, scaled by domestic stock market capitalization. Our next set of measures account for the possibility that there are complementary sources of pre-IPO capital from the venture capital industry and foreign investment. To measure the strength of a country's venture capital industry, we use *VENTURE,* a survey variable from the World Economic Forum's *Global Competitiveness Report* 2003, which ranks the availability of venture capital funding in a country from 1 = "unavailable" to 7 = "widely available" (*VENTURE*). To capture the potential roles of foreign investor support, we use *FOREIGNLIB*,

[4] Using the Djankov, LaPorta, Lopez-de-Silanes and Shleifer (2006) anti-self dealing index yields qualitatively similar results.

[5] It is important to note that because access to capital can partly depend on macro-level corporate governance characteristics, we avoid using measures that have been shown in prior studies to be related to investor protection (e.g. the relative size of the stock market) and thus overlap with our earlier measure.

which measures the extent to which foreign ownership of domestic listed firms is restricted or legally sanctioned and is obtained from the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). This variable is based on the average of two elements: (i) the extent of restrictions on foreign investor purchases of domestic equity and (ii) the extent of restrictions on the ability of foreign companies to issue shares to domestic investors.[6] A lower *FOREIGNLIB* value indicates that there are fewer restrictions on foreign ownership of domestic listed equity in a particular country.

Our regression models also control for a number of other factors that can partially explain variations in the cross-country prevalence of family business groups. Johnson et al. (2000) suggest controlling shareholders have incentives to extract private benefits of control through favorable transfer pricing and the movement of profits, assets and liabilities between group firms to minimize tax liabilities. Dyck and Zingales (2004) propose that strong taxation regimes can limit such consumption of private benefits of control through government monitoring. Thus, if groups exist primarily to extract private benefits, then a rise in the severity of inter-corporate tax rules and the extent to which they are enforced should reduce the incentives for groups to expand through IPOs. To test this proposition, we employ two variables capturing tax incentives following Masulis et al (2011). First, *TAXAVOIDANCE* which is a tax transparency measure from the *Deloitte International Taxation Guide*, calculated as a sum of four indicators of whether regulations exist to limit transfer-pricing, thinly capitalized firms and holding companies in low tax jurisdictions and promote disclosure

[6] The first component is the average of 2 sub-components, (a) industry-specific restrictions and (b) market-wide restrictions. Each of these sub-indices takes the value of zero if a country does not impose any equity ownership restriction, 0.5 if a country requires regulatory approval for foreign investors holding in excess of a certain level of ownership of a domestic firm in a particular industry (a) or any firm in the market (b) and one if a country imposes a strict ownership cap on foreign investment in a domestic firm in a particular industry (a) or any firm in the market (b). The second component takes a value of zero if there is no restriction of foreign companies issuing shares to domestic investors, 0.5 if such transactions require regulatory approval and one if they are prohibited.

of corporate transactions. Second, tax consolidation rules affect the ability of a controlling shareholder to 'tunnel', and thus may also affect the prevalence of business groups in a country. The *TAXCONSOLIDATION* variable distinguishes between two types of taxation systems. This variable is equal to 1 if firms are able to consolidate a subsidiary in which they have ownership stakes of less than 90%, and zero if consolidation is either not allowed or can only occur if the parent owns more than 90%. Under the former regime, consolidation of subsidiaries permits the parent to disregard intra-group transfers for income tax purposes and facilitates the tax-exempt movement of resources within the group.

In markets where business groups are common, there may be a mechanical effect that explains the prevalence of group IPOs. Thus, the regression models control for the proportion of listed firms in a country that are existing business group affiliates (*FAMGROUP%*). Finally we control for cross-country differences in market conditions over the sample period using *AveINDEXRETURN*, defined as the mean yearly stock market return for the 1997-2007 period.

B. Results of country-level regression analysis

Using country-level measures of the prevalence and size of group-affiliated IPOs, we investigate the strength of the proposed determinants in explaining cross-country variations in business group IPOs. Two alternative dependent variables are examined. The first measures the annual proportion of IPOs in a country undertaken by firms belonging to a business group, calculated as the number of group IPOs scaled by total IPOs. The second dependent variable is the annual proportion of the total equity capital raised by group firms as a percentage of total equity capital raised by all firms. These country-year variables are constructed separately for family and non-family groups. Countries where the total number of IPOs over the sample

period is less than five are excluded.[7]

Table II reports the results of various model specifications for the dependent variables defined above. When explaining the cross-country variation in family business group IPOs, the *GOVERNINDEX* has a negative and insignificant effect across all models. However, for the measure of relative frequency of family group IPOs, other financing constraint variables related to economy-wide availability of capital appear to play an influential role, with *INSTOFUNDS* consistently being the most significant explanatory variable. For the non-family group sample, all the financing constraint measures appear to have much weaker explanatory power. This supports the notion that control by a family or individual at the apex of a group facilitates a greater ability to allocate a group's internal capital to new firms, compared to a widely held corporate group. Overall, these results provide evidence that tighter financing constraints contribute to the prevalence of group-affiliated IPOs due to the group firms ability to use their internal capital to raise external capital more easily than non-group firms. This result is also consistent with the country-level findings in Masulis et al (2011) and with the findings of Belenzon, Berkovitz and Rios (2013), who show that the prevalence of corporate groups in a sample of European countries is higher in capital intensive industries and in countries with low financial development.

[INSERT TABLE II HERE]

To capture variations in market conditions across time, the final column of Table II estimates a firm-level probit model for the likelihood that an IPO in our sample is affiliated with a business group (or a family business group), controlling for all of the country level

[7] In an alternative specification, we account for the differences in sample size across countries by estimating the regression model using weighted least squares with the inverse of the total number of IPOs in a country during the sample period being used as the sample weight. The results are similar to the standard OLS estimation.

factors discussed above, and introducing two additional variables related to market conditions at listing. The first is a measure of aggregate stock market performance (*IPOINDEXRETURN*), which is the market index return during three months prior to the listing date of an IPO firm, used to capture the possibility that the IPO is timed to take advantage of strong equity market sentiments. The second is the number of IPOs in the twelve months surrounding the IPO scaled by the total number of IPOs in the same country (*IPOACTIVITY*). This measures whether the IPO occurs in the middle of a "hot" IPO cycle where there are many preceding issues as well as those being planned.

The results of the firm-level probit regression show that measures of country-level external capital constraints continue to have a negative effect on the probability of observing a group affiliated IPO. More importantly, *IPOACTIVITY* is also a significant factor negatively affecting this probability. This finding favors our earlier hypothesis that unlike their non-group counterparts, groups have financing advantages that enable affiliate firms to overcome external funding barriers and go public under less favorable market conditions.

III. Group-level Analysis

In this section, we examine family business group characteristics that influence their decision to enter the IPO market. Consistent with the theory in Almeida and Wolfenzon (2006), we hypothesize that the channel through which group structures (and especially pyramids) can provide financing benefits to IPO firms is through the accumulation of retained earnings within a group that can be used as a source of equity capital for young member firms going public to bridge their external funding gaps. This theoretical framework provides clear empirical predictions regarding which groups are better able to leverage such financing

advantages to enable member firms to go public, and among such groups, when they should be able conduct their IPOs. Specifically, we expect that (i) groups that retain a larger fraction of their earnings should be those that are more active in the IPO market, (ii) the timing of group IPOs is likely to be related to the timing of a group's earnings and its payout decisions, and (iii) among all group members, the parent of a group IPO firm is likely to be a member firm with higher retained earnings than the others. It is important to note that in order to test these hypotheses, we utilize information on all family (and non-family) business groups and their members over the 1997-2007 period, and not just those business groups that conduct IPOs.

To test (i) and (ii), we examine aggregate financial information for each group in a financial year, excluding that of its affiliated firms going public in the same year. Our main focus is the aggregate yearly additions to a group's retained earnings, calculated as its total cash earnings minus its total cash distributions, scaled by the group's year-beginning total assets (*GRPRETAINADD*). We also examine the individual flow components that increase (or decrease) retained earnings as two separate variables, namely *GRPNETINCOME* and *GRPDIVIDEND*, based on group-level net income and dividends as defined above (also scaled by group assets).[8] This allows us to verify whether cash retentions and distributions which have opposite impacts on the availability of internal capital play differential roles in predicting which groups sponsor IPOs.

We also examine several other group-level characteristics related to their ability to expand group assets by raising external equity capital for new public firms. These include two mechanical controls to account for the fact that an IPO event is more likely to be observed in larger groups: the number of member firms in each group (*LogNOFIRMS*) and the average

[8] Our results are qualitatively similar if we use calculate these variables not at the aggregate group level but using the median across group firms.

size of member firms in each group (*AvgLogSIZE*). We also control for (1) the aggregate level of debt (*GRPDEBT)*, as this can be an alternative source of external financing to fund pre-IPO expansion, (2) the weighted average Tobin's *Q* for entire group (*GRPQ*), as this indicates future growth opportunities, (3) group-wide investment activity (*GRPCAPEX*), as this captures immediate investment requirements. Finally, the control structure and diversity of a group can also influence their incentive and ability to list new firms. Thus, we include an indicator variable for groups that are structured horizontally (*HORIZONTAL*) rather than as a pyramid, and another variable measuring the level of industry diversification within each group, using a Herfindahl index constructed for the primary SIC codes of group members (*HERFINDAHL*).

We test whether these variables influence the likelihood of observing a group IPO event using a logit model with panel data. For each group financial year, the dependent variable is equal to one if the IPO listing date is within six months of a group's fiscal year end date. Table IIIa documents the results based on two models: a random effects logit model, which considers both cross-sectional and time-series variations, and a conditional logit model, which considers only within-group financial changes. The latter model allows us to understand how groups create conditions conducive to an IPO after controlling for unobservable group-level effects. With both models, the results are strongly supportive of our proposition that a group's internal capital can provide important support to affiliated IPO firms, with group retained earnings additions, *GRPRETAINADD*, being significant across all models. After decomposing *GRPRETAINADD* into two components, *GRPNETINCOME* and *GRPDIVIDEND*, the results continue to be consistent with the internal capital hypothesis. More specifically, we find additions to retained earnings created by limiting the extent of dividends paid strongly predict the likelihood of a group sponsoring an IPO in a given year.

The control variables in these models are intuitively in line with the alternative rationales for group expansion. In particular, the coefficients of both *Q* and *CAPEX* indicate that a group is more likely to conduct an IPO when it has strong growth opportunities and has a significant investment program on-going. The scale of available group resources, measured by *LogNOFIRMS* and *AvgLogSIZE*, both indicate that larger groups are more likely to sponsor an IPO. The negative coefficient of *HORIZONTAL* also confirms our conjecture that pyramids play an important role in accumulating internal capital, whereas groups organized in a purely horizontal organizational structure are less likely to engage in IPO activity. Also, the more industry concentrated the group is, the greater is the likelihood of an IPO, which indicates that risk sharing is an important motive of group expansion.

[INSERT TABLE IIIa and IIIb HERE]

To pinpoint the types of firms within each group that are selected to be the parent of an IPO, we examine differences across members within a family group using similar variables to those analyzed above, except that they are calculated for individual group firms. Table IIIb report the results of this analysis. In columns (1) and (2) of Table IIIb, we estimate a conditional logit model with group fixed effects and again find that a larger addition to a member firm's retained earnings in a given year increases the likelihood of this firm becoming the parent of an IPO firm, as does a higher Tobin's Q. This likelihood decreases with the size of dividend payouts. In columns (3) and (4), we substitute group fixed effects with group-year fixed effects to examine which firm within a group in a given year is selected as an IPO parent. Under this stricter test, which only considers cross-member differences in the year associated with a group IPO event, we again find that additions to retained earnings significantly raise the likelihood that the group member is the IPO firm's parent. However, the

dividend variable becomes insignificant, perhaps because the sample size is substantially reduced (only groups with at least two firms before an IPO event are considered). Among the other control variables, we find that as the parent's total assets or leverage rises, the likelihood of the group member sponsoring an IPO rises. However, a parent's capital expenditure level does not appear to have any effect.

In models (5) and (6) of both Table IIIa and IIIb, we repeat the same analysis for family groups (group firms) on the sample of non-family groups (group firms). While the control variables related to the size of a non-family group (group firm) and the Tobin's Q of a non-family group firm show statistical significance in helping to explain the decision of these groups to sponsor IPOs, the key internal capital variables both at the group and the parent levels are statistically insignificant. This suggest that the kind of support provided by family groups for their IPO firms are less relevant in non-family groups, pointing to the importance of family control at a group's apex that can direct its internal capital to realize benefits from a pyramidal structure.

IV. Analysis of IPO Firms

A. Inherent Firm Characteristics of Group-Affiliated IPOs

This section documents the characteristics of firms that family business groups take public. In order for business groups to fully exploit their competitive advantages, it would be rational for them to confer their financing advantages on firms that would otherwise find it difficult to raise capital. Accordingly, we hypothesize that on average, group IPOs should display inherent features that are consistent with high external financing constraints.

Table IV compares median values of selected firm and offer characteristics across group and non-group IPOs matched by firm size and IPO cycles. For each group IPO, we select matches from the sample of non-group IPOs using one of the following methods: (1) all non-group IPOs in the same country, (2) non-group IPOs in the same country with equity market capitalization of 80% to 120% of that of the group IPO, and (3) non-group IPOs that occur under the same IPO market condition as the group IPO (with IPO market condition defined as either "hot" or "cold" depending on whether the *IPOACTIVITY* value of an IPO is above or below the country median). We then measure median characteristic differences of group IPOs minus matched IPOs.

The results from Table IV indicate that family group IPOs, particular firms in pyramids, have characteristics where they should ordinarily find it more difficult to go public than their matched peers. That is, pyramid affiliated IPO firms tend to be younger (although this difference is not significant) and have significantly greater stock return volatility, lower profitability, greater capital requirements and more intangible assets than their matched non-group IPOs of similar size. This is consistent with groups representing the most suitable owners of firm-types that would otherwise find it difficult to obtain external funding. When not matching by size, we find that group IPO proceeds are much larger than their matched peers. This is also consistent with the existence of group financing advantages, as projects of larger scale, with poor cash flows and high investment needs are especially difficult to fund.

[INSERT TABLE IV HERE]

B. New Equity Raised in Group Affiliated IPOs

The prior section indicates that group affiliated IPO issuers possess characteristics indicating a high level of information asymmetry. We argue that such firms can go public

because with group affiliation, the amount of external capital required to satisfy a firm's funding needs is reduced. This prediction can be tested directly by looking into the proportion of shares offered to public investors. However, it is important to recognize that although an IPO transaction can raise new equity capital through the issue of new (primary) shares, insiders can also sell existing (secondary) shares for liquidity reasons. As such, we consider these types of share sales separately.

To test the influence of group affiliation on the proportion of shares sold in an IPO in a multivariate setting, we estimate a regression model using two alternative dependent variables: *PRISHARES* (the proportion of primary or new shares raised) and *SECSHARES* (the proportion of secondary or existing shares sold by pre-IPO owners). Our main explanatory variable is an indicator variable (*FAMGROUPIPO*) which equals one if an IPO firm belongs to a family business group, and zero otherwise. For comparison purposes, we include indicator variables for non-family group IPOs (*NONFAMGROUPIPO*), for non-group IPOs controlled by a widely held corporation (*CORPOWN*) and by a government body (*GOVTOWN*), and any IPO backed by a venture capitalist (*VENTURE*), which can include group affiliated firms.

The regression incorporates a number of standard control variables may influence how many shares can be sold in an IPO. The first is the natural log transformation of offer size (*LogOFFERSIZE*). Another variable is post-listing volatility (*RISK*), which is another frequently used measure of information asymmetry in the IPO literature, and similar to Ritter (1984), we include the standard deviation of weekly stock returns during the first year after listing. We also include an indicator variable for high technology firms (*TECH*) as an alternative measure of firms exhibiting unusually higher levels of information asymmetry.

The presence of reputable underwriters can help an IPO raise more shares. Similar to

Alavi, Pham and Pham (2008), the underpricing regression includes an underwriter market share ranking measure, calculated as its fraction of aggregate IPO proceeds of individual underwriters. For each IPO, underwriter rank (*URANK*) is equal to one if the lead underwriter is in the top quintile in market share or in the top ten in the world in terms of aggregate gross proceeds, and zero otherwise. Finally, we consider the possibility that the ability of the market to absorb new IPO shares can change with IPO market conditions. Similar to Boulton et al (2007), we account for this effect by the two variables measuring IPO market conditions discussed previously, *IPOACTIVITY* and *IPOINDEXRETURN*.

In Table V, we begin by examining differences in *PRISHARES* and *SECSHARES* between group and non-group IPOs. The evidence indicates that IPO firms owned by family group firms (especially those controlled through a pyramid) raise proportionally less external equity and are able to retain higher ownership stakes than IPOs of non-group firms. This is consistent with our earlier findings that family groups with the highest retained earnings are more frequent sponsors of IPOs. Non-family group IPOs also issue proportionally fewer primary shares than non-group firms, but they also sell significantly more secondary shares, indicating that non-family groups often view IPOs as a partial liquidation opportunity. Also, firms that use a dual-class share structure sell a larger proportion of outstanding shares in their IPOs, reflecting the fact that with unequal voting rights, it is easier for a controlling shareholder to maintain control, while the external equity funding requirements of these IPO firms are not enhanced. We also document that IPOs of government owned firms, widely held corporations and venture backed firms are often partial liquidation events, where fewer primary shares and more secondary shares are sold than in other IPOs.

[INSERT TABLE V HERE]

We delve further into differences in the amount of shares sold by group IPOs only. This allows us to examine the influence of the IPO parent's characteristics. Using similar parent attributes used in Table IIIb, we find that additions to retained earnings at the parent's level significantly reduce the proportion of primary shares raised by family group IPOs. Complementing our earlier findings at the group level, this is a more direct piece of evidence in support of the important role of group internal capital in facilitating the IPO process by reducing the extent of external capital required. It is also important to note that retained earnings accumulation also has a positive effect on the proportion of secondary shares offered by the parent of a group IPO. Thus, profitability at the parent level appears to increase their likelihood of relinquishing existing shares, potentially to free up more capital for their other attractive investment opportunities. Also, when parent firms are structured as parts of pyramids, a smaller percentage of primary shares and a larger percentage of secondary shares are sold in the IPO. Finally, similar to the group versus non-group comparison, if a group IPO firm has dual class shares, then the percentage of primary shares sold increases.

In contrast to family group IPOs, the last two columns of Table V show the fraction of shares offered for sale by non-family group IPOs is not influenced by additions to the retained earnings of their parents. Thus, internal capital does not appear to play a vital role in the funding structure of these firms. The only factors that are positively associated with a larger fraction of primary shares in non-family group IPOs are a parent's Tobin's Q and having a financial firm parent. The only factors positively associated with the fraction of secondary shares sold in non-family group IPOs are a parent's debt level and offer size, while having a financial firm parent is negatively associated with the fraction of secondary shares sold.

C. The Impact of Group Affiliation on IPO Flotation Costs

Our analysis thus far indicates that group-affiliated IPO issuers possess characteristics associated with high information asymmetry, but are able to overcome their financing constraints and go public by receiving group support. We also argue earlier that without group support, these issuers face higher flotation costs. In particular, group firms are able to tap the group's internal capital market to reduce their external capital funding raising and the percentage of stock they seek to sell, which together should lower the adverse selection risk IPO investors face. We now examine whether this argument holds by comparing the flotation costs of groups versus non-group IPOs.

We measure flotation costs using three alternative dependent variables. The first is *LogUNDER*, which is the natural log of one plus the difference between the first-day closing price and the offer price, divided by the offer price. Taking the natural log reduces the impact of skewness of the underpricing variable. Second, investment banking fees are another important flotation cost component of going public. *FEES* are defined as the sum of management fee, underwriting fee and selling concession, scaled by the issue size. These expenses on average comprise 6.3% of gross proceeds. Finally, we sum these two costs of going public to create a single flotation cost measure, *TOTAL*, and investigate its relationship to group participation after transforming it to the natural log of one plus *TOTAL*, *LogTOTAL*.

The extant IPO literature has identified a number of factors associated with IPO initial returns, which we include as control variables for IPO flotation costs. Most of these variables are asymmetric information related and are standard controls in IPO underpricing studies, including offer size (*LogOFFERSIZE*), ex-ante risk, measured by post-listing stock volatility (*RISK*), and indicators for a high-tech industry (*TECH*), bookbuilt IPOs (*BOOKBUILD*) and

overallotment options (*OVERALLOT*). We also control for underwriter reputation (*URANK*) and venture capital backing (*VENTURE*), based on the findings of Carter and Manaster (1990), Megginson and Weiss (1991) and Barry, Muscarella, Peavy and Vetsuypens (1990).[9] As it is widely accepted that 'hot' and 'cold' IPO market cycles can affect the degree of underpricing, our regressions include *IPOACTIVITY* and *IPOINDEXRETURN* to capture variations in IPO market conditions. In order to control for signaling mechanisms by pre-IPO shareholders, the issuing cost regressions include *PRISHARES* and *SECSHARES* (the proportion of primary and secondary shares offered). Country level fixed effects control for unobserved cross-country variations in flotation costs. Similarly, industry wide factors are taken into account through a set of industry fixed effects based on industry classifications reported by Dyck and Zingales (2004).

The results are reported in Table VI. In the underpricing regression, we find that the coefficient of *FAMGROUPIPO* is negative and significant at the 1% level. This is consistent with the hypothesis that family group affiliates experience lower underpricing due to lower adverse selection risk associated with their access to an internal capital market. We show that this relationship appears to be driven by a group affiliation effect, rather than a pre-IPO owner effect (family, corporate or government), by including indicator variables for the pre-IPO primary owner of the IPO issuer. *CORPOWN* (*GOVTOWN*) indicates if a non-group issuer is owned before the IPO by a widely held corporation (a government entity).[10] It is possible that IPOs by these owners are firms or division of firms with long established operations and

[9] We also consider (1) the ratio of pre-IPO interest-bearing debt scaled by total assets (*DEBT*), which Pagano, Panetta and Zingales (1998) show increases the probability of going public as a way to reduce financial leverage, and (2) the natural log of firm age since incorporation (*LogAGE*). Incorporating these variables however reduce the sample size significantly. In an unreported regression, our main results remain robust after the inclusion of *DEBT* and *LogAGE* as additional control variables

[10] For example, if an IPO is spun off from a widely held corporation that does not control any other listed firms, then this IPO is not group affiliated.

strong reputations, and thus, should face lower issuing costs. However, we find these variables have an insignificant influence on underpricing. So the lower underpricing of group affiliated IPOs is not explained by many of these IPOs being spin-offs from widely held corporations and privatizations by government-owned firms.

[INSERT TABLE VI HERE]

Some group affiliated firms employ control enhancing mechanisms that can separate their cash flow and control rights and thus lead to greater expropriation risks and higher IPO issuance costs. Almeida and Wolfenzon (2006) argue that different control-enhancing mechanisms can have opposing effects. In particular, the financing benefits of pyramidal structures are not attainable with dual-class shares, though the control enhancing effects apply to both. Thus, we separately test for the effect of dual class shares in group affiliated and non-affiliated firms. Consistent with Masulis et al (2011), we find that firms that employ dual class shares are associated with higher underpricing.

Next we consider the impact of group affiliation on the level of IPO underwriting fees. The first model in Table VI is re-estimated, replacing *LogUNDER* with *FEES* as the dependent variable. We find the coefficient of *FAMGROUPIPO* continues to be negative, but its level of statistical significance is weaker, *LogOFFERSIZE* and *URANK* are negatively related to the fees percentage, while *RISK* has a positive and significant coefficient. While a majority of the results remain unchanged, the *GOVTOWN* indicator variable becomes negative and significant in the *FEES* regressions. This suggests that government groups may have stronger bargaining power than other firm types when dealing with underwriters.

A caveat on the *UNDERPRICING* and *FEES* regression evidence is that Chen and Mohan (2002) document a possible interaction between underpricing and underwriter spread.

They argue that underwriters are able to price issuer firm risk, explicitly through fees and implicitly through underpricing. To avoid a possible substitution effect between these two flotation cost components, we examine the total cost of going public (*LogTOTAL*). Consistent with the *LogUNDER* and *FEES* regressions, *FAMGROUPIPO* is also negatively related to *LogTOTAL*. That is, group IPOs are undertaken at a lower overall cost than non-group firms. Furthermore, *IPOINDEXRETURN*, *VENTURE*, *TECH* and *PCTRETAINED* have significant positive relations to underpricing. Finally, *RISK*, *DEBT* and *SECSALE* all have significant, negative coefficients in these regressions of total cost of going public.

In Table VI, we also compare the effects of alternative group structures on IPO costs. We find family group affiliated IPOs employing a pyramidal structure incur the least amount of underpricing. Horizontal family group IPOs have issuing costs that are insignificantly different from non-group firms. These results are again consistent with family pyramidal groups providing significant financing benefits.

V. Evidence of Post-listing Group Support

In this section, we present evidence on how family business group structures can support the survival and growth of their firms in the post-listing years. As presented in our univariate tables, family business groups typically fund young, risky firms with high capital requirements and low cash flows, hence, an important question to address is whether many of these speculative firms fail in the immediate post-listing years. Similarly, it is possible that controlling families may use pyramids, with their large separation of cash flow and controls rights, as a vehicle for investing in their riskiest projects, without having to bear the full cost of IPO failures. To address this possibility we first examine the survival rates of family group

IPOs relative to other IPO types in the first five years after going public.

Since groups fund firm types that are most in need of capital, it follows that these same firms should be especially vulnerable to swings in capital market conditions and to shortfalls of internal cash flows. Further, since group IPO firms have low asset tangibility, the ability to obtain debt finance is also very limited. It follows that these group affiliated IPO firms would have a higher risk of financial distress without a group's internal capital support. Therefore, we test the extent to which group support can ameliorate these vulnerabilities in two ways. First, we test how external capital market conditions affect their ability to raise additional capital relative to stand alone firms. Second, we examine the sensitivity of their capital expenditures to both their internal cash flows and to market conditions, relative to other IPO firms in the five year post-listing period

A. Post-listing Firm Survival

Table VII uses a Cox proportional hazard model to predict IPO firm failure during the initial five year post-listing period. We define failure as a delisting that occurs within five years of an IPO's listing date and that was preceded by one of the following indicators of poor financial performance: (1) one year stock return of -50% or below, (2) market capitalization falling below $500,000 prior to delisting, (3) negative equity in the financial year prior to delisting, or (4) return on assets in the bottom quintile of the sample.

After controlling for other firm characteristics measured at listing, we find that group affiliation has a significant positive influence on decreasing the failure risk of firms recently going public. This result is concentrated among family group IPO firms, especially when group ownership is structured as a pyramid. In columns (5) and (6) of Table VI, we also examine a dynamic Cox model that incorporates the time-varying variable *INDEXRETURN*

(and its lag), which for each IPO is the return of its home country MSCI index for each of the five years after listing. In this model, the coefficient of the interaction between the family (pyramidal) group IPO indicator and *INDEXRETURN* is significantly positive, indicating that the failure rate of a family (pyramidal) group IPO is less sensitive to post-listing market conditions than other firms. In summary, the results of Table VII suggest that affiliated IPOs are more resilient because they receive valuable support from their groups to overcome difficult external conditions.

[INSERT TABLE VII HERE]

B. Post-listing SEO Activity

We next examine the effect of group affiliation on the ability of newly listed firms to satisfy their capital requirements by raising additional external equity capital in the seasoned equity offerings (SEO) market. Similar to the effect that group support has on the IPO process, access to a group's internal capital also has the potential to support the capital raising effort of newly listed firms in the SEO market. Predictions as to how soon after an IPO a group firm can access the SEO market relative to independent firms are ambiguous, since on the one hand internal capital may sustain affiliated firms for longer, while on the other, reputation and internal capital support can facilitate an earlier re-entry into primary equity markets. Therefore, we focus on the sensitivity of group and non-group SEOs to changes in stock markets conditions. We predict that like IPOs, group support will allow group firms to raise further capital under a wider range of market conditions.

To test this prediction, we collect data from *SDC Platinum* on the size and occurrence of an IPO firm's seasoned equity offerings occurring in the each of the first five years after their listing. We exclude pure secondary share sales from our calculations and focus only both

public and private issues of new equity. For each of the post-listing years we calculate the proportion of new capital raised as a proportion of IPO proceeds.

Table VIII reports the results of a firm-fixed effects regressions where our SEO measure (total yearly SEO proceeds scaled by the original IPO proceeds) is regressed on (1) the two group affiliation indicator variables (*FAMGROUPIPO* and *NONFAMGROUPIPO)*, (2) a number of lagged firm-level variables that are related to the need for further external capital, including log of firm size (*LogASSETS*), capital expenditure (*CAPEX*), profitability (*ROA*) and Tobin's Q (*Q*), and (3) two market return variables capturing the home country stock market index returns during the calendar year in which the SEO took place ($INDEXRETURN_t$) and in the preceding calendar year ($INDEXRETURN_{t-1}$).

The results in Table VIII strongly show the group SEOs are less sensitive to market conditions than their non-group counterparts. Model (6) conducts a direct test of the difference in sensitivities of group and non-group SEO activity to market conditions with two interaction terms $FAMGROUPIPO \times INDEXRETURN_t$ and $FAMGROUPIPO \times INDEXRETURN_{t-1.}$ Both coefficients indicate that group firms have a statistically significant lower sensitivity of SEO activity (and relative issue size measured by SEO gross proceed divided by IPO gross proceeds) to contemporaneous and lagged market conditions.

[INSERT TABLE VIII HERE]

C. Post-listing Corporate Investment Patterns

The next analysis focuses on how group support alleviates capital constraints on investment activity of their newly listed affiliates. In the corporate finance literature, the sensitivity between cash flows and investment has often been used to gauge the extent to which firms are capital constrained, that is, their capital expenditures are limited by the extent

of internal cash flows due to inability to obtain external funding. Since there is considerable debate in the literature as to whether this is an appropriate measure of financial constraints, we focus on the sensitivity of a firm's investment activity to external market conditions.[11]

In Table VIII, we estimate the standard investment equation (with firm fixed-effects) by regressing a firm's annual capital expenditure on the lag of Tobin's Q and contemporaneous cash flows, with the addition of ($INDEXRETURN_t$) and its lag ($INDEXRETURN_{t-1}$) to examine whether market conditions influence investment. We pay particular attention to the synchronisation of these market index returns to the balance sheet capital expenditure data. In particular, we ensure that for each firm we calculate the market returns using the closing index level for each firm's unique balance sheet month. We argue that the lag variable ($INDEXRETURN_{t-1}$) is the more relevant of the two, as investment decisions made in the light of specific market conditions may take some time to implement.

Our model is estimated across various group structures and types of control mechanisms. Our estimation results indicate that capital expenditures of group IPOs are not sensitive to their internal cash flows (see columns (1) to (5)), whereas capital expenditure of non-group IPOs are highly sensitive to their cash flows (column 6). Most importantly, we find that for family group IPOs, especially those belonging to a pyramidal group, the sensitivity of capital expenditure to lag market conditions is significantly lower than that of non-group IPOs, as indicated by the interaction terms in model (7). Overall, the findings presented in Table IX indicate that pyramidal group structures help alleviate capital constraints and assist their members in weathering adverse external market conditions. This can give them a competitive advantage by being able to continue to develop while their competitors are forced to wait for

[11] We are not interested in determining whether our sample firms are financially constrained or not, since our sample comprises strictly of IPO firms, which are by their nature likely to be to be constrained.

more friendly market conditions. A valuable first mover advantage may be the end result.

[INSERT TABLE IX HERE]

D. Identifying the Overall Benefits of Group Affiliation

If there is valuable support provided by a family group during and after the listing of an affiliate firm, as indicated by the preceding analysis, we should be able to also observe that affiliation influences firm valuation after an extended period has passed since the IPO event. We look at the five year post-listing interval of IPO firms to see if even more seasoned firms experience the benefits/costs of group affiliation. One important implication of our earlier findings that group firms have higher survival rates is that the non-group firms observed after five years may have higher valuation than group firms because they are naturally high-quality firms that are able to survive by themselves. In contrast, many other lower-quality non-group firms that list prematurely by taking advantages of IPO cycles have by this time failed. We address these biases in our analysis below.

To assess firm performance differences between group and non-group affiliated firms in our sample, we use Tobin's Q (measured by market value of assets divided by book value of assets). To provide comparability to past results, we first investigate the relation between *Q* and group affiliation for all our sample firms five years after their listing date, using a simple multivariate OLS regression. As it is difficult to identify both *FAMGROUPIPO* and *NONFAMGROUPIPO*, we either capture group affiliation by aggregating both types of groups together to a single variable *GROUPIPO*, or by using only *FAMGROUPIPO*. In the models incorporating *FAMGROUPIPO*, we only consider (group and non-group) issuing firms whose pre-IPO owners (or ultimate owners) are a family or an individual entrepreneur. The control variables are based on well established economic factors that can explain *Q*.

The results are reported in Table X. The first two columns show that *Q* is significantly lower for our sample of recently listed group firms than for non-group firms. The difference is remains negative, but is insignificant for family group firms. This result is comparable to those reported by Claessens *et al*. (2002) and Lemmon and Lins (2003). If group affiliation is treated as an exogenous decision, then our evidence would be consistent with these studies conclusions that the lower firm values and operating returns observed for group firms reflect expected future expropriation of minority shareholder interests by controlling families.

We recognize that the controls *GROUPIPO* and *FAMGROUPIPO* used in the OLS regressions can be affected by endogenous selection bias. If group affiliation alleviates external capital constraints associated with high information asymmetry, then *GROUPIPO* may be correlated with the unexplained components of *Q*. For example, firms engaging in projects that are capital intensive and lack immediate cash flows may be unable to raise funds in external capital markets by themselves due to high information asymmetries, and may require family group support. Conversely, a group may only divest a member firm completely when the firm can independently overcome external financing constraints. Both scenarios can result in group firms possessing lower current market valuation than their non-group peers.

To address this endogenous selection problem, we employ a treatment-effects model in which we simultaneously estimate a firm performance regression (the outcome equation) and a group-selection regression (the treatment equation) using maximum likelihood estimation.[12] The self-selection issue is addressed by predicting group membership from a set of explanatory variables from the performance regression and a new set of identifying

[12] This estimation requires a strong distributional assumption of bivariate normality, but provides cluster-adjusted standard errors. We also estimate the model using both a two-stage instrumental variable estimation (with the first stage involving a probit regression) and the Heckman two-step consistent estimator, which do not require this distributional assumption. Both generate similar results to the maximum likelihood estimation.

instruments, based on historical market conditions around a firm's listing dates. Our previous findings imply that independent (non-group) firms go public when capital market conditions are favourable (to take advantage of "windows of opportunities"), while group firms that can rely on group financial support, are largely independent of current external capital market conditions. Based on this argument, we employ as instruments the volume of IPO transactions in the listing year (*IPOACTIVITY*) and stock market returns over the 3 months prior to listing (*IPOINDEXRETURN*). As these variables are based on historical market conditions, they are unlikely to have a persistent influence on longer-term firm performance of individual firms. Similar to Masulis et al. (2011), we also use the idiosyncratic risk of the IPO firm, measured in the year of listing as an additional instrument.

It is important to note that IPO firms taking advantages of "windows of opportunity" to go public may exhibit greater post listing underperformance (Ritter, 1991). If this correlation between market conditions at listing and underperformance persists beyond three years, then the exclusion condition of the instruments used in our sample may be violated. Therefore, as a robustness check, we expand our sample of firms to all firms listed before 1997, and obtain information regarding market index return conditions in the year in which they list (*IPOINDEXRETURN*). Using group affiliation data available at 2002 from Masulis et al (2011), we can repeat the same regression analysis reported in Table X for these firms, using their firm value (*Q*) and other firm characteristics in year 2002. This creates a sample where there is much greater variability in the time lag between the performance measurement period and a firm's listing date. Our results remain unchanged based on this expanded sample.

A further concern which can also lead to violation of the instrument's exclusion condition is that conditions at listing are associated with inherent firm quality. (e.g. low

quality firms list in hot markets). If this is the case, then performance differences (measured by Tobin's Q) between firms that list in hot and cold markets are likely to persist perpetually. We argue that IPO market conditions are not likely to affect the average *proportion* of high and low quality firms that go public for two related reasons. First, favourable IPO conditions imply falling market risk premiums and a larger number of firms that are NPV positive. We argue that among the sample of firms requiring access to public equity capital, their quality is randomly distributed, such that changing market conditions on average induce the same proportion of high and low quality firms to go public. Second, if systematic differences in IPO firm quality persisted in hot versus cold IPO markets, then the pooling equilibrium would breakdown as low quality firms are still able go public and IPO cycles are much more muted.

[INSERT TABLE X HERE]

We simultaneously estimate the treatment-effects model containing both group affiliation and firm performance equations. The results are reported in the last two columns of Table X. We find that in both treatment-effects regressions involving *Q*, the coefficients of *GROUPIPO* and *FAMGROUPIPO* are significantly positive. This result yields an important finding supporting the internal capital market explanation for business groups. The fact that group firms on average underperform non-group firms appears to be due to the negative impact of private benefits of control, but it also reflects endogenous self-selection effects. After controlling for endogeneity, we find that group affiliation enhances firm value.

E. Alternative Explanation of Post-Listing Group Support

One possible reason why family groups provide strong on-going support to a new IPO firm is to retain control so that the family can for extract substantial private benefits of control. In an unreported test, we examine this alternative explanation by comparing the frequency of

changes in control in group IPO firms relative to other IPO firms of similar maturity as public companies. We exclude all firms that fail based on the criteria used in the estimation of the Cox model presented in Table VII, and define a change of control to be any transactions (reported by the Thomson Reuters SDC Platinum database) that result in a transfer of more than 50% of ownership to a new (unrelated) party. We find that family group IPOs, especially those held in a pyramid, are significantly more likely to experience a change of control than non-group firms. In comparison, IPOs using dual-class shares (which can be part of a group or independent firms) are significantly less likely to experience a change of control. This evidence indicates that the use of pyramids is not synonymous with a long-term control retention strategy. Thus, unless a family group employs dual-class shares, it is difficult to attribute group support of newly listed member firms as primarily being motivated by the planned future extraction of private benefits of control.

VI. Conclusions

This study investigates how family business groups can exploit their financing advantages by facilitating member firm access to the equity capital market, thereby allowing them to fund for their growth opportunities. At the country level, we provide evidence that the prevalence of group-affiliated IPOs is greater in markets characterized by significant financing constraints and that their timing is less sensitive to IPO market conditions. This suggests that due to their financing advantages, members of family business groups can go public in less favorable capital market environments where other firms would find raising external capital prohibitively expensive. At the group level, we document more direct evidence that group internal capital plays an important role in enabling new affiliates to go public. Additions to

retained earnings by existing group members consistently is a significant factor in explaining both cross-sectional and time-series variations in the likelihood of observing an IPO event among groups and the likelihood of being an IPO parent within a group. At the firm level, we find that group affiliated IPOs have high information asymmetry and large capital requirements, implying that they should find it more difficult go public as an independent firm without group support. The most direct evidence of such support is the strong negative relation between the amount of external capital that a group IPO firm has to raised and pre-IPO additions to retained earnings of its parent. In terms of other IPO transaction characteristics, we show that group affiliation can reduce flotation costs, which is also consistent with the interpretation that internal capital markets can help reduce the cost of expensive external equity capital that member firms must raise.

Group affiliation appears to exert a positive influence for an extended period of time after a firm goes public. This is supported by evidence that after listing, group-affiliated firms are less likely to fail, and their subsequent investment and equity raising activities are less sensitive to negative market conditions than their non-group counterparts. When examining firm valuation after listing, we also find that group affiliation raises firm value of recently listed member firms relative to the counterfactual option of going public as independent firms.

Overall, our study provides a comprehensive set of results that consistently highlight a critical channel through which group membership and structure generate important benefits to both existing members and the capital market: that is, through facilitating the initial round of external equity raisings by new firms and providing continuing support after these IPO events. In this sense, family groups appear to play an important economic function akin to that of venture capitalists in developed markets. However, unlike venture capitalists who rely on

enforceability of financial contracts to alleviate the risks associated with funding risky growth opportunities, family groups often operate in underdeveloped capital markets with weak governance and legal institutions. In such environments, our evidence indicates that pyramidal structures are a very attractive means of overcoming external financing constraints associated with funding new ventures.

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Table I – Country Distribution of the IPO Sample

Country	Number of IPOs				Total offer size (US$ billion)			
	All IPOs	Non-group IPOs	Family group IPOs	Non-family group IPOs	All IPOs	Non-group IPOs	Family group IPOs	Non-family group IPOs
Argentina	17	9	6	2	3.309	2.167	1.079	0.063
Australia	1260	1213	29	19	50.231	44.912	2.881	2.439
Austria	54	53	2	3	11.283	9.375	0.173	1.735
Belgium	81	74	6	4	14.899	11.171	2.590	1.138
Brazil	105	104	7	1	35.278	33.412	1.555	0.310
Canada	620	607	12	3	24.927	22.815	1.064	1.048
Chile	12	11	2	0	6.446	5.939	0.507	0.000
Colombia	3	3	0	0	3.031	3.031	0.000	0.000
Czech Rep.	5	5	0	0	0.555	0.555	0.000	0.000
Denmark	48	46	1	5	3.509	3.156	0.155	0.197
Finland	60	55	6	3	7.187	6.352	0.687	0.147
France	549	539	27	16	84.467	57.567	4.879	22.021
Germany	522	487	22	20	67.841	55.259	2.642	9.941
Greece	173	159	12	2	10.725	9.569	0.456	0.701
Hong Kong	606	590	26	5	46.873	40.627	4.894	1.352
Hungary	7	5	0	3	1.679	0.255	0.000	1.424
India	359	349	10	3	21.093	16.548	4.214	0.331
Indonesia	135	118	25	1	6.513	5.059	1.441	0.012
Ireland	45	44	0	1	7.359	7.225	0.000	0.134
Israel	94	85	12	1	4.009	3.434	0.563	0.012
Italy	209	197	14	5	53.097	44.462	2.240	6.394
Japan	1524	1363	38	124	78.602	55.330	1.331	21.941
Malaysia	472	437	33	4	8.746	5.463	2.278	1.004
Mexico	19	17	4	0	9.968	6.965	3.003	0.000
Netherlands	99	91	7	2	22.929	18.365	3.585	0.978
New Zealand	61	64	1	0	4.180	3.368	0.812	0.000
Norway	116	106	9	4	16.685	14.005	1.355	1.325
Pakistan	9	8	1	0	0.418	0.415	0.003	0.000
Peru	4	4	0	0	0.348	0.348	0.000	0.000
Philippines	45	36	10	0	2.920	1.521	1.399	0.000
Poland	137	128	11	2	11.018	9.880	0.457	0.681
Portugal	16	14	3	0	8.623	8.184	0.439	0.000
Singapore	382	356	20	11	13.013	6.303	1.840	4.870
South Africa	20	22	0	2	3.513	2.902	0.000	0.610
South Korea	598	565	32	8	29.941	23.257	5.851	0.833
Spain	57	50	3	10	32.451	15.156	2.047	15.249
Sri Lanka	7	4	2	1	0.159	0.064	0.009	0.085
Sweden	110	100	11	1	16.404	15.038	1.181	0.184
Switzerland	88	87	2	2	27.357	22.952	2.674	1.730
Taiwan	595	553	39	5	12.674	8.068	3.267	1.339
Thailand	168	157	10	3	7.062	6.042	0.735	0.285
Turkey	39	28	11	2	25.476	22.480	2.855	0.142
UK	1258	1238	19	11	114.088	111.256	1.416	1.415
US	2507	2458	55	33	344.270	307.293	11.902	25.076
Full sample	13295	12639	540	322	1255.156	1047.550	80.45895	127.147

Table II – Regression analysis of the frequency and average costs of going public for group IPOs

The country-level models are based on OLS regression results for a sample of 42 countries (where there are at least 5 IPOs with ownership information). The dependent variable is *FAMGROUPIPONO* (*NONFAMGROUPIPONO*), the total number of family group (non-family group) affiliated IPOs divided by the total number of IPOs, or *FAMGROUPSIZE (NONFAMGROUPSIZE)*, the difference in total offer size of all group (family group) IPOs. The firm-level model is a probit regression with dependent variable being the probability of observing a family group affiliated IPO in a subsample of IPOs that are not owned by governments and widely held corporations. *FAMGROUP%* (*NONFAMGROUP%*) is the percentage of listed firms in the market that belong to a group (family group) in 2002. *TAXCONSOLIDATION* indicates a high ownership threshold at which subsidiaries can be consolidated into the parent for taxation purposes. *TAXAVOIDANCE* measures the stringency of tax laws related to intra-corporate transactions. *GOVERNINDEX* is an index based on the principle components weights of anti-director rights, an enforcement index and corporate disclosure. *INSTOFUNDS* is total institutional equity investments scaled by stock market capitalization. *VENTURE* measures the level of availability of venture capital funding. *FOREIGNLIB* is the extent to which foreign investment is permitted in the market. Observations are weighted by the total number of IPOs in that market for the sample period. In the country-level regression, *AveINDEXRETURN* is the average annual return on the Datastream MSCI index for the country of listing during the 1997-2007 period. For each sample IPO in the firm-level models, *IPOINDEXRETURN* is measured as the index return during the quarter preceding the listing date and *IPOACTIVITY* is the ratio of total number of IPOs during the period of 6 months before to 6 months after the listing date scaled by the total number of IPOs listed in the same country during the sample period. Heteroskedasticity-adjusted and country-cluster standard errors are reported in parentheses for the country-level and firm-level models, respectively.

	Country-level models				Firm-level models
	FAMGROUP IPONO	*NONFAM GROUPIPONO*	*FAMGROUP IPOSIZE*	*NONFAM GROUP IPOSIZE*	Pr(*FAMGROUP IPO*)
FAMGROUP%	0.323***		0.112		1.764***
	(0.088)		(0.207)		(0.411)
NONFAMGROUP%		0.326		1.505**	
		(0.279)		(0.722)	
CONSOLIDATION	0.024	-0.020	0.015	-0.030	0.138
	(0.017)	(0.015)	(0.032)	(0.045)	(0.091)
TAXAVOIDANCE	-0.001	0.011*	-0.010	-0.010	-0.046*
	(0.005)	(0.005)	(0.013)	(0.013)	(0.026)
GOVERNINDEX	-0.006	-0.032	-0.055	-0.062	-0.213**
	(0.017)	(0.020)	(0.034)	(0.056)	(0.089)
INSTOFUNDS	-0.034*	0.010	-0.137***	-0.061	-0.163
	(0.018)	(0.021)	(0.045)	(0.073)	(0.177)
VENTURE	-0.028*	0.025	0.040	0.084	0.015
	(0.016)	(0.025)	(0.035)	(0.069)	(0.068)
FOREIGNLIB	-0.039	-0.067*	0.010	-0.133	-0.389***
	(0.029)	(0.031)	(0.050)	(0.083)	(0.102)
AveINDEXRETURN	0.665	0.666	-2.454*	-0.839	
	(0.494)	(0.745)	(1.480)	(1.331)	
IPOINDEXRETURN					0.155
					(0.228)
IPOACTIVITY					-0.914*
					(0.528)
Adjusted R^2	0.572	0.321	0.212	0.178	
Pseudo R^2					0.054
N	42	42	42	42	12455

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Table IIIa – Group-level Determinants of the Likelihood of Observing an IPO by a Family Group

All variables are computed for individual family (non-family) groups during the 1997-2007 period. For each group, the dependent variable takes the value of one if one of its affiliates goes public a given year and zero otherwise. *GRPRETAINADD* is the additions to the group's retained earnings scaled by its year-beginning total assets. *GRPNETINCOME* and *GRPDIVIDEND* are the group's total net earnings and cash dividends paid to common shares scaled by group assets. *GRPDIVIDEND* is a group's total cash dividends paid to common shares scaled by total group assets. *LogNOFIRMS* is the natural logarithm of the number of member firms in a group prior to the IPO. *AvgLogSIZE* is the group average of the natural logarithm of each member firm's total assets. *GRPQ* is a group's Tobin's Q defined as the ratio of market value of total group assets to book value of total group assets. *GRPCAPEX* is a group's total capital expenditures scaled by the previous year's capital stock. *GRPDEBT* is total interest bearing debt scaled by total assets. *HERFINDAHL* is a Herfindahl index that measures the industry concentration of the group based on the 2-digit SIC codes of its members. *FINGROUP* is and indicator variable equal to 1 if the group contains a financial member and zero otherwise. *HORIZONTAL* is an indicator variable equal to one if the group if the group is structured purely horizontally (no pyramidal members), and zero otherwise. *INDEXRETURN* is the return on the country MSCI index for over the financial year. *IPOACTIVITY* is the frequency of IPOs in the country during the financial year. The regression specifications including group fixed effects are estimated as a conditional logit model. Standard errors clustered at the group level are reported in parentheses.

	Family Groups				Non-Family Groups	
	(1)	(2)	(3)	(4)	(5)	(6)
GRPRETAINADD	1.644***		1.242*		0.606	0.149
	(0.471)		(0.732)		(0.887)	(1.380)
GRPNETINCOME		1.801***		1.367*		
		(0.617)		(0.724)		
GRPDIVIDEND		-7.634**		-7.045**		
		(3.426)		(3.562)		
LogNOFIRMS	1.779***	1.774***	-0.322	-0.337	1.912***	-0.845**
	(0.204)	(0.280)	(0.239)	(0.244)	(0.221)	(0.420)
AvgLogSIZE	0.187***	0.188***	0.186*	0.188*	0.120**	-0.261*
	(0.036)	(0.044)	(0.098)	(0.098)	(0.054)	(0.142)
GRPQ	0.147**	0.162**	0.119	0.140	0.069	-0.075
	(0.068)	(0.074)	(0.114)	(0.114)	(0.097)	(0.220)
GRPCAPEX	1.452**	1.511*	-0.539	-0.416	0.733	-0.880
	(0.720)	(0.792)	(0.892)	(0.897)	(1.599)	(2.011)
GRPDEBT	-0.157	-0.266	-0.038	-0.088	-0.529	-1.153
	(0.327)	(0.388)	(0.706)	(0.708)	(0.415)	(0.768)
HERFINDAHL	5.645***	5.595***	6.069***	5.964***	4.987***	4.046***
	(0.488)	(0.655)	(0.906)	(0.906)	(0.648)	(1.355)
FINGROUP	0.121	0.123			0.092	
	(0.198)	(0.157)			(0.178)	
HORIZONTAL	-0.619***	-0.617***			0.001	
	(0.130)	(0.163)			(0.190)	
IPOACTIVITY	3.713***	3.760***	4.688***	4.805***	4.793***	7.437***
	(0.519)	(0.558)	(0.801)	(0.795)	(0.919)	(1.454)
INDEXRETURN	0.128	0.126	0.134	0.133	0.423*	0.738
	(0.175)	(0.200)	(0.166)	(0.166)	(0.256)	(0.865)
Group Fixed Effects	NO	NO	YES	YES	NO	YES

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Table IIIb – Member-level Determinants of the Likelihood of Becoming an IPO Parent within a Group

The sample consists of member firms of family (non-family) groups observed in the 1997-2007 period. The dependent variable takes the value of one if a group member is the parent entity of an IPO in a given year and zero otherwise. For each member firm, *RETAINADD* is the additions to retained earnings scaled by year-beginning total assets. *NETINCOME* and *DIVIDEND* are net earnings and cash dividends paid to common shares scaled by year-beginning total assets. *LogSIZE* is the natural logarithm of total assets. *Q* is Tobin's Q defined as the ratio of market value of total assets to book value of total assets. *CAPEX* is capital expenditures scaled by year-beginning total assets. *DEBT* is total interest bearing debt scaled by total assets. *FINMEMBER* is and indicator variable for whether the member is a financial firm. *INDEXRETURN* is the return on the country MSCI index for over the financial year. *IPOACTIVITY* is the frequency of IPOs in the country during the financial year. All regression specifications are estimated as a conditional logit model. Standard errors clustered at the group level are reported in parentheses.

	Family Groups				Non-Family Groups	
	(1)	(2)	(3)	(4)	(5)	(6)
PARENTRETAINADD	2.659***		2.794**		2.492*	4.983
	(0.754)		(1.310)		(1.484)	(4.474)
PARENTNETINCOME		2.676***		2.795**		
		(0.748)		(1.311)		
PARENTDIVIDEND		-8.601**		-2.680		
		(3.359)		(4.306)		
LogPARENTSIZE	0.356***	0.353***	0.501***	0.501***	0.883***	1.189***
	(0.054)	(0.055)	(0.076)	(0.078)	(0.079)	(0.146)
PARENTCAPEX	1.014	1.083	0.164	0.161	-0.589	0.722
	(0.970)	(0.977)	(1.120)	(1.120)	(2.110)	(2.820)
PARENTDEBT	1.034***	1.046***	1.029***	1.029***	0.780	-0.165
	(0.290)	(0.291)	(0.318)	(0.322)	(0.477)	(0.732)
PARENTQ	0.127*	0.153**	-0.033	-0.034	0.367***	0.464**
	(0.073)	(0.071)	(0.135)	(0.152)	(0.108)	(0.209)
PARENTFINANCIAL	-0.186	-0.213	-0.509	-0.509	-0.643	-0.260
	(0.319)	(0.326)	(0.333)	(0.334)	(0.983)	(0.597)
PARENTPYRAMID	-1.650***	-1.652***	-1.223***	-1.222***	-1.082*	-0.262
	(0.223)	(0.226)	(0.211)	(0.214)	(0.623)	(0.751)
IPOACTIVITY	3.103***	3.267***			6.021***	
	(1.057)	(1.048)			(1.677)	
INDEXRETURN	0.126	0.131			1.903**	
	(0.230)	(0.228)			(0.770)	
Group Fixed Effects	YES	YES			YES	
Group-year Fixed Effects	NO	NO	YES	YES	NO	YES
Pseudo R^2	0.146	0.148	0.303	0.303	0.288	0.658
No. of observations	8400	8400	998	998	6189	1162

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Table IV – Univariate comparisons of group and matched non-group IPOs

The table reports the median value of selected business group IPO characteristics as well as the median difference in these characteristics between group IPOs and a set of non-group peers matched by (1) country (2) country and size, where a size peer is defined as an IPO with a market capitalization within a 80 to 120 percent range of a group IPO, and (3) country, size and listing conditions, where a listing conditions peer is defined as a peer that goes public in the same market conditions. IPO market conditions are classified as either being "hot" or "cold" based on whether the number of the IPOs in a 6-month window either preceding or following each IPO, is great than the median across our entire 10-year sample. *MARKET CAP* is U.S. dollar market capitalization at the time of listing. *IPOACTIVITY* is the number of IPOs during 6 months before to 6 months after the listing date of each sample IPO scaled by the total number of IPOs listed in the same country during the sample period. *IPOINDEXRETURN* is the return on the Datastream MSCI index for the country of listing over the three months preceding the offering. *RISK* is the standard deviation of weekly stock returns during the first year after listing. *AGE* is firm age since incorporation at listing. *CAPEX*, *ROA*, *EBIDTA*, *INTANGIBLE* are capital expenditure, net income, EBIDTA, and intangible assets scaled by total assets at the first financial year end after listing. *ANALYST* is the number of analysts covering the firm in the first year of listing. Asterisks indicate the significance of median tests between a particular cohort of IPOs against their peers.

	Family Groups				**Family Pyramid**				**Non-Family Groups**			
	Median	Country Peer Median Difference	Country & Size Peer Median Difference	Country, Size & Listing Conditions Peer Median Difference	Median	Country Peer Median Difference	Country & Size Peer Median Difference	Country, Size & Listing Conditions Peer Median Difference	Median	Country Peer Median Difference	Country & Size Peer Median Difference	Country, Size & Listing Conditions Peer Median Difference
MARKET CAP	207.91	94.655***	-	-	216.89	101.250***	-	-	287.48	152.861***	-	-
IPO ACTIVITY	10.08	-0.473***	-0.153*	-	10.14	-0.239**	0.000	-	9.85	-0.595**	-0.453**	-
IPOINDEXRETURN	2.04	0.000	-0.316	-	1.55	-0.444	-0.428	-	-0.15	-1.798***	-1.542***	-
RISK	8.16	-0.080**	0.108***	-0.011	8.32	0.144***	0.176***	0.096**	6.91	-1.146***	-0.642*	-0.702**
AGE	7.00	-1.000	0.000	0.000	6.00	-1.000	-1.000	-1.000	12.50	3.000***	2.000***	0.500**
CAPEX	6.22	0.146***	-0.195**	0.133*	6.13	0.152***	-0.194*	0.167*	4.54	-0.084***	-0.966	-1.083
ROA	7.26	-0.941	-1.750***	-1.498***	6.95	-1.170*	-2.344***	-2.180***	6.74	-0.798	-1.144	-0.717
EBITDA	13.90	-1.816	-3.502***	-2.802*	13.68	-1.959	-3.494**	-3.068**	13.39	-0.871	-1.886	-2.121
LEVERAGE	13.49	2.972***	0.099***	-0.126***	12.82	2.630***	-0.336**	-0.338*	15.68	3.382***	1.222***	0.361*
INTANGIBLE	1.99	0.628***	0.208***	0.220***	2.12	0.939***	0.685***	0.608***	1.44	0.158***	0.078***	3.714***†
ANALYST	0.00	1.733***†	0.671***†	0.588***†	0.00	1.660***†	0.574***†	0.465***†	1.00	2.228***†	0.666***†	0.546***†

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

† denotes that the median differences is zero and significant, so mean differences are reported instead.

Table V. Proportion of Primary and Secondary Shares Sold in IPOs by Family Group Firms

PRISHARES (*SECSHARES*) are primary (secondary) shares sold in an IPO as a percentage of all outstanding shares. *PYRFAMGROUPIPO* (*HORFAMGROUPIPO*) is the indicator for family-group IPOs owned through a pyramid (directly). *NONFAMGROUPIPO* is the indicator for non-family-group IPOs. *PARENTRETAINADD*, *PARENTCAPEX*, *PARENTDEBT*, are additions to retained earnings, capital expenditures, and debt scaled by year-beginning total assets for a group IPO's immediate parent. *LogPARENTSIZE*, *PARENTQ*, *PARENTFINANCIAL*, *PARENTPYRAMID* are the natural logarithm of total assets, Tobin's Q, financial firm indicator and pyramid-owned indicator, respectively, for the parent. *DUALCLASS* indicates whether an IPO has shares with differential voting rights. *GOVTOWN* (*CORPOWN*) is the indicator for non-group IPOs controlled by a government (a widely held corporation). *VENTURE* is the indicator for venture-backed IPOs. *LogOFFERSIZE* is the natural log of offer size. *RISK* is the standard deviation of first-year weekly returns. *URANK* and *TECH* are indicators for IPOs with a top-quintile underwriter and those belonging to a high-tech industry. *MARKETRETURN* is the country MSCI index return during the three months before each listing. *IPOACTIVITY* is the frequency of IPOs during 6 months before to 6 months after the listing. Regressions include country and industry dummies. Standard errors clustered by countries are reported in parentheses.

	All IPOs		Family-group IPOs		Non-family-group IPOs	
	PRISHARES	*SECSHARES*	*PRISHARES*	*SECSHARES*	*PRISHARES*	*SECSHARES*
PYRFAMGROUPIPO	-0.035***	-0.005				
	(0.009)	(0.007)				
HORFAMGROUPIPO	-0.028	-0.004				
	(0.022)	(0.012)				
NONFAMGROUPIPO	-0.058**	0.020**				
	(0.025)	(0.009)				
PARENTRETAINADD			-0.217**	0.149**	-0.463	-0.140
			(0.092)	(0.056)	(0.279)	(0.267)
LogPARENTSIZE			-0.005	-0.002	-0.002	-0.004
			(0.010)	(0.003)	(0.008)	(0.005)
PARENTCAPEX			0.211*	-0.103*	0.035	-0.441
			(0.120)	(0.057)	(0.196)	(0.376)
PARENTDEBT			-0.018	-0.021	0.055	-0.075*
			(0.036)	(0.016)	(0.122)	(0.040)
PARENTQ			-0.022	0.001	0.033**	0.002
			(0.016)	(0.006)	(0.013)	(0.010)
PARENTFINANCIAL			0.011	0.003	0.074**	-0.098*
			(0.043)	(0.014)	(0.033)	(0.048)
PARENTPYRAMID			-0.051**	0.033*	-0.047	-0.020
			(0.021)	(0.018)	(0.094)	(0.073)
DUALCLASS	0.065**	-0.022***	0.181***	0.002	0.008	-0.053
	(0.031)	(0.006)	(0.049)	(0.022)	(0.040)	(0.031)
GOVTOWN	-0.039***	0.068**				
	(0.010)	(0.026)				
CORPOWN	-0.142***	0.061***				
	(0.022)	(0.015)				
VENTURE	-0.023**	0.026***				
	(0.008)	(0.009)				
LogOFFERSIZE	0.012*	0.018***	-0.002	0.014**	0.015	0.012***
	(0.007)	(0.002)	(0.011)	(0.006)	(0.009)	(0.004)
RISK	0.162*	-0.157***	-0.302	-0.255**	-0.022	-0.364
	(0.087)	(0.035)	(0.181)	(0.111)	(0.260)	(0.248)
URANK	-0.051***	0.004	-0.028	0.001	-0.027	0.035
	(0.013)	(0.004)	(0.024)	(0.018)	(0.033)	(0.028)
TECH	-0.025***	-0.017***	-0.028	-0.003	-0.053	0.006
	(0.009)	(0.003)	(0.044)	(0.020)	(0.052)	(0.020)
IPOINDEXRETURN	0.030	-0.010	0.076	-0.012	-0.079	0.029
	(0.050)	(0.014)	(0.083)	(0.060)	(0.312)	(0.117)
IPOACTIVITY	0.020	-0.080**	0.313	-0.171	0.158	-0.291
	(0.104)	(0.033)	(0.305)	(0.177)	(0.508)	(0.547)
Adjusted R^2	0.242	0.241	0.244	0.236	0.425	0.283
N	12050	12050	309	309	224	224

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Table VI. Flotation Costs of Family Group Firms Compared to Other IPOs

LogUNDER is the natural log of one plus *UNDERPRICING* calculated as (first-day closing price – offer price)/offer price. *FEES* is the sum of fees paid to the underwriter(s) scaled by offer size. *LogTOTALCOST* is the natural log of one plus (*UNDERPRICING+FEES*). *FAMGROUPIPO* (*NONFAMGROUPIPO*) is the indicator for family (non-family) group IPOs. *PYRFAMGROUPIPO* (*HORFAMGROUPIPO*) is the indicator for pyramidal (horizontal) family group IPOs. *DUALCLASS* is an indicator variable which takes the value of one if the issuing firm uses share classes with differential voting rights. *GOVTOWN* (*CORPOWN*) is the indicator variable for IPOs whose ultimate controlling owners is a government (a widely held corporation). *VENTURE* is the indicator variable for venture-backed IPOs. *LogOFFERSIZE* is the natural log of the total number of shares issued multiplied by the offer price. *RISK* is the standard deviation of weekly stock returns during the first year after listing. *URANK* and *TECH* are indicator variables for IPOs with a top-quintile underwriter and those belonging to a high technology industry. *OVERALLOT* and *BOOKBUILD* are indicator variables for IPOs using green shoe options and the bookbulding method. *SECSALE* is the total number of secondary shares offered divided by total number of shares outstanding pre-IPO. *MARKETRETURN* is the return on the Datastream MSCI index for the country of listing over the three months preceding the offering. *IPOACTIVITY* is the number of IPOs during 6 months before to 6 months after the listing date of each sample IPO scaled by the total number of IPOs listed in the same country during the sample period. Regressions include country and industry dummies. Standard errors clustered by countries are reported in parentheses.

	LogUNDER		*FEES*		*LogTOTALCOST*	
FAMGROUPIPO	-0.054***		-0.002*		-0.051**	
	(0.016)		(0.001)		(0.024)	
PYRFAMGROUPIPO		-0.057***		-0.002		-0.056**
		(0.016)		(0.001)		(0.023)
HORFAMGROUPIPO		-0.045		-0.003*		-0.037
		(0.032)		(0.002)		(0.047)
NONFAMGROUPIPO	-0.096***	-0.096***	-0.003*	-0.003*	-0.125***	-0.125***
	(0.032)	(0.032)	(0.002)	(0.002)	(0.022)	(0.022)
DUALCLASS	0.038**	0.038**	-0.001	-0.001	0.056***	0.055***
	(0.017)	(0.017)	(0.001)	(0.001)	(0.018)	(0.018)
GOVTOWN	0.037	0.037	-0.006***	-0.006***	0.049*	0.050*
	(0.031)	(0.031)	(0.002)	(0.002)	(0.029)	(0.029)
CORPOWN	0.005	0.005	-0.001	-0.001	-0.007	-0.008
	(0.018)	(0.018)	(0.001)	(0.001)	(0.011)	(0.011)
VENTURE	0.018	0.018	0.001	0.001	0.015	0.015
	(0.028)	(0.028)	(0.001)	(0.001)	(0.021)	(0.021)
LogOFFERSIZE	-0.012	-0.012	-0.003***	-0.003***	-0.007	-0.007
	(0.012)	(0.012)	(0.001)	(0.001)	(0.018)	(0.018)
RISK	0.801***	0.802***	0.020***	0.020***	0.894***	0.894***
	(0.219)	(0.219)	(0.008)	(0.008)	(0.196)	(0.196)
URANK	0.024**	0.024**	-0.002	-0.002	0.028***	0.028***
	(0.010)	(0.010)	(0.001)	(0.001)	(0.010)	(0.010)
TECH	0.041***	0.041***	0.002	0.002	0.063***	0.063***
	(0.015)	(0.015)	(0.001)	(0.001)	(0.009)	(0.009)
PRISHARES	-0.018	-0.018	0.001	0.001	-0.110***	-0.110***
	(0.044)	(0.044)	(0.001)	(0.001)	(0.038)	(0.038)
SECSHARES	-0.074	-0.056	-0.000	-0.000	-0.190**	-0.190**
	(0.080)	(0.050)	(0.005)	(0.005)	(0.092)	(0.092)
OVERALLOT	-0.008	-0.008	-0.000	-0.000	-0.039*	-0.039**
	(0.020)	(0.020)	(0.002)	(0.002)	(0.019)	(0.019)
BOOKBUILD	0.079	0.079	0.008***	0.008***	0.122**	0.122**
	(0.048)	(0.048)	(0.002)	(0.002)	(0.053)	(0.053)
IPOINDEXRETURN	0.504***	0.504***	0.008*	0.008*	0.578***	0.578***
	(0.147)	(0.147)	(0.004)	(0.004)	(0.185)	(0.185)
IPOACTIVITY	0.038	0.039	0.003	0.003	0.280	0.278
	(0.214)	(0.214)	(0.014)	(0.014)	(0.353)	(0.354)
Adjusted R^2	0.119	0.119	0.437	0.437	0.152	0.152
N	11913	11913	6758	6758	6716	6716

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Table VII. Cox Proportional Hazard Model of IPO Firm Failures within 5 Years of Listing

GROUPIPO (*FAMGROUPIPO*) indicates if an IPO belongs to group (family group). *PYRFAMGROUPIPO* (*HORFAMGROUPIPO*) is the indicator for pyramidal (horizontal) family group IPOs. *DUALCLASS* indicates if an IPO firm uses dual-class shares. Models 1 includes but do not report the following control variables. *GOVTOWN* (*CORPOWN*) is the indicator variable for IPOs whose ultimate controlling owners is a government (a widely held corporation). *VENTURE* is the indicator variable for venture-backed IPOs. *LogSIZE* is the log of US-dollar market capitalization. *RISK* is the standard deviation of weekly stock returns during the first year after listing. *URANK* is an indicator variable for top-quintile underwriters. *PCTRETAINED* is the percentage of shares retained by pre-IPO owners. Models 2 to 5 include the following additional variables. *DEBT*, *INTANGIBLE*, *CAPEX*, and *EBITDA* is the ratio of total liabilities, intangible assets, capital expenditure and earnings before interest, tax, depreciation and amortization scaled by total assets (all are measured at the first balance date after listing). *DIVYIELD* is the ratio of dividend-per-share to share price. *LogAGE* is the natural log of firm age (number of years from incorporation to listing). *LogANALYST* is the logarithm of one plus the number of analysts covering a firm. *IPOINDEXRETURN* is the country MSCI index return over the three months preceding the offering. *IPOACTIVITY* is the number of IPOs during one year surrounding the listing date of each IPO scaled by the total number of IPOs reported in the same country. Models 5 and 6 estimate a dynamic Cox model incorporating the time-varying variable $INDEXRETURN_t$, which for each IPO is country MSCI index return in year *t* after listing (up to 5 years). Regressions include listing year, country and industry dummies. Country cluster standard errors are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
FAMGROUPIPO	-0.537*	-1.033**		-1.102**	
	(0.282)	(0.486)		(0.488)	
PYRFAMGROUPIPO			-1.451*		-1.939**
			(0.849)		(0.790)
HORFAMGROUPIPO			-0.318	-1.534	-0.493
			(0.757)	(1.101)	(0.761)
NONFAMGROUPIPO	-0.865**	-0.907	-0.905	-1.220***	-1.530
	(0.412)	(1.098)	(1.101)	(0.268)	(1.104)
DUALCLASS	-1.069**	-1.384***	-1.390***	-1.102**	-1.222***
	(0.429)	(0.239)	(0.244)	(0.488)	(0.280)
FAMGROUPIPO				3.455***	
**INDEXRETURN*$_t$				(0.550)	
FAMGROUPIPO				1.880	
**INDEXRETURN*$_{t-1}$				(1.989)	
PYRFAMGROUPIPO					3.086***
**INDEXRETURN*$_t$					(0.508)
HORFAMGROUPIPO					2.650***
**INDEXRETURN*$_t$					(0.424)
PYRFAMGROUPIPO					-1.684*
**INDEXRETURN*$_{t-1}$					(1.008)
HORFAMGROUPIPO					3.446***
**INDEXRETURN*$_{t-1}$					(0.585)
NONFAMGROUPIPO				-3.625***	-3.625***
**INDEXRETURN*$_t$				(1.027)	(1.030)
NONFAMGROUPIPO				-0.058	-0.059
**INDEXRETURN*$_{t-1}$				(0.676)	(0.676)
DUALCLASS				1.860***	1.831***
**INDEXRETURN*$_t$				(0.425)	(0.441)
DUALCLASS				1.157***	1.171***
**INDEXRETURN*$_{t-1}$				(0.255)	(0.244)
INDEXRETURN$_t$				-1.712***	-1.713***
				(0.335)	(0.336)
INDEXRETURN$_{t-1}$				-1.905***	-1.901***
				(0.356)	(0.358)
Pseudo R^2	0.069	0.140	0.140	0.150	0.150
N	12120	6444	6444	28848	28848

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Table VIII. SEO Sensitivity to Market Conditions in the First 5 years

The table reports estimates from OLS firm-fixed effects models of the size of an IPO firm's seasoned equity offerings (SEO) relative to the size of its IPO, for SEOs occurring in the first five years after their listing. Sample years range from 2002 to 2011 depending on the IPO listing year (1997-2007) .The dependent variable is total yearly USD proceeds from primary market issues to both public and private investors scaled by the USD proceeds raised from the IPO. $CAPEX_{t-1}$ is the lag of capital expenditures scaled the previous year's capital stock reported annually. ROA_{t-1} is the lag of EBIT scaled by the previous year's capital stock. Q_{t-1} is the previous periods Tobin's Q ratio. $LogASSETS_{t-1}$ is the natural logarithm of the total USD assets in the previous year. $INDEXRETURN_t$ is the contemporaneous MSCI country stock market index return during the calendar year in which the SEO tool place. $INDEXRETURN_{t-1}$ is the MSCI country stock market index return in the calendar year preceding the SEO year. For comparison purposes Models (1) – (6) estimate various subsamples as follows (1) Family Group IPO firms (2) Family Group Pyramid IPO firms (3) Family Group Horizontal IPO Firms (4) Non-family Group IPO Firms (5) IPO Firms employing dual class shares (6) Stand Alone IPO Firms (not employing dual class shares). Models (7) provide a more direct statistical comparison of the sensitivities of SEOs to market conditions of our subsamples relative to independent firms (the omitted group) by using interaction terms. Standard errors clustered by firms are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	-0.018	-0.053	0.043	-0.014	0.384***	0.212***	0.208***
	(0.077)	(0.086)	(0.152)	(0.127)	(0.102)	(0.018)	(0.017)
$CAPEX_{t-1}$	0.021	0.039	-0.016	0.067	0.103***	0.024***	0.027***
	(0.032)	(0.041)	(0.052)	(0.062)	(0.039)	(0.009)	(0.008)
ROA_{t-1}	-0.005	-0.007	-0.004	-0.019	0.002	0.000	-0.000
	(0.010)	(0.008)	(0.023)	(0.019)	(0.007)	(0.002)	(0.002)
Q_{t-1}	0.005*	0.004	0.008	-0.002	-0.000	0.003***	0.003***
	(0.003)	(0.004)	(0.007)	(0.003)	(0.003)	(0.001)	(0.001)
$LogASSETS_{t-1}$	0.002	0.005	-0.002	0.002	-0.029***	-0.016***	-0.016***
	(0.006)	(0.007)	(0.012)	(0.009)	(0.008)	(0.002)	(0.001)
$INDEXRETURN_t$	0.002	-0.002	0.006	-0.014	0.005	0.019***	0.019***
	(0.005)	(0.009)	(0.006)	(0.009)	(0.006)	(0.002)	(0.002)
$INDEXRETURN_{t-1}$	-0.003	-0.007	0.002	0.003	0.005	0.005***	0.006***
	(0.004)	(0.006)	(0.005)	(0.007)	(0.007)	(0.002)	(0.002)
FAMGROUPIPO $*INDEXRETURN_t$							-0.018***
							(0.006)
FAMGROUPIPO $*INDEXRETURN_{t-1}$							-0.008*
							(0.005)
NONFAMGROUPIPO $* INDEXRETURN_t$							-0.006
							(0.007)
NONFAMGROUPIPO $* INDEXRETURN_{t-1}$							-0.031***
							(0.009)
DUALCLASS $*INDEXRETURN_t$							-0.007
							(0.006)
DUALCLASS $*INDEXRETURN_{t-1}$							0.003
							(0.007)
Adjusted R^2	0.000	-0.000	-0.003	0.004	0.036	0.015	0.014
N	1888	1236	652	1166	1608	38759	43115

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Table IX. Investment Sensitivity Models IPO Firms in their First 5 years

The table reports estimates from OLS firm-fixed effects models of the investment sensitivity of IPO firms for the first five years after their listing. Sample years range from 2002 to 2011 depending on the IPO listing year (1997-2007) .The dependant variable is capital expenditures scaled the previous year's capital stock reported annually. Q_{t-1} is the previous periods Tobin's Q ratio. $CASHFLOWS_t$ is net income less depreciation and amortization and after extraordinary items scaled by the previous year's capital stock. $INDEXRETURN_t$ is the contemporaneous MSCI country stock market index return during the one period ending at the balance data at which capital expenditures are reported. $INDEXRETURN_{t-1}$ is the MSCI country stock market index return for the preceding year to that where capital expenditures are made. For comparison purposes Models (1) – (6) estimate investment sensitivities for various subsamples as follows (1) Family Group IPO firms (2) Family Group Pyramid IPO firms (3) Family Group Horizontal IPO Firms (4) Non-family Group IPO Firms (5) IPO Firms employing dual class shares (6) Stand Alone IPO Firms (not employing dual class shares). Models (7) provides a more direct statistical comparison of the investment sensitivities of our subsamples relative to independent firms (the omitted group) by using interaction terms. Standard errors clustered by firms are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0.031***	0.035***	0.023***	0.038***	0.021***	0.036***	0.036***
	(0.005)	(0.005)	(0.008)	(0.005)	(0.004)	(0.001)	(0.001)
Q_{t-1}	0.018***	0.016***	0.023***	0.013***	0.016***	0.014***	0.014***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.002)	(0.001)	(0.001)
$CASHFLOWS_t$	-0.014	-0.014	-0.015	-0.036	-0.001	0.009**	0.010***
	(0.016)	(0.018)	(0.032)	(0.030)	(0.018)	(0.004)	(0.004)
$INDEXRETURN_t$	0.013**	0.005	0.020***	0.003	0.018**	0.005***	0.004***
	(0.005)	(0.006)	(0.008)	(0.006)	(0.007)	(0.001)	(0.001)
$INDEXRETURN_{t-1}$	0.005	0.006	0.005	0.018***	0.021***	0.014***	0.014***
	(0.003)	(0.005)	(0.005)	(0.006)	(0.005)	(0.001)	(0.001)
FAMGROUPIPO							0.008*
$*INDEXRETURN_t$							(0.005)
FAMGROUPIPO							-0.010***
$*INDEXRETURN_{t-1}$							(0.004)
$FAMGROUPIPO*Q_{t-1}$							0.005*
							(0.003)
FAMGROUPIPO							-0.025
**CASHFLOWS*							(0.016)
NONFAMGROUPIPO							-0.002
$* INDEXRETURN_t$							(0.007)
NONFAMGROUPIPO							0.002
$* INDEXRETURN_{t-1}$							(0.006)
NONFAMGROUPIPO							0.001
$*Q_{t-1}$							(0.003)
NONFAMGROUPIPO							-0.050*
$*CASHFLOWS_t$							(0.029)
DUALCLASS							0.010
$*INDEXRETURN_t$							(0.006)
DUALCLASS							0.011**
$*INDEXRETURN_{t-1}$							(0.005)
DUALCLASS							0.002
$*Q_{t-1}$							(0.002)
DUALCLASS							-0.005
**CASHFLOWS*							(0.018)
Adjusted R^2	0.082	0.068	0.107	0.071	0.166	0.070	0.073
N	1955	1239	716	1183	1466	33922	37955

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Table X. Group affiliation and firm value five years after listing.

The dependent variable is the ratio of market value of total assets to book value of total assets (Q), measured at the end of the fifth fiscal year after the listing date of an IPO firm. *GROUPIPO* (*FAMGROUPIPO*) is an indicator variable that equals one if an issuing firm belongs to group (family group), and zero otherwise. *DUALCLASS* is an indicator variable for IPO firms that use dual-class shares. *LogSIZE* is the log of US-dollar market capitalization. *LogAGE* is the natural log of firm age (number of years from incorporation to listing). *ASSETGROWTH* is the three-year average annual growth rate in asset. *DEBT* is total interest-paying debt divided by total assets. *CAPEX* is the ratio of capital expenditures to total assets. *DIVYIELD* is the ex-ante five-year average of the ratio of dividend-per-share to share price. *INTANGIBLE* is the ratio of intangible assets to total assets. *LogANALYST* is the logarithm of one plus the number of analysts covering a firm. The first stage of the treatment effects regressions uses the following instruments. *RISK* is the standard deviation of weekly stock returns during the first year after listing. *IPOINDEXRETURN* is the return on the Datastream MSCI index for the country of listing over the three months preceding the offering. *IPOACTIVITY* is the number of IPOs during the period of 6 months before to 6 months after the listing date of each sample IPO scaled by the total number of IPOs listed in the same country during the sample period. All regressions include year, country and industry dummies. Standard errors clustered by countries are reported in parentheses.

	OLS Estimation		Treatment-Effects Estimation	
	All IPOs	Excluding Corp & Govt IPOs	All IPOs	Excluding Corp & Govt IPOs
GROUPIPO	-0.108**		2.465***	
	(0.052)		(0.251)	
FAMGROUPIPO		-0.105		2.575***
		(0.079)		(0.262)
DUALCLASS	0.014	-0.031	0.034	-0.046
	(0.089)	(0.113)	(0.095)	(0.134)
GOVTOWN	-0.283**		-0.192	
	(0.134)		(0.117)	
CORPOWN	-0.487***		-0.394***	
	(0.044)		(0.045)	
VENTURE	-0.218**	-0.217**	-0.169**	-0.194***
	(0.089)	(0.088)	(0.071)	(0.073)
LogSIZE	0.233***	0.236***	0.194***	0.215***
	(0.042)	(0.044)	(0.041)	(0.046)
LogAGE	-0.160***	-0.170***	-0.145**	-0.150**
	(0.054)	(0.060)	(0.058)	(0.059)
DEBT	0.245	0.324	0.241	0.287
	(0.178)	(0.194)	(0.150)	(0.185)
ASSETGROWTH	-0.030*	-0.036**	-0.010	-0.017
	(0.016)	(0.015)	(0.024)	(0.019)
CAPEX	-0.794***	-0.879***	-0.840***	-0.853***
	(0.222)	(0.243)	(0.254)	(0.286)
DIVYIELD	-0.004	-0.003	-0.003*	-0.003*
	(0.002)	(0.002)	(0.002)	(0.002)
INTANGIBLES	-1.297***	-1.378***	-1.270***	-1.371***
	(0.175)	(0.165)	(0.192)	(0.207)
LogANALYST	-0.231***	-0.241**	-0.275***	-0.278***
	(0.081)	(0.091)	(0.079)	(0.087)
Adjusted R_2	0.103	0.104		
N	8697	8019	8380	7708

***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.