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The structure and formation of business groups: Evidence from Korean *chaebols* ☆

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ABSTRACT

We study the evolution of Korean *chaebols* (business groups) using ownership data. *Chaebols* grow vertically (as pyramids) when the controlling family uses well-established group firms ("central firms") to acquire firms with low pledgeable income and high acquisition premiums. *Chaebols* grow horizontally (through direct ownership) when the family acquires firms with high pledgeable income and low acquisition premiums. Central firms trade at a relative discount, due to shareholders' anticipation of value-destroying acquisitions. Our evidence is consistent with the selection of firms into different positions in the *chaebol* and ascribes the underperformance of pyramidal firms to a selection effect rather than tunneling.

1. Introduction

Groups of firms under common ownership are prevalent around the world. These so-called business groups account for a large fraction of the economic activity of many countries.[1] Most of these groups are controlled by families that hold equity stakes in group firms either directly or indirectly through other firms in the group. For example, one typical ownership structure is referred to as a pyramid. In this structure, the family achieves control of the constituent firms by a chain of ownership relations: the

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[1] Claessens, Fan, and Lang (2002) find that, in eight out of the nine Asian countries they study, the top 15 family groups control more than 20% of the listed corporate assets. In a sample of 13 Western European countries, Faccio and Lang (2002) find that, in nine countries, the top 15 family groups control more than 20% of the listed corporate assets.

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family directly controls a firm, which in turn controls another firm.[2]

The previous empirical literature has generally taken group structure as given, and studied the consequences induced by its ownership structure. The literature focuses mostly on the relationship between the controlling family's cash flow and voting rights and measures of accounting performance and valuation (see, e.g., Claessens, Djankov, and Lang, 2000; Faccio and Lang, 2002). In particular, the findings in the literature suggest that pyramidal ownership may reduce firm performance (see, e.g., Claessens, Djankov, Fan, and Lang, 2002; Joh, 2003), perhaps because of tunneling incentives created by pyramiding (Bertrand, Mehta, and Mullainathan, 2002; Bae, Kang, and Kim, 2002; Baek, Kang, and Lee, 2006). However, the causes that determine a group's ownership structure remain largely unexplored. In particular, while there have been some recent theoretical attempts to understand pyramidal ownership, there is little empirical research that focuses on how pyramids evolve over time.[3] We try to fill this gap in this paper.

Our tests draw mostly on Almeida and Wolfenzon's (2006) theory of pyramidal ownership. In their model, the controlling family chooses the optimal ownership structure of a new firm (call it firm B) which is to be added to the group (for example, through an acquisition). The choices are a pyramidal structure, whereby the family uses the equity of an existing group firm (call it firm A) to finance the investment in the new firm, and a direct ownership structure, whereby the investment is paid for with the family's personal wealth. The theory generates predictions about the characteristics of firms that are placed in pyramids rather than under direct control. First, firms that have cash flows and/or assets that are difficult to pledge to outside investors (low pledgeability) should be placed in pyramids. This relationship arises because group equity (such as the equity of firm A) is particularly valuable as a financing tool when the family is financially constrained. Since financial constraints are more likely to bind for low pledgeability firms, such firms are optimally controlled through pyramids. Second, the lower the net present value (NPV) of the new firm, the more likely it is that the new firm will be placed in a pyramid. Pyramidal ownership forces the family to share the NPV of firm B with minority shareholders of firm A. Thus, the family prefers to directly control high NPV firms. Third, the theory predicts that firms that are used by the family to set up and acquire other firms (such as firm A) should trade at a discount relative to other public group firms. The valuation discount arises because investors anticipate the selection of low NPV firms into pyramids and thus, discount firm A's shares to compensate for the poor returns associated with future pyramidal investments.

We use a unique data set of Korean business groups to test the theory's implications. The political and regulatory context of *chaebols* allows us to obtain extremely detailed ownership data on *chaebol* firms. Since the mid-1990s, the top Korean *chaebol*s have had to report their complete ownership information to the Korean Fair Trade Commission (KFTC). These reports include ownership and accounting data on all firms (public or private) in each *chaebol*. Another feature that distinguishes our data is their dynamic nature. We have a panel from 1998 to 2004, for a relatively comprehensive sample of *chaebol* firms. In most countries, these type of data are not generally available.[4]

The theoretical arguments above motivate new metrics of group ownership other than the standard measures of cash flow and voting rights. First, we provide a measure of the *position* of any group firm relative to the controlling shareholder. This metric allows us to distinguish pyramidal from direct ownership. In addition, to identify firms that the family uses to set up new firms (such as firm A in the description above), we compute the *centrality* of a firm for the group structure (e.g., whether a given firm is used by the family to control other group firms).[5] We also introduce a new metric to compute voting rights that we call *critical control threshold*. This metric is closely related to the concept of the weakest link that is used in existing literature. However, unlike the weakest link, it can be computed for group structures of any degree of complexity. We provide algorithms that generate these ownership measures. In our data, this is necessary because the complex ownership structures of Korean *chaebol*s with dozens of firms and several ownership links among them make it difficult for the researcher to directly compute them.[6]

We start by describing the basic characteristics of Korean *chaebols*. We find that both pyramids and cross-shareholdings are common in Korean *chaebol*s. Nevertheless, pyramids in Korean *chaebols* are not "deep." A large majority of *chaebol* firms belong to pyramids with a total of two or three firms in the chain. Only a few group firms in each group are classified as being central, and they tend to be the older and larger firms in the group. These findings suggest that in a typical Korean *chaebol,* a few central firms hold stakes in a large number of firms controlled through a pyramid involving the central firms. We also observe a substantial number of firms that are controlled directly by the family, with no ownership links to other *chaebol* firms. This cross-sectional variation in *chaebol* firm ownership structures allows us to test the predictions described above.

The empirical evidence on the characteristics of group firms is consistent with the theoretical predictions. First, we

[2] Pyramids are very common throughout the world. See, among others, Claessens, Djankov, and Lang (2000), for the evidence on East Asia, Faccio and Lang (2002) and Barca and Becht (2001) for Western Europe, Khanna (2000) for emerging markets, and Morck, Stangeland, and Yeung (2000) for Canada.

[3] A recent paper by Fan, Wong, and Zhang (2009) focuses on the formation of state-owned pyramids in China. As discussed by those authors, state-owned Chinese firms are special in that they show no separation between ownership and control. Bertrand, Johnson, Samphantharak, and Schoar (2008) use cross-sectional data on Thai business groups to study the role of family structure for group ownership structure and group firm performance. In particular, they find that groups that are controlled by larger families are more pyramidal in structure.

[4] Franks, Mayer, Volpin, and Wagner (2008) assemble a data set that contains ownership information on private firms in France, Germany, Italy, and the UK. They focus on the trade-off between family and dispersed ownership, rather than on the ownership structure of groups.

[5] The measure of *centrality* that we derive is similar (but not identical) to that proposed by Kim and Sung (2006).

[6] Our algorithms can also be useful in other countries in which groups have complex ownership structures.