ecgi

Crises as Opportunities for Growth: The Strategic Value of Business Group Affiliation

Finance Working Paper N° 781/2021
January 2022

Ronald W. Masulis
University of New South Wales, ABFER, FIRN, FMA, National University of Singapore, and ECGI

Peter K. Pham
University of New South Wales and FIRN

Jason Zein
University of New South Wales and FIRN

Alvin E. S. Ang
The Hang Seng University of Hong Kong

ECGI Working Paper Series in Finance

Crises as Opportunities for Growth: The Strategic Value of Business Group Affiliation

Working Paper N° 781/2021

January 2022

Ronald W. Masulis
Peter K. Pham
Jason Zein
Alvin E. S. Ang

Abstract

We document a novel strategic motive for family business groups to utilize their internal capital markets (ICMs) during financial crises. We find that crisis-period group ICM activity is targeted toward exerting product market dominance over standalone rivals. Groups make significant post-crisis gains in market share that are concentrated among affiliates (and industry segments within affiliates) operating in highly competitive product markets, where capturing such gains is difficult in normal times. These patterns are observed only in emerging markets, suggesting that ICMs enable groups to exploit crises to realize long-term competitive advantages only when rivals face chronic financing frictions.

Keywords: Family Business Groups, Product-market competition, Financial crisis

JEL Classifications: G01, G31, G32

Ronald W. Masulis
Scientia Professor in Finance
University of New South Wales, UNSW School of Business
UNSW Business School Building, Kensington Campus
Sydney, NSW 2052, Australia
phone: + 61 (2) 9385 5860
e-mail: ron.masulis@unsw.edu.au

Peter K. Pham*
Associate Professor
University of New South Wales, School of Business
Gate 2 High Street, Kensington Campus UNSW
Sydney, NSW 2052, Australia
phone: +61 29 385 5875
e-mail: peter.pham@unsw.edu.au

Jason Zein
Associate Professor
University of New South Wales, School of Business
Gate 2 High Street, Kensington Campus UNSW
Sydney, NSW 2052, Australia
e-mail: j.zein@unsw.edu.au

Alvin E. S. Ang
Assistant Professor
The Hang Seng University of Hong Kong
Hang Shin Link, Siu Lek Yuen
Shatin N.T., Hong Kong
phone: +(852) 3963 5653
e-mail: Alvinang@hsu.edu.hk

*Corresponding Author

Crises as Opportunities for Growth: The Strategic Value of Business Group Affiliation

Ronald W. Masulis[a], Peter Kien Pham[a,*], Jason Zein[a], Alvin E. S. Ang[b,a]

[a]*School of Banking and Finance, UNSW Business School, UNSW Sydney NSW 2052, Australia*
[b]*Department of Economics and Finance, School of Business, The Hang Seng University of Hong Kong Shatin, Hong Kong*

Journal of Financial and Quantitative Analysis, forthcoming

December 21, 2021

Abstract

We document a novel strategic motive for family business groups to utilize their internal capital markets (ICMs) during financial crises. We find that crisis-period group ICM activity is targeted toward exerting product market dominance over standalone rivals. Groups make significant post-crisis gains in market share that are concentrated among affiliates (and industry segments within affiliates) operating in highly competitive product markets, where capturing such gains is difficult in normal times. These patterns are observed only in emerging markets, suggesting that ICMs enable groups to exploit crises to realize long-term competitive advantages only when rivals face chronic financing frictions.

Keywords: Family Business Groups, Product-market competition, Financial crisis

JEL classification: G01, G31, G32

*Corresponding author. Address: Room 307, UNSW Business School, UNSW Sydney; Phone: +61 2 9385 5875; Fax: +61 2 9385 6347; Email: peter.pham@unsw.edu.au

Email addresses: ron.masulis@unsw.edu.au (Ronald W. Masulis), j.zein@unsw.edu.au (Jason Zein), alvinang@hsu.edu.hk (Alvin E. S. Ang)

"We believe that crisis is our opportunity for our future growth." - Hyun-Suk Kim, CEO and President, Samsung Electronics.[1]

1. Introduction

Around the world, a substantial fraction of publicly listed firms are members of business groups. These group structures arise when two or more firms become linked together via common ownership ties to a single controlling shareholder, often a wealthy family (Masulis et al., 2011). The extant literature has voiced numerous concerns about the corporate governance impact of business groups, arguing that families can use these structures to consolidate control and entrench themselves against outside shareholder intervention and government reforms.[2] Yet, surprisingly limited empirical evidence is available regarding the link between business group prevalence and aggregate levels of competition in an economy. Morck et al. (2005) warn that business groups can create "economic entrenchment" by strategically deploying resources to perpetuate their dominance over other firms. Echoing this concern, Almeida and Wolfenzon (2006) posit a theory whereby such entrenchment can prevent the efficient allocation of capital to valuable standalone projects, while Boutin et al. (2013) provide evidence that groups' economic power limits competition by preventing entry of new firms.

While these studies highlight the broad and potentially serious consequences of business groups' economic impacts, the conditions under which groups are able to expand their market power and strengthen their competitive positions over time are not well documented. Under the assumption that investor protection is continually improving over time (see Spamann, 2009), the incentives for families to control large business groups should dissipate as their ability to consume private benefits becomes more constrained (La Porta et al., 1999; Almeida and Wolfenzon, 2006). Yet, in many markets around the world, family groups continue to

[1] "A rare look inside Samsung's secretive ideas lab", *CNN.com*, September 17, 2019.

[2] See La Porta et al. (1999), Morck et al. (2005), Bertrand et al. (2008), Djankov et al. (2008), among others.

expand, with no end to their dominance in sight.[3] For example, in South Korea from 2002 to 2012, a period which includes the Global Financial Crisis (GFC), the total annual sales as a percentage of GDP of the 10 largest business groups increased from 53% to 80%, with two thirds of the gain occurring after this crisis (Kwon, 2012).

The above observations motivate our study's research question: Do business groups exploit a crisis to expand their economic power? Thus far, the empirical evidence on this question in the business group literature is lacking. This is surprising given that internal financing benefits of group affiliation have long been associated with what the product market competition literature terms a "deep pockets" advantage, that is, the ability of financially strong firms to establish market dominance over financially constrained rivals (Maksimovic and Phillips, 2002; Faure-Grimaud and Inderst, 2005; Cestone and Fumagalli, 2005; Boutin et al., 2013).[4] We argue that a business group's ICM should provide its affiliates with a clear strategic advantage during crisis periods, allowing them to capture market share from standalone rivals with limited access to external capital. This echoes the observation in Phillips (1995) who states that "*the deep purse has value when the capital markets are closed to the firm; otherwise, a firm can borrow when faced with 'predatory' behavior by rivals*".

While past studies have analyzed the impact of business group membership on corporate investment levels *during* financial crises, the longer term strategic product market outcomes of such activity remain unclear. On the one hand, the evidence from Lins et al. (2013) suggests that the main strategic purpose of crisis period ICM re-allocations is to ensure the survival of the group's affiliates rather than to expand its market power. In particular, using a multi-country sample of business groups, they find that in response to liquidity shocks precipitated by the 2008-2009 Global Financial Crisis, family groups cut investments (by more than non-family groups) to ensure the survival of their hard hit members and thereby

[3] Masulis et al. (2015) show that there is a net increase in both the number of business groups and the number of listed group affiliates over the 2002-2007 period. They also show that the fraction of total market capitalization attributable to the largest business groups is also rising over the same period in some emerging markets.

[4] See also Telser, 1966; Benoit, 1984; Brander and Lewis, 1988; Bolton and Scharfstein, 1990 for theoretical models on this theme.

preserve the family's private benefits of control.[5] Such actions are generally inconsistent with the goal of increasing market power.

On the other hand, single-country evidence from two small economies, Korea (Almeida et al., 2015) and Chile (Buchuk et al., 2019), document that groups firms cut their investment by less than similar non-group firms, especially for group affiliates with high growth opportunities (high Tobins Q). However, these studies do not consider the longer term strategic objectives that might be behind such investment behavior. Relatively greater crisis period investment by group firms is not necessarily motivated by the goal of dominating competitors.[6] For example, while groups might utilize their ICMs during crises to help high Q affiliates meet their *pre-existing* investment plans, this is not a strategic response to an altered external financing environment. Rather, the decision to reallocate internal capital to these firms is simply a *financially* efficient response. From a strategic perspective however, this can yield little benefit to their competitive positions because a group's high Q affiliates may already enjoy market dominance. Indeed, this may be the primary reason for their high Q (see Lindenberg and Ross (1981)).

Our analysis recognizes that business groups do not operate in a competitive vacuum, but rather strategically interact with their rivals. We argue that such considerations can also explain how a business group utilizes its ICM during a crisis.[7] Analyzing this aspect of a group's behavior is important because it allows us to uncover a new explanation for the continued dominance of family business groups, namely exploiting crises as an opportunity to achieve product market dominance over their standalone rivals.

Our analysis also recognizes that a group's success in using their deep pockets during crises to establish longer term product market dominance depends critically on how effectively their competitors can counter these actions. This is likely to vary across countries depending

[5] Massa et al. (2021) further argue that, during bad times, groups may transfer assets across affiliates in order to ensure the survival of their "central firms". They show that such firms have lower risk and therefore lower expected returns.

[6] Even in a general sense, there is no systematic and direct evidence linking investment levels to longer term changes in within-industry competitive positions

[7] In a general context Fresard and Valta (2016) provide theory and evidence showing that firms' investment decisions are strategically influenced by their competitive positions vis-à-vis their rivals

on the external financing environment. In developed capital markets, standalone firms are able to effectively respond to a group's competitive threats by quickly regaining access to external finance when capital markets return to normal.[8] If groups anticipate this response, then their incentive to use their deep pockets for competitive purposes can be seriously diminished. In contrast, for groups in emerging markets, any competitive gains they achieve during a crisis period can more easily be defended and built upon in the long run. This is because standalone firms will find it difficult to claw back product market share losses due to a chronic lack of access to external finance that persists even after capital market conditions return to normal.

Using the 2008-2009 Global Financial Crisis (GFC) as our setting, we analyze the strategic responses to the crisis with a comprehensive sample of family business groups from 45 countries around the world. Given our coverage of both developed and emerging capital markets, the GFC is an ideal external financial shock as it effectively closes the external capital markets to virtually all firms around the world (Campello et al., 2010). Such conditions amplify a group's deep-pockets advantage and allows us to more clearly observe its effects on product market competition. It is significantly more difficult to identify these same effects in normal times because the competitive benefits of deep pockets are likely to occur at a more incremental pace (or perhaps not at all), and thus are difficult to disentangle from other factors that could explain group dominance, such as unobservable controlling family skill levels and favorable government policies.

Our baseline analysis relies on a difference-in-differences matching estimator methodology to compare the pre-to-post crisis changes in market share experienced by group firms to a matched set of control firms. The use of a matching estimator is critical in our setting because a common issue when studying business group affiliates is that they tend to be substantially larger than most firms in the local economy. Using OLS regression models in such a setting

[8]It is also possible that in developed capital markets standalone firms face less severe declines in their access to external funds in financial crises periods, because they can access many alternative pools of capital, such as lines of credit and private placements with institutional investors. Also, competition regulators in developed markets tend to be more powerful and are more likely to limit the long term gains group firms can retain.

can lead to a violation of the common support assumption due to a lack of covariate overlap between treated and control firms. Our matching estimator approach ensures that we compare group firms to standalone firms with similar scale and financial capacity by matching on covariates such as size, cash holdings, industry sector, and pre-crisis market share. Our cross country approach also allows us to exclude from the analysis, countries where our matching procedure is unable to close the size gap between group and non-group firms. This helps to ease concerns that group affiliation is correlated with other underlying firm characteristics that could also explain a group's ability to gain market share in the aftermath of the crisis.

Our results show a significant pre-to-post crisis increase in product market shares of family group firms relative to similar non-groups firms, but only in emerging markets. Here, we find that groups expand their relative market shares by approximately 0.54 percentage points more than matched control firms over a 3-year horizon starting at the onset of the crisis. This rises to 1.13 percentage points over a longer 5-year horizon, or about one fifth of the average pre-crisis market share in a typical emerging market. We detect no such differences in developed markets, consistent with the notion that groups have limited capacity to generate long-term strategic benefits from a transitory shock when capital markets are resilient and well-functioning. Both the results for emerging and developed markets are robust to a variety of alternative matching criteria, including those related to industry definitions. To ensure that the market share increase of group firms observed for emerging markets is specific to the crisis period, we also examine other years before and after the GFC as placebo crisis years, but they do not produce any significant difference-in-differences in market share.

We next specifically examine the strategic dimension of groups' crisis-period ICM activity. First, we analyze whether a group deploys its deep pockets advantage in industries where affiliated firms can realize the most valuable competitive gains. We argue that the crisis opens up a strategic window of opportunity for group affiliates to establish their ascendancy in highly competitive industries, where in normal times, making such product market inroads can be too costly. To test this argument, we split the sample into two groups based on the pre-crisis levels of industry concentration (to capture rivalry among existing players) and by

average firm age in an industry (to proxy for ease in new firm entry). Our analysis confirms that product market gains are largely attributable to group firms operating in industries with high pre-crisis competition (measured by low market concentration and high entry rates). Second, we exploit the fact that firms often operate across multiple industries to examine how market share gains differ *within a group firm's industry segments*. When examining industry segments where the group firm is *not* an industry leader, we find that their relative market share gains are significantly more pronounced compared to other industry segments where the group firm has already achieved market dominance.

Another important aspect of our analysis is linking the observed gains in product market shares to the level of ICM activity in a group. Prior studies have shown that group ICMs become more active during crises to bridge the temporary gap between desired investment and financing capacity facing some group members (Almeida et al., 2015; Santioni et al., 2019; Buchuk et al., 2019). Since our focus is on whether group ICM re-allocations occur for strategic competitive reasons, we test whether groups who experience greater gains in product market shares are associated with higher crisis-period ICM activity. We identify business groups with particularly active crisis-period ICMs using two approaches. The first is based on a new measure of the size of intra-group investments, or investment in affiliates (where reporting is mandated by international accounting standards). The second approach involves instances of intra-group purchases of equity blocks. We show that both measures are associated with significantly higher increases in market share (of up to two percentage points over a 5-year horizon), but only for emerging markets.

We explore several possible channels through which family groups might use their ICMs during the crisis period to grow their market shares. First, they may do this organically through their investment programs. For example, groups may maintain or even expand their production capacity and product development, in anticipation of poaching additional customers away from financially weakened rivals. We find that, during the crisis, family group firms in emerging markets cut their capital expenditures (CAPEX) by less than other firms. However, unlike previous studies, we clearly show that this difference is concentrated

in young industries with high pre-crisis levels of competition – the types of industries where market share gains are difficult to achieve in normal times. When we examine developed markets, we find that the crisis-period CAPEX of group affiliates actually declines more than other firms, consistent with our earlier market share results.

We next attempt to demonstrate a connection between the above documented CAPEX patterns and a group's product market strategies. To do this, we take a similar approach to Mukherjee et al. (2017) and rely on a textual analysis of company press releases, media articles and exchange announcements (available from the RavenPack News Analytics database), to identify events that would indicate a firm's growing product market presence. We then analyze pre-to-post crisis changes in several types of product market expansion events, such as new product releases, entry into new markets, and production increases, for group versus non-group firms. We find in the aftermath of the crisis that these expansion events are more likely to occur in group firms than other firms. Overall, while our results for 22 emerging markets in our international sample are consistent with Almeida et al. (2015), who document higher capital expenditures by Korean Chaebols during the Asian Financial Crisis, our findings go one step further by connecting such patterns to a group realizing its strategic objective of expanding its market share. These results also point to an important channel through which groups can achieve superior post-crisis performance as documented by Almeida et al. (2015) and which we also find for our much larger and more diverse sample of business groups outlined below.

Second, market share gains can occur through inorganic expansions, which we examine by analyzing groups' acquisition behavior. We again find that in emerging markets the likelihood of group affiliates engaging in M&A activity increases during the crisis period relative to that of non-group firms. However, the same increase in group firm M&A activity is not observed in developed markets. Third, a group's deep pockets can allow affiliated firms to sustain their operations as their competitors fail (or become financially distressed) during the GFC, leaving product market gaps available to be filled by group affiliates. Using a Cox proportional hazard model, we find that following the crisis, listed group affiliates in

emerging markets are significantly less likely to fail following the crisis, in line with the results in Santioni et al. (2019) for Italian firms. However, we also show that it is not simply group firms' superior survivability that solely explains their increases in market share

Of course, capturing market shares is not necessarily wealth creating for all shareholders, since it can involve costly investments incurred for the purpose of empire building or private rent seeking or expansions that cannot be sustained. Family groups may also willingly incur such shareholder wealth decreasing actions (e.g. large advertising campaigns) if product market dominance provides them with added private benefits such as greater political power and family-brand visibility (Morck et al., 2005). Groups may also underestimate the speed at which rivals can respond or overestimate their own ability to retain crisis period gains in market share.

To assess whether growth in market share around financial crises is profitable, we analyze the buy-and-hold stock returns of group firms from the onset of the crisis period for up to five years thereafter. We show that group firms in emerging markets significantly outperform other similar non-group firms in terms of stock returns, indicating that family groups gains in market share do not represent over-investment. These results also expand on prior studies that document positive short-term consequence of business groups investments during crises (Almeida et al., 2015; Lins et al., 2013). By analyzing stock returns over a 5-year horizon from the onset of the crisis, we are better able to gauge whether new investments made in the depths of the stock market cycle reap long-term financial gains for family group firms in the recovery period. Our findings suggest that by exploiting strategic opportunities presented by financial crises, groups create long-term economic benefits for all their shareholders.

Our study builds on the literature that shows how business groups can insulate their affiliates from external capital market shocks (Almeida et al., 2015; Santioni et al., 2019; Buchuk et al., 2019). However, none of these studies documents the longer term product market consequences of such actions.[9] Our findings demonstrate that strategic imperatives

[9] In the related context of (single-firm) conglomerates, Gopalan and Xie (2011), Matvos and Seru (2014), Kuppuswamy and Villalonga (2016), and Matvos et al. (2018) also show that ICMs of US multi-division firms are more active during episodes of severe external capital market dislocation.

to enhance their competitive positions and expand their economic influence are additional group objectives pursued through their crisis-period ICM activity.[10]

Our results also highlight an important connection between the business group and industrial organization literatures that focuses on the interaction between financial decisions and product market competition, such as the theoretical work of Bolton and Scharfstein (1990) and Faure-Grimaud and Inderst (2005). Empirically, Fresard (2010) makes use of exogenous decreases in barriers to competition due to tariff cuts to show that a firm's financial strength (proxied by their cash reserves) leads to a systematic increase in their product market share, at the expense of industry rivals. In a business group setting, Kim (2016) analyzes competition among Korean business groups in the aftermath of the Asian Financial Crisis. She shows that groups in a position of relative financial strength achieve higher post-crisis sales growth rates compared to other groups. However, Kim's study does not provide a comparison between group firms and standalone firms to demonstrate the consequence of having access to an ICM. Using a sample of French firms, Boutin et al. (2013) show that groups with deep-pockets negatively affect industry entry rates in normal times. Complementing these studies, our study provides cross-country evidence that makes use of a sudden and unanticipated global shock to external financing as a means to distinguish a group's deep pockets benefits from other possible explanations (such as outstanding family talent). Our unique data and setting allow us to clearly document the considerable variations in the extent to which groups can capture these benefits – both across country-level long-term external financing conditions and across industry-specific competition environments.

More broadly, our study contributes to the literature on the segmentation of world equity markets. Despite decades of strong domestic economic growth and financial globalization reforms, countries classified as emerging markets continue to lag behind developed markets in many respects including equity trading activity, capital raising, financial intermediaries and

[10] Similar crisis-period benefits are documented in a private-equity setting by Bernstein et al. (2019). They show that portfolio firms of private equity funds with deep pockets (derived from the fund's pre-committed, but untapped limited partner capital), are able to maintain investment and increase market share during the post-GFC period.

institutional investor development (Bekaert et al., 2011; Carrieri et al., 2013; Hanselaar et al., 2019), and they remain generally under-represented in international investors' portfolios (Bekaert and Harvey, 2017). As argued by Almeida and Wolfenzon (2006), business groups may contribute to perpetuating these persistent differences across countries, as their ICMs can actually substitute for the role of financial intermediary lending within groups, thereby weakening the overall demand for the services of financial intermediaries and reducing external capital available to standalone firms. Our empirical results are consistent with this hypothesis by showing that family business groups in emerging markets are able to exploit financial crises to raise competitive pressures on their standalone rivals and to significantly strengthen their economic power through their use of deep pocket internal financing.

2. Data and sample construction

2.1. Business group sample

Our empirical analysis requires the identification of business group affiliated firms from around the world in 2007, the year immediately preceding the onset of the GFC. We rely on the business group data assembled by Masulis et al. (2011) covering 45 countries as of 2002, and expanded to 2007 by Masulis et al. (2020). A key advantage of this dataset is its broad coverage of many developed and emerging market countries across five continents. This is achieved through a comprehensive procedure that combines standard ownership databases (Bureau van Dijk Osiris, Factset Lionshares, Thomson Reuters Global Ownership), hand-collected firm ownership data (from LexisNexis, Factiva, Bloomberg, Dun and Bradstreet's Who Owns Whom, stock exchanges and securities regulators), and major transactions data (IPOs, M&A, etc.).[11]

It is important to recognize that level of ultimate ownership identification we obtain in our study cannot be achieved by relying solely on standard commercially available ownership databases. For example, Lins et al. (2013) rely on ownership information from Bureau van Dijk's (BvD) suite of products (Osiris, Orbis, Amadeus, etc.), but we find that these databases

[11] See Masulis et al. (2011) and Masulis et al. (2020) for more detailed descriptions of these data sources.

provide only a partial picture of actual business group ownership linkages. Out of the universe of all listed and delisted firms covered by the BvD databases in 2007, only about three quarters have any ownership data reported. Among them, only about 21 percent have ultimate owner information, as the databases only consider ownership chains connected by shareholdings of at least 25 percent and they do not consistently aggregate related blockholdings.[12]

Following Masulis et al. (2011), a business group is defined as two or more publicly-listed firms controlled by the same ultimate controlling shareholder. The control chain linking each firm to the ultimate controlling shareholder is established based on the largest ownership stake that is equivalent to having at least 20 percent of the voting rights in the firm (or 10 percent if the shareholder has some operating control as a founder, CEO, or board chair). Masulis et al. (2020) expand the Masulis et al. (2011) dataset by tracking how each group evolves over the 2003-2007 period. In summary, they use firms' major transactions data to capture new groups formed and existing group expansions through IPOs (or spin-offs) of group affiliates and through partial acquisitions of new firms, as well as cases of groups divesting (liquidating) existing member firms. Masulis et al. (2020) then cross-check the snapshot of the business groups we identify against data from the ownership databases, Orbis, Worldscope, Global Ownership, and Lionshares to locate other missing group affiliated firms.

We exclude financial firms from our analysis (with Standard Industry Classification (SIC) codes 6000-6999), given their unique status during the 2008-2009 financial crisis. In any sample of international firms, significant financial data and reporting anomalies can exist. We drop firms having negative cash holdings, negative total assets, negative book value of debt, negative common equity, cash-to-asset ratios exceeding one, and total assets ranked in the lowest 5^{th} percentile in each country. After applying the above sample selection criteria, we obtain a sample of 19,803 listed firms from 45 countries as of 2007, of which 2,882 firms are

[12]For example, in the Osiris database, the majority of listed firms in the Samsung business group cannot be ultimately traced to the Lee Kun-hee family as control is achieved through various fragmented blocks of less than 25 percent held directly or through affiliated firms. A comparison of our business group sample to that in Lins et al. (2013) illustrates the severity of this problem. When we restrict our sample to the same 35 country sample used in this prior study, our procedure leads to more than double the number of group affiliated firms.

affiliated with family business groups and 1,364 firms are affiliated with non-family groups (controlled by governments, financial institutions or widely held corporations). The remainder of the sample consists of 15,557 standalone firms, where their ultimate owner information can be ascertained to confirm that they are strictly unaffiliated with any type of business group, although they can be owned by a family. Table 1 provides a country-level breakdown of the sample.

2.2. Classification of capital market development

We argue that capital market development reflects underlying cross-country differences in financing frictions. This link is well established in the literature, as prior studies have shown that market development is positively correlated with inbound portfolio investment flows (Chan et al., 2005), market trading and valuation (Bekaert et al., 2011; Carrieri et al., 2013), and development of legal institutions Djankov et al. (2008), all of which affect a firm's access to external financing. Specifically, we use the MSCI index classification system to classify our sample countries into developed and emerging markets. The first cohort includes 23 "Developed Markets" that MSCI includes in the MSCI World Index. The second cohort comprises the other 22 sample countries that MSCI designates as "Emerging Markets" and "Frontier Markets" as of 2007 (referred to in our study as "Emerging Markets"). The list of emerging market countries is presented in Table 1.

There are several important advantages of using the MSCI classification. First, it incorporates a wide range of criteria to capture the level of development in each national market, including (1) sustainability of economic development, (2) size and liquidity of listed firms, and (3) market accessibility to international investors.[13] The application of these criteria is also vetted by the international investment community as MSCI seeks detailed feedback from institutional investors on its index decisions. Second, the classification is

[13] This is arguably a more sophisticated approach than using only the relative size of a country's stock market. For example, if our sample countries are grouped according to aggregate stock market capitalization scaled by GDP (with data from Djankov et al. (2008)), then Germany and Italy are below the median (and would be designated "Emerging Markets"). If they are grouped according to the number of listed firms per capita, then France, Germany, and the Netherlands are below the median.

widely adopted by international portfolio investors (with around $14.5 trillion of institutional funds benchmarked against MSCI indices as at 2020), resulting in significant differences in foreign fund flows into each of the two market classes (Ferreira and Matos, 2008; Burnham et al., 2018). Such foreign investments can directly impact a firm's financing capacity and indirectly impact it through the role that foreign institutions play in improving corporate governance (Aggarwal et al., 2011). Third, there appears to be a clear and persistent divide between MSCI's "Developed Markets" versus other markets. In the past three decades, there have been only 4 re-classifications affecting the developed markets list, involving Portugal (promoted in 1997), Greece (promoted in 2001 and demoted in 2013), and Israel (promoted in 2010).[14]

Based on the above classification, business group importance clearly differs across countries by market development status. Table 1 shows the breakdown of (family and non-family) group firms and standalone firms by country. Consistent with the conjecture that business groups thrive in an environment with high external financing barriers, we find that family (non-family) group firms on average account for 33% (10%) of sample firms in emerging markets, compared to 14% (6%) in developed markets.

[Insert Table 1 here]

An important element of our hypothesis is the relative weaknesses of emerging capital markets in supporting firms' external financing. This point has been well established in the literature. For example, Henderson et al. (2006) show that both debt and equity issues are relatively limited outside the most developed capital markets. Doidge et al. (2013) find that domestic IPO activity intensifies over time as a country's financial markets becomes more developed (due to financial globalization). Hanselaar et al. (2019) provide time-series evidence that equity issuance volume in emerging markets is both less frequent and less sensitive to market-wide liquidity improvements.

[14] In fact, the emerging/developed markets divide is consistently recognized by all major index providers. For example, as of 2007, the MSCI list of emerging markets is mirrored in both the S&P/IFC and the FTSE Russell classifications.

Using our dataset, we also confirm that there is a clear divide between emerging and developed markets as reflected in firms' general ability to raise external finance. In Appendix Table A1, we provide some preliminary tests using seasoned equity offering (SEO) and corporate investment (CAPEX) data to re-confirm this difference. In Column 1, we report that emerging market firms are significantly less likely to engage in SEOs than their developed market counterparts. This difference is equivalent to about 18% of the average rate of SEOs across all firms, and persists in the sub-sample of standalone firms (Column 2), which do not have access to an internal capital market. In Columns 3 and 4, the sensitivity of firm-level investment (measured by CAPEX/Assets) to internally generated cash flows (measured by net profits plus depreciation, scaled by total assets) is separately estimated for emerging market and developed market firms. This sensitivity captures the extent to which a firm faces external financing constraints, and our estimates confirm that this sensitivity is significantly higher in emerging markets, especially for standalone firms.

2.3. The 2008-2009 Global Financial Crisis

Several features of the GFC make it an attractive external financing shock from which the impacts of a group's deep pockets advantage can be inferred. First, capital markets in this period experience severe disruptions across much of the globe, with the crisis transmitted across both emerging and developed markets (Bekaert et al., 2014). Second, the onset of the crisis is both sudden and unanticipated, so it is unlikely that firms could preemptively make changes to their ownership structure in anticipation of the GFC. Third, unlike the 1997 Asian Financial Crisis, where business groups are often cited as a key trigger (Chang, 2006), in the GFC, business groups are not implicated as a potential cause. In contrast, the source of the GFC was centered in the United States, where family groups are not a dominant organizational form. Fourth, the crisis itself does not appear to be triggered by a large drop in corporate investment. Even the demand for loans does not fall by a substantial amount (Chang et al., 2019). In fact, practitioners, regulators and academics generally agree that overexposure of banks to subprime mortgage defaults is the primary trigger for the GFC, rather than it being the result of excessive corporate investment or debt financing.

The immediate consequence of the onset of the crisis is a severe contraction in credit availability. Ivashina and Scharfstein (2010) show that US banks, particularly ones with diminished deposit bases and larger outstanding credit lines, severely curtail their supply of new loans, beginning in late 2008. The equity issuance market is also adversely affected, with the aggregate seasoned equity offering (SEO) proceeds of global non-financial firms contracting from US$320 billion in 2007 to US$241 billion in 2008 (figures calculated using SDC Platinum data). Overall, this disruption to the supply of external financing at the country level leads to dramatic reductions in corporate investment, especially for financially constrained firms (Campello et al., 2010).

In Figure 1, we show the global nature of the GFC. Across different regions around the globe, we observe a consistent decline of about 50 percent in aggregate stock market value, as approximated by regional MSCI indices. The plot also shows sharp declines during the second half of 2008 across all major regional stock indices, highlighting the unexpected nature of the crisis.[15] This sharp fall coincides with the collapse of Lehman Brothers in September 2008, an event generally regarded as the beginning of a full-blown financial crisis.

Given that we work with international firm data on an annual basis, we define the pre- and post-GFC periods for each firm using its financial year-end date. If a firm closes its books in the first two quarters of 2008, we define its last pre-GFC financial year as its 2008 financial year-end. If instead, a firm's financial year-end is in the last two quarters of the year, then we define its last pre-GFC financial year to be 2007.

[Insert Figure 1 here]

3. Group affiliation and crisis-induced changes in product market outcomes

3.1. Empirical predictions

Our main analysis focuses on the long-term product market outcomes of family business groups following the 2008-2009 financial crisis. Our predictions are guided by the well-

[15] Bekaert et al. (2014) show that firms in emerging markets are more widely affected by crisis contagion than firms in developed markets.

established "deep pockets" argument: a firm's relative financial strength allows it to establish product market dominance over its rivals by being able to sustain losses (or maintain investment) without becoming insolvent (see Telser, 1966; Benoit, 1984; Brander and Lewis, 1988; Bolton and Scharfstein, 1990; Fresard, 2010).[16] In contrast, financially weak firms (typically those that are highly leveraged) do not have this staying power, leaving them vulnerable to competitive pressure in financial crises.[17] Our setting utilizes the GFC as a shock that substantially increases a group's deep-pockets advantage relative to its rivals.

Bringing the literature on the competitive effects of deep pockets to a cross-country setting, we argue that the incentives to use ICMs to capture product market share are likely to vary with different levels of external capital market development. A key consideration in extant theories of firms' product market decisions is the ex-ante ability of rivals to effectively respond to such competitive threats. If a group firm observes that its rivals have sufficient financial capacity to weather a short-term loss of market share, then using their deep pockets to attempt to obtain market share gains may not be optimal. In line with this view, Fresard (2010) suggests that a rival's cash holdings can deter competitive threats because of what he terms a "second strike" capability, that is, the rival can credibly signal that it has the financial capacity to retaliate.

We predict that the capacity of standalone firms to effectively respond to competitive pressure from business groups is seriously restricted in emerging markets. Such restrictions are not confined to the crisis period, but also tend to persist in normal times. Thus, in equilibrium, the incentives for groups to use ICMs as tool to capture market share from standalone rivals should be much stronger in emerging markets, as groups know that chronic external financing constraints impair a standalone firm's ability to effectively respond in these markets. This conjecture is supported by several studies that document significant constraints on access to external debt and equity capital in countries with weak financial development (see for example Henderson et al. (2006)). Hanselaar et al. (2019) further show

[16] Several other studies document that conglomerate ICMs also provide a similar beneficial effect for their divisions (see Faure-Grimaud and Inderst (2005), Maksimovic and Phillips (2002)).

[17] Opler and Tittman (1994) show that highly leveraged firms lose market share during industry downturns.

that even when aggregate market liquidity improves, firms in emerging markets continue to find it difficult raise external capital.

Product market expansion may not be the only means through which groups can exploit their financing advantages during a crisis. Another hypothesis posited by past studies such as Lins et al. (2013); Massa et al. (2021) is that family-controlled groups have strong immediate survival concerns (to preserve families' long-term private benefits of control). Hence, family-controlled groups may divert resources from growing affiliates to rescue other affiliates experiencing operating problems. This implies that a group may weigh up the benefits of using its ICM to strengthen their competitive positions against the benefits obtained from using the ICM to prop up its troubled affiliates. Our empirical analysis will assess the relative importance of these two alternative hypotheses in different external financing environments.

3.2. Constructing product market outcome changes following the GFC

We examine product market outcome changes from the financial year ending immediately before the crisis (denoted Year -1 or the pre-crisis year) to up to five years after. Our proxy for product market outcomes is market share. To construct each firm's market share, we sort our sample firms into industries according to the first two digits of their primary SIC codes. In an international setting, this is a complex task given that individual firms can operate in multiple industries and that their primary industry classification can change as their main activity switches over our sample period. Another complication is that vendors of international firm data, including Worldscope, generally do not provide time-varying (historical) industry classification. If researchers are only able to capture the latest industry classification, they would incorrectly obtain market share figures for certain firms that have switched their primary industries. The analysis would be affected by a systematic bias since often there can be structural issues that drive these firms to shift their primary activities from one industry to another.[18]

[18]For example, from 2007 (the year before the GFC) until 2013 (the last year of our observation window), about one fifth of our sample firms change their primary industries.

We implement a detailed set of procedures to address the above issues. We begin by determining a firm's 2007 primary industry SIC code drawn from an historical version of the Worldscope database. This provides a snapshot of our sample firms' industry classifications at the onset of the GFC. We then use the industry segment sales information in Worldscope to identify cases where a firm changes its primary SIC industry in later years of our sample period. For firms with no segment sales information, we assume that their primary industries are unchanged.

Similar to many past studies such as Campello (2006), Fresard (2010) and Billett et al. (2017), we assess product market performance of listed firms through their sales gains relative to their listed industry rivals. Specifically, we compute relative market share by first determining the total sales generated within every country's specific 2-digit SIC industry and then calculating the percentage share of total industry sales attributable to each firm. This measure does not give us the precise market share of each firm given that it is not possible to capture all firms (including private firms) in each industry on a global scale. However, given our study's hypothesis is about the competitive effect of a family business group's "deep pockets", the main difference that we seek to document is between a listed group firm and its listed rivals that are not group affiliated. For this objective, our market share measure still allows us to make such a comparison in an unbiased manner. Of course, there can still be excessive noise in this measure when an industry is sparsely populated by listed firms. Thus, similar to a criterion used in Fresard (2010) and Billett et al. (2017), we apply a minimum number of firms rule that only computes market shares for industries with at least five listed firms in a given country-year.

We compute the market share changes for each firm's primary industry from the pre-crisis year (Year -1) to three years later (Year +2) and to five years later (Year +4) where Year 0 is the *crisis year*. The first window captures the firm's ability to withstand the immediate impact of the crisis and the second reflects its more long-term market share gains/losses. For firms that fail during one or both of these two measurement periods, we assign them a final

market share value of zero.[19] This adjustment reflects the assumption that a failed firm is no longer operational and effectively loses all of its market share.[20]

Table 2 describes the time-series variations in a firm's market share measure from 2003 to 2013. An important point to note is that there is a mechanical relationship between market shares and the number of listed firms in an industry. For emerging markets, the number of firms tends to increase during the sample period (see Columns 1 and 2). This means that for each firm in an emerging market, the market share measure is more likely to decline over time than it is to increase. In contrast, market shares in developed markets are relatively stable because the number of listed firms in each market does not systematically increase or decrease.

3.3. Matching methodology

Accounting for unobserved differences between firms with and without family group affiliation is a significant challenge. For this reason, we may not be able to fully establish the causal effect of a family group's deep pockets on its product market positions. However, if the 2008-2009 crisis can be assumed to be sudden and largely unanticipated, such that the industry structures of groups and strategies of firms across an economy do not adjust in anticipation of the crisis, then the analysis can still provide persuasive evidence on whether family-group firms are on average able to exploit a severe capital market shock to capture added market shares relative to other firms. This is important because of the somewhat mixed evidence in previous studies in relation to groups' investment behavior during financial crises. For instance,Almeida et al. (2015) find that Korean *Chaebols* cut investments less

[19] We define a failed firm as one that is delisted during the measurement period (either 3 or 5 years after Year -1) and satisfies one of the following conditions just before the delisting: (1) a final market capitalization value less than US$0.5 million, (2) a stock return over the period of less than -90%, and (3) zero reported sales.

[20] This is not a material assumption. In Panel D of Appendix Table A4, we exclude firms that fail after the crisis (4.8% of the pre-crisis firm sample) from the analysis and show that the baseline results remain robust. We note that bankruptcy is only one of many possible ways that market share can change. In subsequent analysis, we empirically examine several channels for increasing market share: through organic growth (such as investments in product development and distribution channels and cutting prices (or lowering margins) to drive out rivals) and growth through acquisitions.

aggressively than non-*Chaebol* firms during the Asian Financial Crisis, whereas Lins et al. (2013) find that family group firms reduce investment more aggressively during the 2008-2009 crisis compared to non-family group firms using a multi-country sample.

Our analysis has two important advantages over the empirical settings in these other studies. Because Almeida et al. (2015) focuses on a single emerging market, South Korea, where *Chaebols* dominate, it might be difficult to find appropriate counterfactual firms. For example, one key difference between group and non-group firms is their size. Evaluating distributional differences in firm size using the Kolmogorov-Smirnov test, Almeida et al. (2015) show that *Chaebol* firms are indeed much larger than non-*Chaebol* firms. The difference persists even after applying a matching procedure. Lins et al. (2013) compare the investment response of family group firms to non-family group firms using a relatively small cross-country sample of business groups and find that hard-hit family groups cut investments by more than non-family groups. However, their comparisons do not employ any matching methodologies.

To address the covariate imbalance problem described above, we rely on a difference-in-differences matching estimator (DID-ME) developed by Abadie and Imbens (2006, 2011) to select appropriate matched firms and then use them as a benchmark to estimate the effect of the crisis on the market share changes of family group firms. This matching estimator is particularly attractive because it allows us to match on both categorical variables (such as country and industry) and on continuous variables that might predict product market success. Similar to Almeida et al. (2015), we argue that this is a more reliable approach to identifying crisis-induced deviations across firms than using a standard linear regression analysis, which can mask the fact that there is inadequate covariate overlap between family-group firms and the matched comparison sample of firms.

Specifically, we form treatment and matched control samples based on information at the end of the pre-crisis year (Year -1). For each family group (subject) firm, we select from among the other firms in the same country and the same industry sector, the nearest neighbor match based on the following list of continuous covariates used to capture observable

differences in the ability of a firm to compete in its product market.[21] First, we control for firm size ($Size$), measured by the logarithm of $US total assets, and firm age (Age), measured by the logarithm of the number of years since listing. Large and old firms may be at a life cycle stage where market share growth is relatively stable. Second, certain factors such as cash flows from operations, asset liquidity, existing financial leverage and asset tangibility may influence firms access to external financing, so our covariates include the following measures: net profits plus depreciation ($Operating\ Profit$), cash holdings ($Cash\ Holdings$), book value of debt ($Leverage$), and the value of property, plant and equipment (PPE), all scaled by book value of total assets. $Cash$ is a particularly important matching covariate, because we seek to distinguish the group firm's deep pockets advantage via access to an ICM, from simply just being a cash rich firm. Finally, to account for investment requirements, the covariates also include capital expenditures scaled by total assets ($Capex$) and Tobin's Q (Q), calculated as the market value of total assets (market value of equity plus the book value of debt) scaled by book value of total assets. Finally, to pick control firms from the same industry cohort, we use the first digit of a group firm's SIC industry code.[22] This approach represents our default matching procedure.

A close examination of our data confirms that significant differences exist between family group firms and other firms along many dimensions. While this may create bias in a linear regression setting, we alleviate such problems using our matching estimator. In Appendix Table A2, we compare the frequency distribution of each of the above covariates across the two sub-samples: family group firms and other firms in the same country and same 1-digit SIC industry. Using the Kolmogorov-Smirnov test, we show that the two sub-samples significantly differ along all dimensions, except Q in emerging markets and $Capex$ in developed markets. Focusing on size differences, we further report in Appendix Table A3 that the total assets distribution of group firms is significantly different to that of the rest of the firms in 13 out

[21] We find that either including or excluding non-family group firms from the control group does not affect any of our main findings. See Panel A of Appendix Table A7.

[22] This choice is mainly driven by the small number of existing firms in some countries and by the fact that our primary market share measure is computed at the 2-digit SIC code level. In robustness analysis discussed later, we change the above industry matching condition to the 2-digit SIC code level.

of our 19 emerging-market countries and 13 out of 22 developed-market countries (some countries are not included if our matching procedure fails to find matches for any sample family-group firm).[23]

By matching on the above categorical and continuous covariates, we are able to reduce the covariate imbalance between family group firms and their matched firms, but not completely eliminate it. Specifically, in Appendix Table A2, we show that our matching procedure closes the gaps in all covariates, except *Size* and *Age*. When delving into the size imbalance for each country (see Appendix Table A3), we show that the gaps are eliminated for 15 out of the 26 countries mentioned above where family group firms are systematically larger. Yet, significant size differences continue to exist in the remaining 11 markets.[24] The richness of our cross-country sample means that, in later robustness analysis, we are able to exclude the countries where our matching remains unable to completely eliminate firm size differences, while retaining a reasonably large cross-country sample of matched firms (see Appendix Table A4).

3.4. Baseline results

Figure 2 presents a graphical summary of our study's main results, using two separate graphs for emerging and developed capital markets. Each graph takes a snapshot of our sample firms as of the pre-crisis year (Year -1) and then measures the average market share of family group firms and that of their matched control firms, for up to three years before the crisis and up to five years after (including the crisis year, Year 0). It is important to emphasize that, in our timeline, Year -1 is the last year before the crisis while Year 0 is actually the first year in which a firm faces the potential impact of the crisis. This is because a large number of firms have their financial year ending in December, so for them, Year 0 ends in December 2008, which is after the crisis has struck.

The graph for emerging capital markets (Graph A) shows that, even before the crisis,

[23] The median firm size, US$ total assets, of family-group firms is three times larger than that of the other firms in emerging markets, and 2.7 times larger in developed markets.

[24] In many of these markets, groups are relatively important such as Italy, Indonesia, Singapore, South Korea and Turkey.

family group firms generally have greater market shares than their matched control firms (obtained from the default matching procedure described above), confirming the known fact that family group firms historically hold greater economic power. Then from the onset of the crisis, family group firms are able to maintain market shares during the first three years (Year 0 to Year +2) and eventually increase market shares by the fifth year (Year +4). This is in contrast to a clear decline in market shares for the matched control sample over the same time frame.

The pre-crisis market share trends are depicted by the plotted lines over Year -3 to Year -1, which show that the trend lines for the family group and matched control samples are consistent with a parallel trends assumption. It is important to emphasize again that there is a general downward trend in market share for emerging markets because of the increase in the number of newly listed firms entering these markets, as shown in Table 2. Therefore, the key takeaway from Graph A is that after the GFC, there is an increasing deviation of the two lines representing market shares of family group firms and their matched control firms.

Graph B shows that we do not observe the same patterns for developed markets. It is clear that family group firms in developed markets do not, on average, have greater market shares than their matched control firms. The crisis also does not lead to a situation where the average market share of family group firms deviates from that of its matched control firm sample in the post-GFC period.

[Insert Figure 2 here]

In Table 3, we analyze the market share changes for family group firms to their matched control firms. For emerging markets (Columns 1 and 2), family group firms gain market shares, while their control firms lose market shares in most cases. Again, these changes are relative, given the general (and mechanical) decline in market share statistics in emerging markets. The matching estimator provides us with the Average Treatment Effect on the Treated (ATT) statistics estimated from comparing these two firm types. The statistics indicate that family group firms increase their market shares by 0.57 percentage point more

than their matched control firms by the end of the third year after the pre-crisis year.[25] Expanding the period to 5 years after the pre-crisis year, the difference-in-differences rises to 1.13 percentage points, which is equivalent to about one fifth of the average market share of a typical emerging market firm (5.56%) in the pre-crisis year.

[Insert Table 3 here]

In contrast to the evidence from emerging markets, in developed markets, the market share changes do not differ significantly for family group firms and their associated matched firms. In some tests, the difference is in fact negative. Overall, our results suggest that in developed markets, family groups are unable to generate market share gains after the GFC, perhaps because their crisis-induced financing advantages cannot be sustained in the longer run, or perhaps because groups prioritize preservation of their private benefits of control and respond to the crisis by scaling back on the aggressiveness of their competitive actions to protect financially weak affiliates.

3.5. Robustness analysis on baseline results

We introduce several variations on our default matching criteria to assess the robustness of our baseline results. First, we consider the possibility that post-crisis market share changes depend on a firm's starting market share position. Panel A of Appendix Table A4 reports the ATT estimated by adding a firm's pre-crisis year market share to the other continuous covariates used in our default matching procedure. The results suggest that even after adding this control, family group firms in emerging market still realize greater crisis-induced market share changes than the matched control firms.

Second, we vary the current definition of peer firms (of a group firm), that is, those in the same country having the same one-digit SIC code. This matching condition could be either

[25] The "treatment" in our analysis is whether a firm is affiliated with a family business group. This is purely based on observational data: we do not have an experiment that randomly sorts firms into either affiliated or standalone firms. Our study utilizes ATT estimates as we are only interested in the crisis-induced product market effect of observed family-group firms, not of all firms in the population, which would be given by the Average Treatment Effect (ATE).

too restrictive or insufficiently precise. However, as shown in Appendix Table A4, our baseline results remain robust even when we remove the same industry sector requirement (see Panel B) or if we replace it with a more restrictive two-digit SIC code matching requirement (see Panel C).

Third, the crisis has a material impact on firm survival. We will focus on this issue in later analysis, but for now we ensure that it is not the dominant reason for our baseline results. In Panel D of Appendix Table A4, we exclude firms that go bankrupt after the crisis and show that our baseline results continue to hold.

Fourth, we address the issue that our matching procedure cannot completely close the size gap between family group firms and other firms in the same country. To do this we rerun the baseline analysis, after removing firms from countries where we are unable to eliminate significant firm size differences between group and non-group firms. The results reported in Panel E of the Appendix Table A4 show that family group firms continue to gain market shares relative to their matched control firms in this more restricted, but more closely matched sample.

Fifth, it may be the case that the market share increases observed for family group firms in emerging markets is not crisis induced, but part of a long-term trend where groups gain market dominance regardless of capital market conditions. To rule out this possibility, we follow a test used in Almeida et al. (2015) and examine market share changes following 2004 and 2013, which serve as two *placebo* crisis years before and after the GFC. We pick 2004 as a pre-GFC placebo crisis year because it is the mid point between the Dotcom crisis and the GFC, and pick 2013 as a post-GFC placebo crisis year to avoid any overlap with the construction of our main market-share change variable. The results reported in Appendix Table A5 show that there are no significant differences in market share changes between family group firms and their control firms following each of these placebo crisis year. Thus, our baseline results appear to be concentrated around the GFC.

Finally, we modify the matching criteria in the regression analysis. In Appendix Table A6, we regress crisis-induced market share changes on an indicator for family group firms

(*Family Group*), using our matching covariates as control variables and replacing the exact matching conditions (same country and industry) with country-by-industry fixed effects. This regression is estimated for the entire sample (see Panel A) and then for just the sub-sample of family group firms and their matched control firms (see Panel B). The second specification allows us to control for the remaining differences in observable characteristics (after matching) between group firms and their matched control firms. The results are consistent with those obtained from the matching estimator. For emerging capital markets, family group firms gain market shares relative to peer firms in the same country and industry, but in developed capital markets, the outcome is the opposite. Overall, while we can not completely eliminate covariate imbalances across our sub-samples, our evidence indicates that this issue is unlikely to drive our baseline results.

3.6. Non-family groups

Our results for family group firms are consistent with the interpretation that controlling families have the ability to re-direct resources and coordinate product market strategies of member firms under their control in response to the crisis. However, as mentioned earlier, there are instances where listed firms can be connected in a group structure that is not under a family's control. These non-family business groups may evolve from historical family-controlled groups (but the original families are no longer in control), or they may form when a listed firm holds large equity position in one another for strategic reasons (e.g. alliances).

In general, it is unclear whether non-family groups possess the same incentives to engage in the longer term strategic behaviour we document for family groups. This is because they lack a large shareholder who can internalize the benefits of their deep-pockets (Shleifer and Vishny, 1986). Further, the lack of family control of these groups may mean that they also lack a sufficiently long investment horizon required to reap the benefits of the product market strategies we document. This is inline with Anderson and Reeb (2003) and Stein (1988, 1989) who argue that certain forms of corporate control (in particular non-family control) tend to be associated with more myopic investment decisions.

We deal with the presence of non-family business groups in our sample in two ways. First,

as a robustness check, we remove from the sample any firms affiliated with non-family groups to ensure that the matched control firms (used in our default matching procedure) are strictly standalone firms with no access to a business group ICM. The results, reported in Panel A of Appendix Table A7, show that this does not change our baseline results.

Second, we focus on whether the same product markets gains documented for family groups are also observed for non-family group firms. To do this, we repeat our baseline ATT analysis, except using non-family groups firms as the treated group and selecting a set of matched standalone firms, based on our default matching procedure, as control firms. The results, reported in in Panel B of Table A7, show that the ATT is insignificant, indicating that non-family group firms do not experience an increase in firm-level market shares relative to their matched peer firms.

3.7. Industry competitiveness and group firms' market share gains

The baseline results above beg the question of which types of affiliated firms receive group support to help grow their market shares. To further develop our hypothesis that groups exploit their crisis-induced financing advantages to capture market shares, we argue that a firm's pre-crisis competitive environment is a decisive factor. This is motivated by the results from Fresard (2010) that the product market benefits of having deep pockets are greater when the current level of competition is more intense.

We classify pre-crisis industry-level competitiveness in two ways. The first is the level of concentration among existing players using the Herfindahl-Hirschman index (HHI). For each sample firm, we compute its industry's HHI value immediately before the crisis as the sum of the squared market shares of all listed firms in the same 2-digit SIC industry (and the same country), and then sort firms according to whether their HHI values are below the country median (implying a more fragmented, competitive industry) or above/equal to the median (implying a more concentrated, non-competitive industry). The second classification is constructed based on the extent to which an industry is populated with young (new) firms before the crisis. We argue that competition is likely to be more intense in an emerging new industry or those industries which offer greater ease of entry. Using the same approach as

above, for each sample firm we compute the average age (from listing) for all the firms in the same 2-digit SIC industry (for the same country). The subject firm is then classified as operating in a relatively young (competitive) industry if its industry age measure is below the country's median or a relatively old (non-competitive) industry if its industry age measure is equal to or above the country's median.

The results for these two firm types are presented in Table 4. Consistent with our expectation, the observed market share increase of family group firms (relative to peer firms) in emerging markets is concentrated among those firms that operate in more competitive industries. This result holds regardless of whether we use industry concentration or average firm age. For example, the estimated ATT of the 5-year market share change measure rises to 2.1 percentage points for the sub-sample of family group firms operating in industries with relatively younger firms, compared to 0.3 percentage points for group firms operating in industries with older firms. It is worth noting that, for developed capital markets, even when we segment firms into competitive and non-competitive industries, we observe no significant difference in market share changes between family group firms and their matched control firms.

[Insert Table 4 here]

3.8. Market share gains for different segments within a group firm

Although our baseline analysis attributes all of a firm's sales to its primary SIC, we recognize the fact that some firms can have multiple segments operating in unrelated product markets. Masulis et al. (2020) show that there is a strong tendency for family group firms to operate in multiple industry segments as they have access to resources retained within their groups that allow them to take on new investment projects and develop them into new firms. If our hypothesis holds, then the crisis should create new opportunities for a group firm to become even more aggressive in expanding their strategic positions in emerging industry segments.

To test this argument, we re-arrange the dataset into firm-segments, with individual segments defined at the two-digit SIC code level. For firms without any industry segment data, we assume that they operate in single segment – their primary SIC as assigned by Worldscope. We then compute market shares at the firm-segment level based on our sample of two-digit SIC firm-segments. Specifically, for each country and year, we construct the overall market size of a two-digit SIC industry based on the aggregation of this SIC code's segment-level sales for all listed firms. A firm-segment's market share is the proportion of sales that the firm-segment contributes to the total sales in this 2-digit SIC code market.

This approach has an added advantage. It allows us to capture how the relative importance of a firm's different activities changes over time and also more accurately defines the set of competitors for each of its activities (which may include the non-primary operations of other firms). The main limitation is that segment data are not always available, e.g. 11% of firms do not have segment data in the pre-crisis year.[26]

We separately examine the primary (the largest) segment and non-primary (the remaining) segments for each family group firm. This split is first defined by each segment's absolute sales amount. We again use the Abadie and Imbens (2006, 2011) matching estimator to compare a family group firm's segment to its matched segment drawn from the control firm sample. We add one more covariate to those employed in the default matching procedure: a segment's sales as a proportion of the firm's total sales – to ensure that we compare market shares changes of segments with similar relative importance to a firm. The results are reported in Table 5. For emerging markets, family group firms gain market shares in their primary segments, but the increase is only statistically significant 5 years after the crisis (see Panel A). More interestingly, we find that family group firms are able to make the most significant gains in their non-primary segments both during the subsequent three-year and five-year periods (see Panel C). For example, the magnitude of the estimated 5-year market share increase is twice as large in the non-primary segments as it is for the group affiliates' primary

[26] Even for firms that report segment data, the data may occasionally be missing in some years. When this occurs, we impute the segments' sales in a missing year by assuming that the firm maintains the same segments and relative weightings (to total sales) for the last year where such data are available.

industry segments. This result is consistent with the suggestion Masulis et al. (2020) that a group's ICM performs an important function of incubating and developing projects outside of the group's core activities. It also echos the evidence on diversified US firms from Matvos et al. (2018), who show that these firms tend to increase the scope of their activities even more when facing periods of high capital market frictions.

[Insert Table 5 here]

Instead of classifying segments according to their sales values, we also alternatively define a primary segment as the one where the group firm has the highest market share (relative to the other segments of the same firm). This allows us to define a core activity of a family group firm based on its segments' market power. The results presented in Panels B and C again show group firms appear to exert greater effort to capture market share in industry segments where they currently lack market power. Overall, the segment-level results indicate that family group firms are able to direct resources to help boost new, non-core activities within other group member firms.

4. Direct Measures of Group ICM Activity

Although our main hypothesis relies on the group's ICM to generate its deep-pockets advantage, it is always possible that the results documented thus far are explained by other group firm characteristics that make them different from their peer firms. For example, an increase in market share may be the result of government support given to business group as a result of its strong political ties or because the firm is in a critical sector of the economy. It is also possible that a group's controlling family has above average managerial skills. Such reasons could also explain why groups are able to expand during a crisis period, which are unrelated to their ICM activities. To strengthen our evidence, we examine two specific dimensions of how group ICMs respond to the GFC and relate them to a group firm's change in market share.

4.1. Investment in affiliates

It is important to acknowledge at the outset that obtaining data on the precise movements of internal capital within every family controlled business group in 45 different markets around the world is a virtually insurmountable challenge. Thus, in order to obtain a widely available proxy for ICM activity for the vast number of groups in our global sample, one must trade-off the granularity and precision of the data, with its availability across many national settings.[27] Our way of addressing this challenge is to develop a new accounting based measure of ICM activity which is widely available for firms in each of our sample countries.

Specifically, this measure is based on the *change* in a group firm's external investment in other group affiliates. This figure must be reported under the International Accounting Standard 28 (IAS 28), *Investments in Associates and Joint Ventures* requiring firms to disclose the fair value of their investment holdings (both equity and debt) in affiliated firms (IAF) where they are deemed to have a significant influence. A "significant influence" is presumed when a company has greater than 20 percent ownership in an affiliated firm (or lower when there are other indicators of control, such as board representation), which matches with our definition of control links between firms within a business group. For example, if a group firm controls another firm in a pyramidal chain, the parent firm's reported IAF must include the value of its investment in the subsidiary.

This measure is motivated by the recognition that there are three principal uses of internal capital in a business group: i) paying it out as dividends, ii) retaining it in the member firms where it is generated, or iii) reinvesting it in other group member firms (as debt and/or equity investment). Our IAF variable is a measure of this third category of capital use or movement.

The *Investments in Associates and Joint Ventures* data are obtained from Worldscope and have broad coverage (available for about 92% of family group firms in our sample).[28] However, the reported data only represent the *book value* of the stock of a firm's IAF, which

[27] Other studies in the business group literature are able to obtain detailed ICM data but only for a single country such as Buchuk et al. (2019) for Chile and Almeida et al. (2015) for South Korea

[28] It is important to note that by 2007 most countries had adopted International Financial Reporting Standards (IFRS). Some country-specific accounting standards (such as US GAAP) mandate similar disclosures.

can vary due to accounting revaluations, such as write-downs of assets deemed permanently impaired. To obtain an approximation of the increase (or decrease) in a firm's IAF in a given year, we first compute the year-to-year change in IAF book value, and then add back to it the estimated impairment charge applied to the IAF value in the same year. We do not have precise data on specific IAF impairment charges, so we assume that these impairment charges apply at the same rate as the impairment charges on the firm's investment assets (also obtained from Worldscope).

For each group firm, we calculate the asset weighted average of the adjusted IAF changes of the *other affiliates* in the same group. This measure, denoted *Group IAF*, represents the extent to which the focal group firm may benefit from active intra-group internal capital reallocation by the rest of the business group. For example, a group firm's *Group IAF* measure of 0.002 indicates that 0.2 percent of the other member firms' assets are externally invested in their affiliates. We argue that this flow of internal capital directly or indirectly reaches the focal firm. We thus can proceed to test whether a particular family group firm's post-crisis market share increase is related to the group's ICM activities. Under the assumption that the crisis is unanticipated, such sensitivity would indicate that ICMs play a key role in helping family business groups achieve better product market outcomes.

The results are reported in Panel A of Table 6. We first examine family group firms that have an average positive *Group IAF* during the first two financial years ending after the crisis (Year 0 and Year +1). For emerging capital markets (Columns 1 and 2), the estimated ATT representing the market share changes for this group firm cohort over and above those of their matched firms is positive and significant across both the 3-year and 5-year windows. The ATT increases further when we focus on the "High Positive Group IAF" sub-sample: family group firms with an above-median value among those that on average report *positive Group IAFs*. In contrast, the ATT for the "No Group IAF" sub-sample, where the *Group IAF* is zero or negative, is not significant. The magnitude of the ATT obtained from the "No group IAF" sub-sample is only about half of the ATT obtained from the "High Positive Group IAF" sub-sample.

[Insert Table 6 here]

A limitation of the *Group IAF* measure is that it only reflects the outward investments of one group firm into other affiliates. It does not pinpoint which of these other affiliates receive the investment. As an unreported robustness check, we compute an alternative IAF measure using only group firms that are part of a pyramidal ownership structure. For each family group firm, we construct its *Group IAF* using only the reported IAF value of its direct parent firm. Given the subsidiary-parent relationship, the *Group IAF* constructed in this way more directly captures the investment made by the parent firm in the focal firm. Our results are unchanged under this alternative definition.

4.2. Block equity investments by other group firms

Our second ICM activity measure captures observable intra-group transactions occurring specifically through equity investments. An important way in which ICMs operates is to allow other group firms to invest in another affiliate's seasoned equity offering. Using the SDC Platinum database, we identify intra-group block equity investments as cases where the cornerstone investor in a public equity issue or a private placement by a group firm is another affiliate of the same group. Compared to the IAF measure discussed above, the block equity investment measure may not capture the full range of investments (primarily ignores debt) that one group member firm makes in another. However, the advantage of this second measure is that it reflects with greater accuracy, equity investments that a focal group firm *receives* from other group members.[29]

Panel B of Table 6 reports the results from the matching estimator when we split family group firms according to whether they receive block equity investments during the crisis period (in Year 0 and/or Year +1). Similar to the IAF-related results in Panel A, we again find that the estimated ATT is positive and significant for family group firms that receive such investments. For example, 5 years after the crisis, these firms increase their market shares by more than 1.9% relative to their matched firms. We still find a positive and significant

[29] Our first measure may also ignore firms that do not follow the IFRS accounting standards.

ATT for the sub-sample of family group firms with no observable equity block investments.[30] However, the magnitude of the estimated ATT is only about one third of that obtained from the sub-sample of group firms with equity block investments.

The results in developed markets tell a very different story. Here, affiliates receiving large intra-group investments actually end up losing market share, suggesting that group ICMs are used to support distressed affiliates, rather than to exploit strategic product market opportunities.

5. How do group firms gain market share?

Our study now closely examines the factors that can contribute to the faster post-crisis growth in market share experienced by family group firms relative to their rivals. This analysis aims to demonstrate that the observed growth does not simply happen by default, but that group firms take specific actions to improve their product market positions.

5.1. Organic growth

We first examine family group firms' ability to continue investing during the crisis. We argue that these firms can maintain or expand their product market presence because of their ability to continue their investment programs in the face of external capital market disruptions better than peer standalone firms. However, there is an alternative possibility. Lins et al. (2013) argue that family-controlled groups may have strong survival concerns (to preserve families' long-term private benefits of control), which could actually create an incentive to reduce corporate investment in crisis periods to extend financial support to faltering member firms.

To evaluate these opposing arguments, we again compare family group firms to their matched peers. Similar to Almeida et al. (2015) and Lins et al. (2013), our primary interest is a firm's ability to maintain its investment programs during the financial crisis. Specifically, we

[30] We can only identify 128 family group firms (or about 11%) that receive equity block investments, so the other category of firms (those with no such investments) may still receive group support in smaller private investments or in other forms such as intra-group loans.

compute the difference between the average CAPEX/assets during the crisis years (Year 0 and Year +1) relative to its average value during the equivalent pre-crisis period (Year -1 and Year -2). Panel A of Table 7 presents the results from our matching estimator analysis. We show that both family group firms and their matched peers exhibit a decline in CAPEX/assets. The estimated ATT for emerging capital markets, however, is significantly positive, suggesting that family group firms are better able to maintain their investment programs. This is again consistent with the argument that groups have incentives to exploit their ICMs in capital market environments that exhibit serious structural financing frictions. In contrast, the estimated ATT for group firms is negative and significant in developed capital markets. From this evidence, the alternative channel suggested by Lins et al. (2013) that family-controlled groups in developed markets have strong survival concerns for some of their member firms appears to have some support.

[Insert Table 7 here]

We next attempt to link family group affiliates' superior ability to maintain CAPEX to their product market strategies. This is done by repeating the above analysis across sub-samples segmented by our competition intensity measure. In Panel B of Table 7, we show that in emerging markets, the magnitude of the estimated ATT is larger for family group firms in competitive industries than for those in non-competitive industries. In the face of the 2008-2009 financial crisis, groups appear to concentrate their investment effort in activities that are likely to generate the most long-term product market benefits.

The above analysis of CAPEX indicates that the crisis induces a divergence in corporate investment levels of group and non-group firms, but it does not show whether the incremental investment made by family groups is directly targeted at product-related initiatives. We now seek to analyze the specific actions that firms undertake to improve their product offerings, so as to gain market share. To do this we follow a similar approach of Mukherjee et al. (2017), who rely on textual analysis of company press releases to identify new product introductions. For our global sample of firms, we utilize the *RavenPack News Analytics* database, which collects company press releases, media articles and exchange announcements, and provides a

taxonomy of these corporate news events. We take advantage of the ability of Ravenpack's textual analysis algorithms to classify the contents of such events. From Ravenpack's list of product-related news categories, we count the events related to product market expansion. We further focus on 4 specific sub-categories (that are well populated in the RavenPack database) that we argue should reflect how a firm implements its strategies to capture more market share: namely, i) new product releases, ii) new market entries, iii) supply (or production) increases, and iv) price cuts. We then investigate how the frequencies of these events change from the pre-crisis period until the post crisis period.

Because product-related events are generally infrequent and concentrated in particular times for a given firm, a matching estimation (as in our market share analysis) is not suitable since it is not possible to construct a continuous variable reflecting changes in event frequency from immediately before to after the crisis. Therefore, we instead rely on a difference-in-differences regression analysis that employs both firm and country-year fixed effects, and is estimated over a relatively long window from 5 years before to 5 years after the pre-crisis year. The key explanatory variable is the interaction of the family group firm and post-crisis period indicators (*Family Group Firm* $\times$ *Post Crisis*). The control variables are drawn from the covariates (firm characteristics) used in the default matching procedure discussed earlier. The regression results are reported in Table 8. In Column 1, the dependent variable is the logarithm of the total number of product-market expansion events (plus one) that occur at each firm in a given year. The key explanatory variable is the interaction of the family group firms and post-crisis period indicators (*Family Group Firm* $\times$ *Post Crisis*). This interaction is positive and significant for firms in emerging markets, indicating that family group firms take a more aggressive stance on product-market development activity after the onset of the crisis, compared to other firms in the same country. This analysis does not show a significant difference-in-differences result for group firms in developed capital markets.

In Columns 2 to 4, we change the dependent variable from the count of product-market expansion events to an indicator variable for whether a firm announces a news event related to one of the 4 specific subcategories mentioned above in a given year. We find that the

Family Group Firm × *Post Crisis* interaction is positive and significant for events related to new product releases, new market entries, and supply (production) increases. Overall, the analysis of product-related news suggests that the improvements in market shares experienced by family group firms after the GFC coincide with (and are perhaps explained by) their investments in developing new products, expanding production, and introducing existing products into new markets.

[Insert Table 8 here]

It is important to acknowledge that our attempt to quantify product-related events does not fully capture all the dimensions of a firm's product strategy. Group affiliates in emerging markets could hasten the demise of their standalone competitors during the crisis by drawing on their deep pockets to cut prices (and reduce their gross margins) to draw customers away from their rivals. Chevalier (1995) suggest that such price competition is a form of predatory behaviour. We do not have detailed product pricing data to show whether family group firms win market shares by competing aggressively on price. On this issue, we can only offer some suggestive evidence, using news events related to price cuts and reported gross margins as two rough indicators of price competition. The argument is that, if groups' financing advantages allow them to continually operate with very low gross margins by charging customers low prices relative to product costs, then their rivals are likely to find it difficult to compete.

We examine evidence of price cuts in Column 5 of Table 8 and find that there is no significant difference-in-differences in the likelihood of price cut announcements. We then compare the change in gross margins following the crisis between family group firms and their matched control firms, using the same matching procedure used in Table 3. This analysis is presented in Appendix Table A8, and does *not* show that family group firms reduce their gross margins by a greater extent than their matched peers. Thus, at least based on firm news events and gross margins data, there appears to be no clear evidence to support the possibility that family group firms on average behave in a predatory manner, that is, operate at close to their cost basis in the crisis period to drive out their competitors.

5.2. Acquisitions and long-term survivability

Another means through which firms can rapidly capture market share is through acquisitions. We investigate whether family group firms are better able to maintain their acquisition activities after the GFC compared to their standalone peers. Since M&A activities are relatively infrequent corporate transactions (with a large number of firms exhibiting no M&A activity), we are unable to compute a measure for the change in a firm's acquisitiveness from before to after the financial crisis that could be used in a matching analysis. Thus, we instead opt to use a difference-in-differences regression analysis, similar to our analysis of the product news events above.

The regression results are reported in Table 9. The dependent variable is an indicator variable for whether a firm conducts an acquisition in a given year. In emerging markets, we find that family group firms become more active acquirers after the onset of the financial crisis, as shown by the positive and significant interaction coefficient on *Family Group Firm* $\times$ *Post Crisis*. The difference-in-differences is not significant for family business groups in developed capital markets.

[Insert Table 9 here]

Even without actively expanding their operations, family group firms can increase their market shares by simply surviving the difficult capital market conditions occurring in the GFC (Massa et al., 2021), whereas some of their rivals lack the financial strength needed to survive. More generally, financial distress can have a significant negative impact on a firm's ability to compete (Opler and Tittman, 1994). Using a Cox proportional hazard regression model, we obtain evidence consistent with this scenario. Specifically, we use the characteristics of sample firms in the year immediately before the GFC (Year -1) to predict the duration until a firm fails (or survives until 2013). The results reported in Panel B of Table 9 show that the key explanatory variable, *Family Group*, has a hazard ratio of 0.439, which is also significantly different from one (the p-value is lower than 0.01). A hazard ratio of 0.439 means that about half as many family group firms experience bankruptcy during the

crisis compared to other firms. There is no clear difference in survivability for group firms for the case of developed markets.

5.3. Aggregate shareholder wealth effect of product market gains

Finally, we provide some evidence on the minority shareholder wealth implications of a group's strategic use of its deep pockets. This is an important issue because the effort to increase product market share can often require costly investments, but it may fail to yield sufficient returns to compensate shareholders. Yet, families controlling business groups may be willing incur these costs because product market dominance provides them with significant private benefits such as greater political power and family-brand visibility (Morck et al., 2005). Alternatively, a group's ICM may open up strategic investment opportunities that also benefit minority shareholders. To determine the net impact of the above effects, we examine long-run buy-and-hold stock returns of firms in the sample. We follow Lins et al. (2013) in defining the financial crisis to start in the middle of August 2008. We then compare buy-and-hold returns on the first, third and fifth year anniversaries of this date across group firms and matched control firms selected using the covariates described in the default matching procedure.

The results reported in Table 10 for emerging markets show that over all three return horizons, family group firms significantly outperform their matched firm counterparts. This suggests that in emerging markets the product market gains in the post-crisis period that we document are also associated with gains in minority shareholder wealth. Yet, in developed markets, we find there are again no significant differences in returns across firm types.

[Insert Table 10 here]

6. Conclusion

Utilizing a global business group dataset, we analyze how groups strategically utilize their internal capital markets during the 2008-2009 Global Financial Crisis to make competitive gains over their rivals. We show that in emerging capital markets, family group firms are

able to achieve significant increases in market share in the aftermath of the crisis. These gains are concentrated among groups who display heightened internal capital market activity. Analyzing industry segments within each group affiliate shows that a firm's new and emerging divisions are the ones that record the largest increase product market share. We also document that increases in market share are largest for group affiliates in competitive industries, where in normal times such gains may be costly to achieve.

We explore several channels through which family business groups are able to achieve these competitive gains. We find that market share increases occur partly because group firms are less likely to fail during the financial crisis period. However, this is far from the only explanation. Group affiliates are shown to have higher capital expenditure levels, particularly when they are in industries with high pre-crisis levels of competition, and are associated with more new product releases and more entries into new markets. Group firms are also more active in acquiring other firms in the post-crisis period. All of these changes appear to benefit minority shareholders, as stock returns of family group firms tend to outperform their matched peers.

Throughout our analysis, the differences in product-market positions and strategies between family group firms and their control firms are only observed in emerging capital markets and not in developed markets. Family group firms in developed markets even cut their investments by a greater extent than their peer firms during the crisis. Overall, the evidence from developed markets is consistent with the existence of strong external financing environments promoting product-market resilience of standalone firms by providing them with more reliable access to capital, outside of crisis periods. Such conditions reduce the ex-ante incentives of a group to try to exploit a transitory crisis to capture long-term competitive advantages, and instead to follow a strategy of protecting an affiliate's solvency so as to preserve the family's private benefits of control.

An important contribution of our study is to uncover a new explanation for the longevity and continuing dominance of business groups in emerging markets: that they actually thrive in times of economic and financial crisis. Since periodic episodes of economic and financial

market dislocation show no signs of abating, our findings suggest that incumbent business groups may continue to dominate emerging markets for the foreseeable future. While such group dominance can benefit controlling families and tag-along minority shareholders, it also creates incentives for groups to discourage external capital market development so as to maintain their strategic advantage (Morck et al., 2005; Almeida and Wolfenzon, 2006). Furthermore, the superior ability of family group firms to survive and flourish through the duration of financial crises may further divert funds away from new independent ventures and force more projects to be funded within family group organizations. This creates negative long-term externalities in the allocative efficiency of capital markets in emerging economies.

References

Abadie, A., Imbens, G. W., 2006. Large Sample Properties of Matching Estimators for Average Treatment Effects. Econometrica 74 (1), 235–267.

Abadie, A., Imbens, G. W., 2011. Bias-Corrected Matching Estimators for Average Treatment Effects. Journal of Business and Economic Statistics 29 (1), 1–11.

Aggarwal, R., Erel, I., Ferreira, M., Matos, P., 2011. Does governance travel around the world? evidence from institutional investors. Journal of Financial Economics 100 (1), 154–181.

Almeida, H., Kim, C. S., Kim, H. B., 2015. Internal Capital Markets in Business Groups : Evidence from the Asian Financial Crisis. Journal of Finance 70 (6), 2539–2586.

Almeida, H., Wolfenzon, D., 2006. Should Business Groups be Dismantled? The Equilibrium Costs of Efficient Internal Capital Markets. Journal of Financial Economics 79 (1), 99–144.

Anderson, R. C., Reeb, D. M., 2003. Founding-family ownership and firm performance: evidence from the s&p 500. The journal of finance 58 (3), 1301–1328.

Bekaert, G., Ehrmann, M., Fratzscher, M., Mehl, A., 2014. The global crisis and equity market contagion. Journal of Finance 69 (6), 2597–2649.

Bekaert, G., Harvey, C. R., 2017. Emerging Equity Markets in a Globalizing World.

Bekaert, G., Harvey, C. R., Lundblad, C. T., Siegel, S., 2011. What Segments Equity Markets? The Review of Financial Studies 24 (12), 3841–3890.

Benoit, J.-P., 1984. Financiall constrained entry in a game with incomplete information. RAND Journal of Economics 15 (4), 490–499.

Bernstein, S., Lerner, J., Mezzanotti, F., 2019. Private equity and financial fragility during the crisis. The Review of Financial Studies 32 (4), 1309–1373.

Bertrand, M., Johnson, S., Samphantharak, K., Schoar, A., 2008. Mixing Family with Business: A Study of Thai Business Groups and the Families behind them. Journal of Financial Economics 88 (3), 466–498.

Billett, M. T., Garfinkel, J. A., Yu, M., 2017. The effect of asymmetric information on product market outcomes. Journal of Financial Economics 123 (2), 357–376.

Bolton, P., Scharfstein, D. S., 1990. A Theory of Predation Based on Agency Problems in Financial Contracting. American Economic Review 80 (1), 93–106.

Boutin, X., Cestone, G., Fumagalli, C., Pica, G., Serrano-Velarde, N., 2013. The deep-pocket effect of internal capital markets. Journal of Financial Economics 109 (1), 122–145.

Brander, J. A., Lewis, T. R., 1988. Bankruptcy costs and the theory of oligopoly. Canadian Journal of Economics 21 (2), 221–243.

Buchuk, D., Larrain, B., Prem, M., Urza, F. I., 2019. How do Internal Capital Markets Work? Evidence from the Great Recession. Review of Finance.

Burnham, T. C., Gakidis, H., Wurgler, J., 2018. Investing in the presence of massive flows: The case of msci country reclassifications. Financial Analysts Journal 74 (1), 77–87.

Campello, M., 2006. Debt financing: Does it boost or hurt firm performance in product markets? Journal of Financial Economics 82 (1), 135–172.

Campello, M., Graham, J. R., Harvey, C. R., 2010. The Real Effects of Financial Constraints: Evidence from a Financial Crisis. Journal of Financial Economics 97 (3), 470–487.

Carrieri, F., Chaieb, I., Errunza, V., 2013. Do implicit barriers matter for globalization? Review of Financial Studies 26 (7), 1694–1739.

Cestone, G., Fumagalli, C., 2005. The strategic impact of resource flexibility in business

groups. RAND Journal of Economics 36 (1), 193–214.

Chan, K., Covrig, V., Ng, L., 2005. What determines the domestic bias and foreign bias? evidence from mutual fund equity allocations worldwide. Journal of Finance 60 (3), 1495–1534.

Chang, S. J., 2006. Business groups in East Asia: Financial crisis, restructuring, and new growth. Oxford University Press on Demand.

Chang, X. S., Chen, Y., Dasgupta, S., Masulis, R. W. a., 2019. External Financing of Last Resort? Bank Lines of Credit as a Source of Long-Term Finance.

Chevalier, J. A., 1995. Do lbo supermarkets charge more? an empirical analysis of the effects of lbos on supermarket pricing. Journal of Finance 50 (4), 1095–1112.

Djankov, S., La Porta, R., de Silanes, F. L., Shleifer, A., 2008. The law and economics of self-dealing. Journal of Financial Economics 88 (3), 430 – 465, darden - JFE Conference Volume: Capital Raising in Emerging Economies.

Doidge, C., Karolyi, G., Stulz, R., 2013. The u.s. left behind? financial globalization and the rise of ipos outside the u.s. Journal of Financial Economics 110 (3), 546–573.

Faure-Grimaud, A., Inderst, R., 2005. Conglomerate entrechment under optimal financial contracting. American Economic Review 95 (3), 850–861.

Ferreira, M., Matos, P., 2008. The colors of investors' money: The role of institutional investors around the world. Journal of Financial Economics 88 (3), 499–533.

Fresard, L., 2010. Financial strength and product market behavior: The real effects of corporate cash holdings. Journal of Finance 65 (3), 1097–1122.

Fresard, L., Valta, P., 2016. How does corporate investment respond to increased entry threat?

Review of Corporate Finance Studies 5 (1), 1–35.

Gopalan, R., Xie, K., 2011. Conglomerates and Industry Distress. The Review of Financial Studies 24 (11), 3642–3687.

Hanselaar, R. M., Stulz, R. M., van Dijk, M., 2019. Do firms issue more equity when markets become more liquid? Journal of Financial Economics 133 (1), 64–82.

Henderson, B. J., Jegadeesh, N., Weisbach, M., 2006. World markets for raising new capital. Journal of Financial Economics 82 (1), 63–101.

Ivashina, V., Scharfstein, D., 2010. Bank Lending During the Financial Crisis of 2008. Journal of Financial Economics 97 (3), 319–338.

Kim, R., 2016. Financial weakness and product market performance: Internal capital market evidence. Journal of Financial and Quantitative Analysis 51 (1), 307–332.

Kuppuswamy, V., Villalonga, B., 2016. Does diversification create value in the presence of external financing constraints? evidence from the 20072009 financial crisis. Management Science 62 (4), 905–923.

Kwon, E.-j., Aug 2012. Top ten chaebol now almost 80% of korean economy. Hankyoreh. URL http://english.hani.co.kr/arti/english_edition/e_business/549028.html

La Porta, R., Lopez-de Silanes, F., Shleifer, A., 1999. Corporate Ownership around the World. Journal of Finance 54 (2), 471–517.

Lindenberg, E. B., Ross, S. A., 1981. Tobin's q ratio and industrial organization. Journal of Business, 1–32.

Lins, K. V., Volpin, P., Wagner, H. F., 2013. Does Family Control Matter? International Evidence from the 2008-2009 Financial Crisis. Review of Financial Studies 26 (10), 2583–

2619.

Maksimovic, V., Phillips, G., 2002. Do conglomerate firms allocate resources inefficiently across industries? theory and evidence. Journal of Finance 57 (2), 721–767.

Massa, M., O'Donovan, J., Zhang, H., 2021. International asset pricing with strategic business groups. Journal of Financial Economics, forthcoming.

Masulis, R., Pham, P. K., Zein, J., 2020. Family business group expansion through ipos: The role of internal capital markets in financing growth while preserving control. Management Science 66 (11), 5191–5215.

Masulis, R. W., Pham, P. K., Zein, J., 2011. Family Business Groups around the World: Financing Advantages, Control Motivations, and Organizational Choices. Review of Financial Studies 24 (11), 3556–3600.

Masulis, R. W., Pham, P. K., Zein, J., 2015. Ownership and control in family business groups around the world. In *Research Handbook on Shareholder Power*. Edward Elgar Publishing, Cheltenham, UK.

Matvos, G., Seru, A., 2014. Resource allocation within firms and financial market dislocation: Evidence from diversified conglomerates. Review of Financial Studies 27 (4), 1143–1189.

Matvos, G., Seru, A., Silva, R. C., 2018. Financial market frictions and diversification. Journal of Financial Economics 127 (1), 21–50.

Morck, R., Wolfenzon, D., Yeung, B., 09 2005. Corporate governance, economic entrenchment, and growth. Journal of Economic Literature 43 (3), 655–720.

Mukherjee, A., Singh, M., Zaldokas, A., 2017. Do corporate taxes hinder innovation? Journal of Financial Economics 124 (1), 195–221.

Opler, T. C., Tittman, S., 1994. Financial distress and corporate performance. The Journal of Finance 49 (3), 1015–1040.

Phillips, G. M., 1995. Increased debt and industry product markets an empirical analysis. Journal of Financial Economics 37 (2), 189–238.

Santioni, R., Schiantarelli, F., Strahan, P., 2019. Internal capital markets in times of crisis: The benefit of group affiliation in italy. Review of Finance.

Shleifer, A., Vishny, R. W., 1986. Large shareholders and corporate control. Journal of political economy 94 (3), 461–488.

Spamann, H., 2009. The Antidirector Rights Index Revisited. The Review of Financial Studies 23 (2), 467–486.

Stein, J. C., 1988. Takeover threats and managerial myopia. Journal of political economy 96 (1), 61–80.

Stein, J. C., 1989. Efficient capital markets, inefficient firms: A model of myopic corporate behavior. The quarterly journal of economics 104 (4), 655–669.

Telser, L. G., 1966. Cutthroat competition and the long purse. Journal of Law and Economics 9, 259–277.

Figure 1: Fluctuations in MSCI Price Indices around the 2008-2009 Global Financial Crisis

This figure shows the monthly index value of five regional MSCI price index from January 2004 to December 2010: Asia, Asia excluding Japan, Europe, Latin America, and the US.

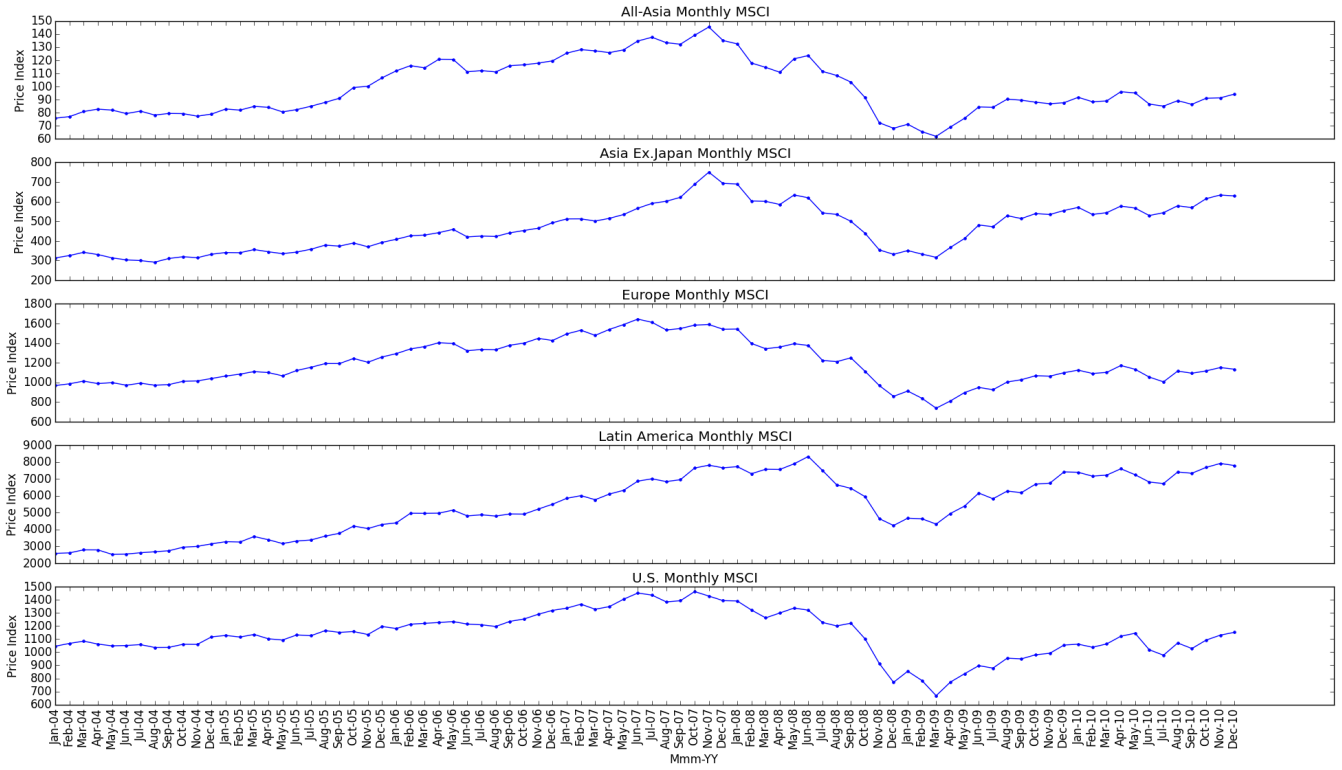
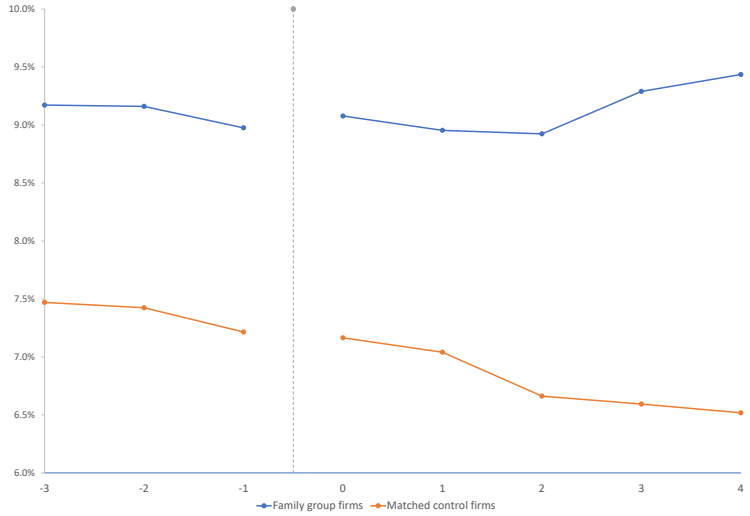


Figure 2: Market Share Changes after the Global Financial Crisis

The x-axis of each graph below displays the number of years relative to the onset of the Global Financial Crisis (the vertical dashed line). Year 0 is the first year that a firm is potentially affected by the crisis. It is defined as the financial year ending in the second half of 2008. Year -1 is therefore the last year in which a firm remains unaffected by the crisis. The y-axis displays the average percentage market share of firms in emerging (or developed) capital markets. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and two-digit SIC industry (with the condition that the industry has at least 5 firms). The matched control sample is constructed by matching each family group firm with another firm that is (1) not part of a family group, (2) in the same country and 1-digit SIC industry, (3) the nearest neighbor match to the subject firm based on the following covariates: total assets, firm age, net profits (excluding depreciation) to assets, capex to assets, debt to assets, cash holdings to assets, property plant and equipment (PPE) to assets, and Tobin's Q. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

Graph A. Emerging Markets



Graph B. Developed Markets

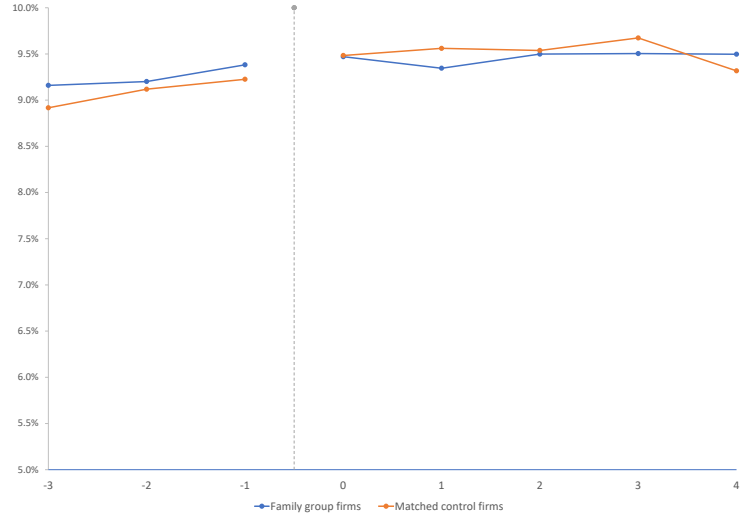


Table 1: Distribution of sample across countries

For each market, Column 1 reports the number of listed firms matching our sample selection criteria for which the ultimate controlling shareholder can be identified. Column 2 reports the number and percentage (in parentheses) of firms that are part of business groups controlled by families and individuals (family groups). Columns 3 reports the same statistics for firms that are part of business groups controlled by non-family entities (non-family groups). Column 4 reports the same statistics for standalone firms that are not part of a group. Columns 5 to 7 report the average market shares for family group firms, non-family group firms and standalone firms. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

					Pre-GFC market shares		
	All sample firms	Family group firms	Non-family group firms	Standalone firms	Family group firms	Non-family group firms	Standalone firm
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Emerging capital markets							
Argentina	59	15 (25%)	9 (15%)	35 (59%)	28.339	10.390	3.594
Brazil	193	49 (25%)	28 (15%)	116 (60%)	14.631	8.644	7.876
Chile	147	73 (50%)	17 (12%)	57 (39%)	11.625	8.962	6.641
Colombia	22	12 (55%)	1 (5%)	9 (41%)	22.992	87.711	28.432
Czech Republic	15	0 (0%)	8 (53%)	7 (47%)		19.083	2.144
Hungary	17	2 (12%)	4 (24%)	11 (65%)		49.640	53.318
India	575	225 (39%)	37 (6%)	313 (54%)	4.898	3.796	4.572
Indonesia	212	76 (36%)	8 (4%)	128 (60%)	16.204	5.255	9.166
Israel	122	82 (67%)	3 (2%)	37 (30%)	13.916	26.698	10.936
Malaysia	724	163 (23%)	42 (6%)	519 (72%)	7.663	13.882	3.791
Mexico	78	22 (28%)	4 (5%)	52 (67%)	14.570	30.775	9.027
Pakistan	87	31 (36%)	18 (21%)	38 (44%)	7.938	25.049	6.682
Peru	66	21 (32%)	9 (14%)	36 (55%)	8.890	10.853	12.003
Poland	126	66 (52%)	7 (6%)	53 (42%)	11.623	15.917	6.476
Philippines	117	35 (30%)	8 (7%)	74 (63%)	12.241	31.159	14.104
South Africa	201	29 (14%)	24 (12%)	148 (74%)	16.477	18.999	10.307
South Korea	1254	350 (28%)	27 (2%)	877 (70%)	6.277	5.782	1.282
Sri Lanka	100	56 (56%)	4 (4%)	40 (40%)	9.660	6.872	7.487
Taiwan	1129	194 (17%)	23 (2%)	912 (81%)	6.055	2.581	1.967
Thailand	379	108 (28%)	28 (7%)	243 (64%)	10.697	16.350	5.526
Turkey	187	88 (47%)	16 (9%)	83 (44%)	12.403	8.478	6.671

Venezuela	6	1 (17%)	1 (17%)	4 (67%)			13.569
Country average		(33%)	(11%)	(56%)	12.479	19.375	10.253
Panel B: Developed capital markets							
Australia	1166	64 (5%)	42 (4%)	1060 (91%)	6.699	7.672	3.284
Austria	61	5 (8%)	7 (11%)	49 (80%)	12.813		10.254
Belgium	93	22 (24%)	10 (11%)	61 (66%)	14.182	24.163	11.373
Canada	907	57 (6%)	13 (1%)	837 (92%)	10.273	12.438	2.663
Denmark	92	12 (13%)	8 (9%)	72 (78%)	11.110	18.472	14.167
Finland	109	13 (12%)	5 (5%)	91 (83%)	19.366	2.243	9.491
France	578	71 (12%)	36 (6%)	471 (81%)	14.599	14.029	3.888
Germany	583	80 (14%)	44 (8%)	459 (79%)	7.861	16.403	2.631
Greece	232	51 (22%)	8 (3%)	173 (75%)	13.795	33.518	8.724
Hong Kong	752	139 (18%)	11 (1%)	602 (80%)	8.195	13.564	3.292
Ireland	30	6 (20%)	0 (0%)	24 (80%)	33.333	0.000	10.970
Italy	191	61 (32%)	9 (5%)	121 (63%)	17.546	15.329	7.061
Japan	3349	174 (5%)	632 (19%)	2543 (76%)	1.628	2.716	1.233
Netherlands	103	15 (15%)	8 (8%)	80 (78%)	27.583	43.358	12.077
New Zealand	77	3 (4%)	1 (1%)	73 (95%)	46.823		9.551
Norway	139	35 (25%)	9 (6%)	95 (68%)	11.755	27.273	8.008
Portugal	38	6 (16%)	3 (8%)	29 (76%)	6.115	73.364	4.802
Singapore	538	81 (15%)	22 (4%)	435 (81%)	7.146	27.286	4.709
Spain	100	22 (22%)	15 (15%)	63 (63%)	10.579	23.424	10.425
Sweden	238	59 (25%)	6 (3%)	173 (73%)	14.644	33.586	5.643
Switzerland	166	16 (10%)	16 (10%)	134 (81%)	11.660	22.522	5.511
United Kingdom	1266	53 (4%)	25 (2%)	1188 (94%)	2.846	10.861	3.310
United States	3179	139 (4%)	108 (3%)	2932 (92%)	1.391	3.779	1.459
Country average		(14%)	(6%)	(79%)	13.563	20.286	6.718

Table 2: Distribution of market share levels and changes over time

For emerging markets, Column 1 reports the total number of all listed firms with reported sales figures in each year and Column 2 reports the average number of these firms in each 2-digit industry. Note that these firms include those that do not meet our sample selection criteria, but we use them to compute the aggregate sales amount of an industry – the denominator of the market share measure. Columns 3 and 4 report the average and median market share statistics for firms that are part of the final sample. Column 5 reports the average year-on-year market share change statistics. The next five columns report the equivalent statistics for developed markets. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets					Developed markets				
	No. of firms	No. of firms per industry	Average market share	Median market share	Average market share change	No. of firms	No. of firms per industry	Average market share	Median market share	Average market share change
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2003	5413	17.47	5.36	1.12	−0.13	19 606	37.21	2.68	0.13	0.02
2004	5857	18.07	5.24	1.05	−0.07	20 172	36.77	2.68	0.13	0.00
2005	7196	19.55	4.95	0.85	−0.26	21 615	40.54	2.54	0.10	0.04
2006	8498	21.47	4.40	0.61	−0.11	21 836	40.31	2.50	0.09	0.03
2007	8804	22.20	4.33	0.58	−0.04	22 051	41.54	2.49	0.08	0.05
2008	9094	22.69	4.29	0.53	−0.02	21 508	42.11	2.50	0.08	0.04
2009	9378	21.42	4.31	0.50	−0.05	21 052	39.94	2.50	0.08	0.02
2010	9450	21.68	4.26	0.49	−0.02	20 660	40.04	2.57	0.08	0.02
2011	9368	22.43	4.20	0.46	0.03	20 160	40.77	2.58	0.09	0.04
2012	9167	22.98	4.23	0.45	0.04	19 393	39.38	2.67	0.09	0.03
2013	8965	22.94	4.20	0.46	−0.01	18 330	36.18	2.78	0.10	0.03
Average		21.17	4.53	0.65	−0.06		39.53	2.59	0.10	0.03

Table 3: Comparison of Firm-level Market Share Changes following the GFC

The outcome variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q, as continuous covariates. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Family group firms sample	0.008	0.380	0.103	0.029
Matched control firms sample	−0.509	−0.598	0.367	0.119
Family group vs Matched control ATT	0.570***	1.134***	−0.383	−0.214
	(0.221)	(0.359)	(0.253)	(0.364)
No. of family group firms	1153	1153	735	735

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

Table 4: Industry Profiles of Family Group Firms and Market Share Changes following the GFC

The outcome variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The statistics are the Average Treatment Effect of the Treated (ATT) and standard errors (in parentheses) obtained when comparing family group firms (FG) to matched control firms (MC) that are drawn from other sample firms in the same country and 1-digit SIC industry, and are the nearest neighbor match based on the following covariates: total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. The comparison is performed on separate sub-samples split according to two alternative measures of industry competitiveness. In Panel A, firms are split according to whether its industry's HHI measure is below (competitive) or above (non-competitive) the country median. In Panel B, firms are split according to whether the average age of firms in its industry is below (competitive) or above (non-competitive) the country median. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: Sub-sample analysis with competitiveness defined by the HHI measure				
Competitive industry: (FG) vs (MC) ATT	0.625***	0.963***	−0.331	0.046
	(0.216)	(0.322)	(0.278)	(0.387)
No. of family group firms	605	588	364	343
Non-competitive industry: (FG) vs (MC) ATT	0.398	0.914	−0.548	−0.697
	(0.406)	(0.582)	(0.404)	(0.540)
No. of family group firms	532	508	371	353
Panel B: Sub-sample analysis with competitiveness defined by industry's firm age				
Competitive industry: (FG) vs (MC) ATT	1.121***	2.107***	−0.451	−1.087**
	(0.398)	(0.578)	(0.355)	(0.492)
No. of family group firms	434	415	324	307
Non-competitive industry: (FG) vs (MC) ATT	0.212	0.305	−0.705**	−0.356
	(0.260)	(0.369)	(0.321)	(0.426)
No. of family group firms	707	684	411	389

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

Table 5: Market Share Changes following the GFC – Segment-level Analysis

Each unit of observations is a firm-segment, with a segment defined by the firm's sales in a 2-digit SIC industry (as reported by Worldscope). The outcome variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is computed by dividing a firm-segment's sales amount by the aggregate sales of all the segments of other sample firms that are in the same country, year and 2-digit SIC industry (on the condition that the industry has at least 5 firms). For each firm, the primary segment is the largest segment in terms of sales amounts (in Panels A and C) or in terms of market shares (in Panels B and D) in a given year, and non-primary segments are the remainder. The reported statistics are the Average Treatment Effect of the Treated (ATT) estimates obtained from comparing certain segments of family group firms to all segments of other (control) firms matched by the following criteria: (1) the control firm is in the same country but not part of a family group, (2) the selected segment of the control firm is in the same country and 1-digit SIC industry, and (3) the selected control segment is the nearest neighbor match to the focal (family group firm's) segment based on the following covariates: the segment's sales as a proportion of the firm's sales, as well as the firm's total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: Analysis of family group firms' primary segments, as defined by sales amounts				
Family group vs Matched control ATT	0.243	0.620**	−0.356*	−0.427
	(0.172)	(0.266)	(0.197)	(0.349)
No. of matched family group firms' segments	1264	1147	820	680
Panel B: Analysis of family group firms' primary segments, as defined by market shares				
Family group vs Matched control ATT	−0.101	0.664**	−0.434*	−0.346
	(0.212)	(0.332)	(0.249)	(0.393)
No. of matched family group firms' segments	1093	988	782	639
Panel C: Analysis of family group firms' non-primary segments, as defined by sales amounts				
Family group vs Matched control ATT	0.769***	1.279***	0.166	0.249
	(0.286)	(0.292)	(0.285)	(0.554)
No. of matched family group firms' segments	577	423	463	307
Panel D: Analysis of family group firms' non-primary segments, as defined by market shares				
Family group vs Matched control ATT	0.537**	1.061***	−0.367	0.121
	(0.266)	(0.386)	(0.243)	(0.487)
No. of matched family group firms' segments	636	476	494	341

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

Table 6: Internal Capital Market Activity and Market Share Changes following the GFC

The outcome variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The statistics are the Average Treatment Effect of the Treated (ATT) and standard errors (in parentheses) obtained when comparing family group firms to matched control firms that are drawn from other sample firms in the same country and 1-digit SIC industry, and are the nearest neighbor match based on the following covariates: total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. Panel A splits the tests according to the level of investment in affiliates (IAF) made by the other same-group affiliates of a focal family group firm during the GFC. Panel B splits the tests according to whether a focal family group firm receives a block equity investment during the GFC. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: Family group firms' market share changes, split by group-level IAF				
Positive Group IAF vs Matched control ATT	0.656**	0.961***	−0.162	−0.149
	(0.266)	(0.401)	(0.309)	(0.414)
No. of family group firms	676	485	679	457
High Positive Group IAF vs Matched control ATT	0.847**	1.164***	−0.285	−0.290
	(0.345)	(0.503)	(0.399)	(0.515)
No. of family group firms	386	309	371	293
No Group IAF vs Matched control ATT	0.392	0.570	−0.783**	−0.745
	(0.302)	(0.431)	(0.389)	(0.606)
No. of family group firms	474	459	250	239
Panel B: Family group firms' market share changes, split by intra-group block equity investments				
Block Investment vs Matched control ATT	1.184**	1.926***	−1.795***	−2.547***
	(0.595)	(0.920)	(0.657)	(0.882)
No. of family group firms	128	127	99	93
No Block Investment vs Matched control ATT	0.467**	0.650**	−0.132	−0.041
	(0.227)	(0.359)	(0.267)	(0.376)
No. of family group firms	1022	981	636	603

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

Table 7: Changes in Corporate Investments of Family Group Firms following the GFC

The outcome variable is the change (winsorized) in the average investment rate (CAPEX/assets) from two years before to two years after the start of the GFC. The reported statistics are the Average Treatment Effect of the Treated (ATT) and standard errors (in parentheses) obtained when comparing family group firms to their matched control firms that are drawn from all other sample firms in the same country and 2-digit SIC industry, and are the nearest neighbor match based on the following covariates: total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. In Panel B, the comparison is repeated on separate sub-samples split according to two alternative measures of industry competitiveness: for each firm, (1) whether its industry's HHI measure is below (competitive) or above (non-competitive) the country median, or (2) whether the average age of firms in its industry is below (competitive) or above (non-competitive) the country median. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets (1)	Developed markets (2)
Panel A: Full sample analysis		
Family group firms' average CAPEX change	−1.307	−1.314
Matched control firms' average CAPEX change	−1.951	−1.049
Family group vs Matched control ATT	0.711***	−0.389*
	(0.282)	(0.236)
No. of family group firms	1247	852
Panel B: Sub-sample analysis, split by industry concentration		
Comp. industry: Family group vs Matched control ATT	0.861***	−0.498
	(0.416)	(0.396)
No. of family group firms	617	413
Non-comp. industry : Family group vs Matched control ATT	0.501	−0.465*
	(0.387)	(0.281)
No. of family group firms	585	410
Sub-sample analysis, split by industry age		
Comp. industry: Family group vs Matched control ATT	0.727	−0.399
	(0.499)	(0.405)
No. of family group firms	443	352
Non-comp. industry : Family group vs Matched control ATT	0.357	−0.385
	(0.350)	(0.283)
No. of family group firms	759	471

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

Table 8: Changes in Product Market News Events of Family Group Firms from Before to After the GFC

The table reports a difference-in-differences regression analysis with the sample period from five years before to five years after the GFC. In Column 1, the dependent variable is the natural logarithm of the number of product-related news events in a given fiscal year. In Columns 2, 3, 4, and 5, the dependent variable is the indicator for whether there is a news event in a given year in the following categories: new products released, new market entry, supply (production) increased, and price cuts. *Family Group* is the indicator variable for family group firms. *Post Crisis* is the indicator for fiscal years that end after the GFC. The regression models include but do not report the following control variables, all of which are measured at one year lag: total assets (log transformed), firm age (log transformed), net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	All product news	Product release	Market entry	Supply increase	Price cut
	(1)	(2)	(3)	(4)	(5)
Panel A: Emerging markets					
Family Group × *Post Crisis*	0.024**	0.019***	0.006**	0.009***	0.002
	(0.011)	(0.006)	(0.002)	(0.003)	(0.002)
No. of observations	41,492	41,492	41,492	41,492	41,492
Adjusted R^2	0.719	0.500	0.142	0.325	0.293
Panel B: Developed markets					
Family Group × *Post Crisis*	−0.002	0.006	0.006*	−0.002	0.001
	(0.010)	(0.009)	(0.003)	(0.003)	(0.002)
No. of observations	90,806	90,806	90,806	90,806	90,806
Adjusted R^2	0.787	0.542	0.137	0.407	0.280
Control variables	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES
Country×year fixed effects	YES	YES	YES	YES	YES

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

Table 9: Acquisition Behaviour and Survival of Family Group Firms from Before to After the GFC

Panel A reports a difference-in-differences regression analysis, where the dependent variable is the indicator for whether a sample firm conducts an acquisition in a given year. The sample period is from five years before to five years after the GFC. *Family Group* is the indicator variable for family group firms. *Post Crisis* is the indicator for fiscal years that end after the GFC. The regressions include but do not report the following control variables, all of which are measured at a one year lag: total assets (log transformed), firm age (log transformed), net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. Panel B presents the estimates (hazard ratios) from the Cox's proportional hazard model with the outcome variable being a firm's survival duration (time until failure) from the pre-crisis year until five years after. The model is estimated on the same firm characteristics considered in the analysis in Panel A, this time measured at the pre-crisis year. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets	Developed markets
	(1)	(2)
Panel A: Difference-in-differences regression on group acquisition events		
Family Group × *Post Crisis*	0.014**	0.001
	(0.007)	(0.009)
Control variables	YES	YES
Firm fixed effects	YES	YES
Country×year fixed effects	YES	YES
Adjusted R^2	0.30	0.38
No. of observations	42247	95142
Panel B: Survival analysis of family group firms after the GFC		
Family Group	0.439***	0.797
	(0.116)	(0.178)
Control variables	YES	YES
No. of observations	5067	11138

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

Table 10: Stock Returns of Family Group Firms following the GFC

The outcome variable is the buy-and-hold stock return measured over a 1-, 3-, or 5-year horizon from mid-August 2008 (the start of the GFC). The reported statistics are the Average Treatment Effect of the Treated (ATT) and standard errors (in parentheses) obtained when comparing family group firms to their matched control firms that are drawn from all other sample firms in the same country and 2-digit SIC industry, and are the nearest neighbor match based on the following covariates: total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	1-year return	3-year return	5-year return
	(1)	(2)	(3)
Panel A: Emerging markets			
Family group firms' buy-and-hold returns	0.005	0.450	0.680
Matched control firms' buy-and-hold returns	−0.025	0.384	0.599
Family group vs matched control ATT	0.041**	0.165***	0.175***
	(0.018)	(0.049)	(0.066)
No. of family group firms	1347	1347	1347
Panel B: Developed markets			
Family group firms' buy-and-hold returns	−0.180	−0.030	0.213
Matched control firms' buy-and-hold returns	−0.166	−0.047	0.212
Family group vs matched control ATT	−0.019	0.008	0.003
	(0.017)	(0.034)	(0.055)
No. of family group firms	928	928	928

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

ONLINE APPENDIX

Table A1: SEO and CAPEX in Emerging vs. Developed Markets

The first two columns of this table report results of logit regression estimates of the likelihood of conducting an SEO. The dependent variable is a dummy variable taking the value of 1 if the firm conducts a SEO, and 0 otherwise. Columns 3 and 4 report results of OLS regression estimates of difference in investment sensitivity to own cash flows between firms in emerging markets and developed markets. The dependent variable is a firm's CAPEX/assets. This is regressed on *Operating Profits*, or net profits (excluding depreciation) scaled by assets, serving as a proxy for internal cash flows. The key explanatory variable in both set of regressions is *Emerging*, which is a dummy variable taking the value of 1 if the firm is from an emerging market, and 0 otherwise. The following control variables are measured at one year lag. *Firm Size* and *Firm Age* is the natural logarithm of total assets and firm age from listing. *Cash Holdings*, *Capex* (excluded from the specifications in Columns 3 and 4), *Fixed Assets*, *Debt*, *Tobin's Q* are the ratios of cash, capital expenditure, fixed assets, profits, interest-bearing debt and market value of assets, to total assets. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. Standard errors are reported in parentheses

	SEO likelihood		Firm investment	
	All firms (1)	Standalone firms (2)	All firms (3)	Standalone firms (4)
Emerging	-0.007^{***}	-0.007^{***}		
	(0.001)	(0.002)		
Operating Profits			0.016^{***}	0.014^{***}
			(0.003)	(0.003)
Emerging × *Operating Profits*			0.020^{***}	0.024^{***}
			(0.007)	(0.008)
Firm fixed effects	NO	NO	YES	YES
Country×year fixed effects	NO	NO	YES	YES
No. of observations	130,599	100,817	114,021	88,163

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

Table A2: Covariate Imbalance – Before and After Matching

The table reports the p-value from the Kolmogorov-Smirnov test for distributional difference in a given measure (one of the covariates listed below) between family group firms and matched control firms. The test is conducted before and after applying the matching procedure, which picks the nearest neighbor match (in the same country and 1-digit SIC industry) for each subject (group) firm using the following continuous covariates: total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	Before matching	After matching	Before matching	After matching
	(1)	(2)	(3)	(4)
Size	0.000	0.000	0.000	0.000
Age	0.000	0.000	0.022	0.097
Operating Profit	0.000	0.310	0.000	0.268
Cash Holding	0.030	0.534	0.081	0.480
Leverage	0.006	0.261	0.049	0.112
PPE	0.001	0.285	0.006	0.636
Capex	0.000	0.380	0.239	0.480
Q	0.675	0.643	0.024	0.838

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

Table A3: Distributional Differences in Firm Size

The table reports the p-value from the Kolmogorov-Smirnov test for distributional difference in firm size (total assets) between family group firms and matched control firms, for each sample country. The test is conducted before and after applying the matching procedure, which picks the nearest neighbor match (in the same country and 1-digit SIC industry) for each subject (group) firm using the following continuous covariates: total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

Emerging markets			Developed markets		
	Before matching	After matching		Before matching	After matching
	(1)	(2)		(3)	(4)
Argentina	0.095	0.181	Australia	0.000	0.691
Brazil	0.012	0.067	Austria	0.698	0.964
Chile	0.018	0.901	Belgium	0.029	0.983
Colombia	0.938	0.699	Canada	0.000	0.188
India	0.423	0.841	Denmark	0.861	0.785
Indonesia	0.000	0.007	Finland	0.231	0.979
Israel	0.013	0.120	France	0.000	0.279
South Korea	0.000	0.000	Germany	0.000	0.312
Malaysia	0.000	0.004	Greece	0.000	0.039
Mexico	0.018	0.128	Hong Kong	0.000	0.014
Pakistan	0.855	0.492	Italy	0.000	0.060
Peru	0.381	0.951	Japan	0.013	0.489
Philippines	0.000	0.701	Netherlands	0.399	0.400
Poland	0.819	0.737	New Zealand	0.131	0.270
South Africa	0.100	0.847	Norway	0.001	0.274
Sri Lanka	0.000	0.008	Portugal	0.893	0.964
Taiwan	0.000	0.000	Singapore	0.000	0.000
Thailand	0.001	0.150	Spain	0.677	0.819
Turkey	0.156	0.163	Sweden	0.000	0.067
			Switzerland	0.130	0.822
			United Kingdom	0.465	0.419
			United States	0.000	0.637

Table A4: Robustness checks on the baseline analysis

The outcome variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q, as continuous covariates. The matching criteria are then varied to form the following alternative matched control samples. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: Adding a firm's pre-crisis market share to the list of covariates				
Family group vs Matched control ATT	0.478**	1.062***	−0.411*	−0.599*
	(0.207)	(0.335)	(0.237)	(0.319)
Panel B: Removing 1-digit SIC industry as an exact matching condition				
Family group vs Matched control ATT	0.465**	1.006***	−0.331	−0.118
	(0.239)	(0.352)	(0.288)	(0.407)
Panel C: Replacing 1-digit SIC industry with 2-digit SIC industry as an exact matching condition				
Family group vs Matched control ATT	0.856***	1.087***	−0.150	−0.527
	(0.213)	(0.326)	(0.237)	(0.342)
Panel D: Excluding firms going bankrupt after the crisis				
Family group vs Matched control ATT	0.519**	1.021***	−0.435*	−0.314
	(0.225)	(0.354)	(0.253)	(0.372)
No. of family group firms	1135	1135	716	716
Panel E: Excluding countries with significant significant size gaps after matching				
Family group vs Matched control ATT	0.829**	1.779***	−0.398	−0.405
	(0.341)	(0.584)	(0.253)	(0.374)
No. of family group firms	604	604	589	589

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

Table A5: Robustness checks on the baseline analysis - placebo crisis

The outcome variable is market share change (winsorized) from the placebo crisis year to either 3 or 5 years later. The placebo crisis is assumed to occur either at the end of 2004 or the end of 2013. For the 2004 placebo crisis, market share change is computed using only the 3-year window, as the 5-year window would overlap with the real crisis in 2008. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q, as continuous covariates. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets			Developed markets		
	2004 Placebo Crisis	2013 Placebo Crisis		2004 Placebo Crisis	2013 Placebo Crisis	
	3-year market share change	3-year market share change	5-year market share change	3-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)	(5)	(6)
Family group vs Matched control ATT	0.121	−0.046	−0.311	0.028	0.262	0.194
	(0.183)	(0.142)	(0.201)	(0.185)	(0.161)	(0.252)
No. of family group firms	927	1089	1055	744	636	602

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

Table A6: Comparison of Firm-level Market Share Changes following the GFC – Regression Analysis

The table reports a cross-sectional regression analysis on the snapshot of sample firms taken at the pre-crisis year. The dependent variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). *Family Group* is the indicator variable for firms that belong to family business groups. The regression models include but do not report the following control variables, all of which are measured at one year lag: total assets (log transformed), firm age (log transformed), net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q. In Panel A, the observations include all sample firms. In Panel B, the observations include only family group firms and their matched control firms (from the same country and 1-digit SIC industry), obtained using nearest neighbor matching on the same continuous covariates as the control variables listed above. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: All sample firms in the pre-crisis year				
Family Group	0.350**	0.667**	−0.411*	−0.523**
	(0.167)	(0.314)	(0.209)	(0.250)
Control variables	YES		YES	
Country×industry FEs	YES		YES	
No. of observations	4041		8482	
Panel B: Family group firms and their matched control firms in the pre-crisis year				
Family Group	0.531**	0.949**	−0.353	−0.206
	(0.205)	(0.375)	(0.239)	(0.297)
Control variables	YES		YES	
Country×industry FEs	YES		YES	
No. of observations	1904		1343	

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

Table A7: Post-crisis market share changes of non-family group firms

In Panel A the analysis excludes non-family group firms, so the comparisons are effectively between family group firms and their matched control firms drawn from the standalone firm cohort. In Panel B, the analysis excludes all family group firms, so the comparisons are effectively between non-family group firms and their matched standalone firms. The outcomes variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plants and equipment to assets, and Tobin's Q, as continuous covariates. The matching criteria are then varied to form the following alternative matched control samples. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: Re-running baseline analysis after excluding non-family firms				
Family group firms sample	0.008	0.380	0.103	0.029
Matched control firms sample	−0.471	−0.598	0.246	−0.190
Family group vs Matched control ATT	0.526**	1.103***	−0.272	0.180
	(0.221)	(0.344)	(0.242)	(0.364)
Panel B: Comparing non-family firms to stand-alone firms (family group firms excluded)				
Non-family group firms sample	0.030	0.270	0.359	0.579
Matched control firms sample	−0.674	−0.169	0.114	0.192
Non-family group vs Matched control ATT	0.671	0.136	0.227	0.374
	(0.478)	(0.818)	(0.184)	(0.298)
No. of non-family group firms	192	192	666	666

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

Table A8: Comparison of Firm-level Gross Margin Changes following the GFC

The outcome variable is the change (winsorized) in gross margins (gross profits divided by sales) from the pre-crisis year to either 3 or 5 years later. The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on total assets, firm age, net profits (excluding depreciation) to assets, CAPEX to assets, debt to assets, cash holdings to assets, property plant and equipment to assets, and Tobin's Q, as continuous covariates. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007.

	Emerging markets		Developed markets	
	3-year gross margin change	5-year gross margin change	3-year gross margin change	5-year gross margin change
	(1)	(2)	(3)	(4)
Family group vs Matched control ATT	0.753	0.239	1.045*	0.403
	(0.470)	(0.585)	(0.579)	(0.837)
No. of family group firms	1089	1089	713	713

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

about ECGI

The European Corporate Governance Institute has been established to improve *corporate governance through fostering independent scientific research and related activities.*

The ECGI will produce and disseminate high quality research while remaining close to the concerns and interests of corporate, financial and public policy makers. It will draw on the expertise of scholars from numerous countries and bring together a critical mass of expertise and interest to bear on this important subject.

The views expressed in this working paper are those of the authors, not those of the ECGI or its members.

ECGI Working Paper Series in Finance

www.ecgi.global/content/working-papers

Electronic Access to the Working Paper Series

The full set of ECGI working papers can be accessed through the Institute's Web-site (www.ecgi.global/content/working-papers) or SSRN:

Finance Paper Series	http://www.ssrn.com/link/ECGI-Fin.html
Law Paper Series	http://www.ssrn.com/link/ECGI-Law.html