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Ownership Dynamics with Large Shareholders: An Empirical Analysis

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Abstract

We study the empirical determinants of corporate ownership dynamics using a unique, hand-collected 20-year data set on the ownership structure of Chilean companies. Controllers' blockholdings are on average high and stable over time. Controllers still make changes to their holdings through issuance and block trades. In a typical year controllers' blockholdings decrease (increase) by 5 percentage points or more in approximately 6% (7%) of firms. We find that the separation between controllers' voting and cash-flow rights reduces the likelihood of ownership dilution. Dilution is preceded by high stock returns and predicts low stock returns in the future when done through issuance.

I. Introduction

There are systematic differences in ownership concentration across countries. Ownership is typically dispersed in the United Kingdom and the United States, while most corporations are controlled by large shareholders in continental Europe, Asia, and Latin America (Barca and Becht (2001), Claessens, Djankov, and Lang (2000), Faccio and Lang (2002), and La Porta, López-de-Silanes, and Shleifer (1999)). Many questions remain open when trying to understand these differences in ownership concentration. For example, do markets naturally converge to the dispersed ownership paradigm of the United States and the United Kingdom? If so, at what speed is ownership being dispersed? What prevents some firms from becoming widely held? What motivates large shareholders to increase or decrease their stakes? Is it control turnover, a cash infusion to finance

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investment, market timing, the need to diversify their portfolios, or something else? Our paper sheds light on these questions.

Some recent papers study the dynamics of ownership and the process through which firms become widely held. Among U.S. firms, Helwege, Pirinsky, and Stulz (2007) find that better stock market conditions (e.g., high returns and liquidity) are key variables to explain ownership dispersion. Following a similar methodology, although with an international sample, Foley and Greenwood (2010) show that investment opportunities and strong investor protection are also crucial for firms to disperse ownership. However, many firms do not become widely held even in countries with strong investor protection. For example, according to La Porta et al. (1999), 20% of firms in the United States are controlled by large shareholders (typically families).[1] On the other hand, many firms become widely held in countries with relatively poor investor protection. For example, approximately 30% of listed firms are widely held in France (Faccio and Lang (2002)).

Chile provides a unique setting for studying ownership dynamics because it is a laboratory that can simultaneously shed light on various theories. In this market we observe regulatory changes that improve the overall protection to minority shareholders. At the same time, we can go beyond the country-level average of corporate governance and measure agency problems at the firm level. This is crucial to understanding within-country differences in ownership concentration as noted above. Also, the Chilean economy has gone through a deep transformation over the recent past. Per capita gross domestic product (GDP) more than doubled (tripled in purchasing power parity terms), implying a dramatic redrawing of investment opportunities as the market changed in size and competitiveness. The local stock market also suffered booms and busts that can incite market timing behavior if this is a motive behind changes in ownership. Overall, previous research has precisely identified these dimensions (legal protection to minority investors or agency problems broadly speaking, investment opportunities, and stock returns) as the main drivers of ownership dispersion. Thus, by studying ownership dynamics in a country that has changed along all of these dimensions, we can better understand the motivations of controlling shareholders. Also, with the data available in this market we can take into account a key dimension that has remained under the radar in recent papers, namely whether control is transferred or not, and at what point, as ownership evolves. As suggested by the model of Zingales (1995), many changes in ownership concentration (e.g., going public or diluting ownership without surrendering control) can perhaps be better understood as decisions of a controlling shareholder who seeks to maximize the extraction of rents in a future sale of control.

Chilean ownership data are of excellent quality even when compared to the recent literature. First, we are able to assemble a data set of the controllers' blockholdings in almost all listed companies over a period of 20 years (1990–2009). This is a long time series. For example, Helwege et al. (2007) only have 15 years of ownership data in the United States, which is the country with the most comprehensive financial data sets. Also, every firm in our sample is covered each year

[1] According to Holderness (2009), this number could be much higher.

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of its existence. Other papers typically rely on cross sections or short panels of ownership data, which are often sampled at intervals longer than a year. Second, we are able to identify the controller by name and assess her stake in the company in a precise way, which allows us to determine when control is transferred from one large shareholder to another. In other work (e.g., Helwege et al. (2007) or Foley and Greenwood (2010)), blockholdings are measured for insiders (officers and directors) as an anonymous group. Third, we are able to combine data on ownership structures with data on boards of directors, which paints a more complete picture of the effects of ownership changes. Finally, we are able to map out the entire web of corporate pyramids. This process is cumbersome, as it requires an intimate knowledge of the corporate structure of many intertwined companies and is therefore hard to replicate in other samples. Pyramids, which are common in many other parts of the world (see Morck, Wolfenzon, Yeung (2005)), imply a separation of cash-flow rights and voting rights. Previous literature has used this separation as a proxy for agency problems, so it adds an interesting dimension to our tests (see Claessens et al. (2000), Claessens, Djankov, Fan, and Lang (2002), Lin, Ma, Malatesta, and Xuan (2011), and Lin, Ma, and Xuan (2011)).

Despite these unique features of the Chilean data, what we learn from it can shed light on ownership dynamics in a number of different markets. According to Djankov, La Porta, López-de-Silanes, and Shleifer (2008), Chile is similar to other developed and emerging economies in continental Europe, Asia, and the rest of Latin America in terms of the size of its equity market relative to GDP, initial public offering (IPO) activity, the level of control premium, typical control mechanisms (e.g., pyramids, dual-class shares, etc.), and the overall level of ownership concentration. In other words, Chile resembles many other markets where large shareholders are prevalent. According to the same authors, the protection to minority shareholders in Chile is not as good as in the United States, but it is close to the average of common law countries, which are more advanced in terms of curbing corporate abuses. This implies that the legal environment for investors in Chile is typical of many markets outside the United States.

We see that unlike the United States, where most firms are widely held 10 years after the IPO (Helwege et al. (2007)), there is no noticeable trend toward ownership dispersion despite all the changes that occur in the 2 decades we study. For example, the median controller holds 61% of shares in 1990 and 67% in 2009, while less than 1% of firms are widely held when applying the threshold of 10% of ownership usually considered in the literature. The median controller's stake is quite high, but roughly comparable to the 57% observed in Germany or 50% in France (Barca and Becht (2001), Faccio and Lang (2002)). As in these other countries, the benefits of concentrated ownership in Chile seem to be large, either in terms of curbing managerial excesses or permitting consumption of private benefits, when compared to the potential gains from diversification (Burkart, Gromb, and Panunzi (1997), Burkart, Panunzi, and Shleifer (2003), DeMarzo and Urosevic (2006), Shleifer and Vishny (1986), and Stulz (1988)).

However, and despite the aggregate stability, controllers sell and purchase large ownership stakes with relatively high frequency. In a typical year approximately 6% of controllers reduce their stake by 5 percentage points or more, while 7% increase their stake by a similar amount. Less than 10% of these events

correspond to changes in the identity of the controller. Changes in a company's board of directors are more common than changes in controller. In some cases the board increases in size, while in others only its composition is modified. These changes may have a strategic purpose, such as sealing an alliance with another family or a financing partner.

We find that dilution is less likely when pyramidal structures produce a wedge between the controller's voting and cash-flow rights. There are demand-side and supply-side explanations for this finding. A demand-side explanation, focused on the wedge as proxy for agency costs, would be that outside investors are reluctant to buy shares when there is a wedge because the controller's interests are poorly aligned with those of minority investors. A different interpretation is that investors may prefer not to buy shares because this would dilute the ownership leverage previously given to a skilled controlling shareholder. In this case, the wedge is not a sign of agency problems but simply a reflection of the management skills of certain large shareholders. Supply-side explanations would argue that controlling shareholders are less willing, or have less need, to sell a stake in companies with larger wedges. Almeida and Wolfenzon (2006) argue that controlling shareholders can finance firms at the bottom of pyramidal structures with little of their own capital. Under this view, firms controlled with a wedge are less likely to issue equity because investment can be easily funded with capital from other firms in the conglomerate. At the same time, controlling shareholders may be extracting large private benefits from firms they control with a wedge because this does not impact their final cash flows, and therefore they may be less keen on diluting their stake in these companies. Irrespective of the interpretation, our finding is important for the literature on ownership dynamics, since it shows that pyramidal structures, which are one of the main reasons for the difference between voting and cash-flow rights (Adams and Ferreira (2008)), do not facilitate ownership dispersion. Also, the wedge between voting and cash-flow rights varies across firms, and not only across countries, which helps to explain why even within the same country some firms become widely held and others do not. Simply put, firms in pyramids are less likely to become widely held.

Foley and Greenwood (2010) show that ownership is diluted more easily in countries that offer better investor protection. In line with their results, we find that an improvement in the legal protection to Chilean investors in the year 2000 reduces the frequency of increases in ownership concentration afterward. However, better investor protection, at least along the dimensions included in the Chilean reform, does not lead to quick ownership dilution.

We continue our analysis by looking at what happens after changes in ownership concentration (see Pagano, Panetta, and Zingales (1998) for a similar strategy). For instance, what if dispersion is the only way to finance a new investment or to obtain debt financing? We do not find evidence of changes in investment, debt growth, or leverage for up to 3 years after events of dispersion. Neither do we find significant changes in profitability as models of adverse selection would suggest. Zingales (1995) predicts that transfers of control are more likely after events of dispersion, since these allow the controller to extract more rents from a potential buyer who also enjoys the private benefits of control. Turnover of control is always very low in our sample and does not increase significantly after dispersion.

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As in previous literature, we find that market variables are important for understanding ownership dynamics (Helwege et al. (2007)). Ownership dispersion is preceded by high stock returns and predicts low stock returns in the future. Return predictability is equally strong after events with and without changes in the board of directors. The presence of institutional investors does not eliminate return predictability as could be expected under some theories if institutions are sophisticated investors. Dilution through share issuance, as opposed to a block sale, is a particularly good predictor of low future returns, which is in line with recent evidence on the relationship between issuance and returns (Fama and French (2008), Pontiff and Woodgate (2008)). There are several interpretations for these findings. First, controlling shareholders may be exploiting inside information at the expense of naïve or less-informed outside investors. Alternatively, controlling shareholders may simply lean against stock market bubbles at the level of the entire market or a particular industry, which would imply that their actions play a stabilizing role. We find that there is no obvious clustering of dilution events in time periods or industries, which sheds some doubts on the presence of specific bubbles. However, our findings are not enough to fully discriminate between these two views on the connection of dilution and future returns. This is a call to caution, since the policy implications and the need for regulatory intervention are quite different in each case.

Overall, our results suggest that ownership dynamics (in Chile and potentially in many other markets where large shareholders are prevalent) are better understood as intermediate steps taken by a large shareholder who retains control all along (as in Zingales (1995)). Differences in the way firms are controlled help to explain why ownership dilution is not seen in many firms or why ownership concentration is so persistent. Stock market performance also has an impact on ownership dilution, in particular when related to issuance, but market timing does not seem to be the whole story for ownership dynamics. Finally, ownership dynamics do not have a sizable impact on real firm performance, at least in the short run.

The rest of the paper is organized as follows: In Section II we review the main theories of ownership dynamics, and in Section III we describe our data in detail. In Section IV we present a regression analysis of the determinants of changes in the blockholding share (BHS), and in Section V we study the aftermath of ownership dispersion and concentration before presenting our conclusions in Section VI. An online Appendix (available at www.jfqa.org) contains further description of the data set and robustness checks.

II. Ownership Dynamics: Motivating Theories

In this section we provide a brief summary of the main insights and empirical predictions of different models. For reasons of simplicity, most theories emphasize one aspect of ownership dynamics and are not, therefore, mutually exclusive.

A. Adverse Selection

Leland and Pyle (1977) present a model of asymmetric information where the insider retains equity in order to signal the firm's quality. Under this model,

an improvement in the informational environment opens the way to ownership dispersion due, for example, to an increase in the transparency of firms' financial statements or the greater presence of independent auditors and stock market analysts. Adverse selection would be reflected in the relatively low profitability of firms after dispersion because only bad firms disperse ownership in equilibrium. In addition, we should see a marketwide shift toward dispersion as the corporate environment becomes more transparent, as has been the case in Chile over the last 20 years.

B. Agency Problems

Jensen and Meckling (1976) present an agency model where controllers have to retain a significant fraction of equity in order to curb moral hazard problems. If they do not do so, their incentives and those of other shareholders are not properly aligned, and insiders capture excessive private benefits. Under the agency view, ownership dispersion is permitted by any factor that better aligns the incentives of controllers and minority shareholders, such as an improvement in legal protection of minority investors or greater stock market liquidity, leading to a more active market for corporate control. In a related agency theory, Shleifer and Vishny (1986) point out that concentration may be the optimal way to avoid the free-rider monitoring problem that arises with dispersed ownership. In this case, dispersion would be permitted by declining monitoring costs or better legal protection of shareholders against managerial misbehavior.

C. Diversification

The need for diversification is a standard reason to expect a trend toward dispersed ownership. In the model of DeMarzo and Urosevic (2006), the controller faces a trade-off between stake reduction, with the resulting diversification of firm risk, and stake maintenance in order to monitor the manager, with a positive impact on the firm's cash flows. Under this model, aggravating the moral hazard problem reduces the speed of adjustment of the controller's stake toward its optimal (more diversified) level. The advantage of this model is that it explicitly discusses dynamics while other models are essentially static.

D. Market Timing

The market timing hypothesis has received considerable attention in the recent literature. Under this view, insiders issue or sell blocks of shares at high prices and repurchase or buy blocks when prices are low (Loughran and Ritter (1995)). These transactions are motivated by the short-term profits that can be made when market prices show irrational deviations from their underlying fundamentals. Controlling shareholders may exploit inside information at the expense of outside investors, or perhaps they simply lean against a stock market bubble. In the 1st case, market timing is another sign of agency problems. In the case of bubbles, the interpretation is less clear. It is potentially optimal, in the sense of achieving price stabilization, to push against the bubble by selling overpriced

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assets. Therefore, the appropriate response of a market regulator is quite different depending on the source of market timing.

Baker and Wurgler (2000) examine the market timing hypothesis in the context of equity issuance in the United States. Henderson, Jegadeesh, and Weisbach (2006) find evidence consistent with market timing in a broad sample of markets and asset classes. Finally, Graham and Harvey (2001) present survey evidence in which ⅔ of chief financial officers (CFOs) identify equity overvaluation and recent stock price behavior among the key factors influencing the decision to issue equity. In the case of ownership dynamics, the market timing hypothesis predicts that ownership dispersion is more likely when prices are high or after firms experience high returns. On the contrary, low prices or low returns should lead to further ownership concentration. More importantly, ownership dispersion should predict low future returns as overvaluation disappears. By the same token, concentration should predict high future returns. As Baker and Wurgler (2002) argue, the defining feature of the market timing hypothesis refers to future return predictability, since other models (e.g., asymmetric information) also imply that firms should issue when valuations are high, but not that past ownership dynamics should predict future returns.

E. Control

Zingales (1995) studies the decision to go public and the size of the ownership stake to be retained. The controller views the IPO as a means to achieve the ownership structure that will maximize the value of the company in a future sale. By giving cash-flow rights to dispersed shareholders but simultaneously retaining control, the controller can increase his bargaining power in a future negotiation with a buyer who would also enjoy the private benefits of control. It is reasonable to think that similar considerations also apply in the case of the large shareholders in our sample. As noted by Pagano et al. (1998), one important implication of this model is that control transfers are more likely after events of dispersion.

F. Borrowing Constraints

One benefit of dispersed ownership is easier and cheaper access to debt financing. Recent research shows that firms where the wedge between the controller's voting and cash-flow rights is smaller or nonexistent (usually firms with more dispersed ownership) are less financially constrained and pay less for credit (Lin, Ma, Malatesta, and Xuan (2011), Lin, Ma, and Xuan (2011)). One implication of this theory is that ownership dispersion should be followed by increased investment as the borrowing constraint is relaxed and by debt growth as credit becomes cheaper.

III. Data

A. Data Collection

In Chile listed companies are required by law to disclose their 12 largest shareholders in their annual reports, indicating the number of shares each holds.

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As these shareholders are almost always other companies, this information is in itself of little help in identifying a company's ultimate controller. However, annual reports also explain whether control is exercised through one holding firm that owns all of the controller's shares or through several firms related to the controlling shareholder.

Companies' annual reports from 2004 onward are publicly available on the Web site of the Superintendencia de Valores y Seguros (SVS) (www.svs.cl) (the Chilean stock market regulator), and a few companies also post older reports online. From 1990 to 2003 we obtain the 12 largest shareholders of these companies from 2 private databases (Fecus Plus and Economatica). These also provide excerpts of companies' annual reports, including financial information and board composition along with other legal data. With all this information we identify each firm's controller (a family, an individual, the state, etc.). We have to check every firm and year individually by hand between 1990 and 2009.[2]

Chile resembles continental Europe and Asia in terms of the major types of controlling shareholders. Around 1/2 of the firms in our sample are controlled by families. Foreign-controlled firms, whose importance has increased over the last 2 decades, now represent more than 10% of all companies. Multiple blockholders (a coalition of 2 or more large shareholders without direct family ties) account for 30% of companies, while the rest of the companies are controlled either by the state or individual investors.[3] Further details can be found in the online Appendix.

For each firm-year, we identify all stakes related to the controller and compute the total fraction of shares outstanding that he or she holds. We call this the blockholding share (BHS). An example of this methodology is provided in Table 1, where we examine the case of CMPC, a forestry company that is one of Chile's largest and most emblematic firms. It is controlled by the Matte family, and under their direction the firm became one of the world leaders in pulp production. The family members do not directly own shares in CMPC but control the company through a pyramid of companies with names that bear no resemblance to the family name, making the task of tracking the BHS considerably more difficult. We identify all stakes controlled by the Mattes throughout the pyramid upon arriving at the family's privately held companies. We see that the companies through which the Mattes control CMPC, as well as the stakes they hold, have remained basically unchanged for the last 20 years. The 3 companies that hold the largest stakes in CMPC in 2009 are Forestal Cominco (19.6%), Forestal Constructora y Comercial del Pacífico Sur (19.2%), and Forestal O'Higgins (7.1%), a situation very similar to that seen in 2000 and, perhaps even more surprisingly, 1990. For each year in our sample we look for these and other companies controlled by the Matte family (e.g., Forestal Bureo and Forestal Coindustria), adding the fraction of shares they hold and obtaining the controller's stake.

[2]As far as we know, there is no database covering Chilean listed companies' ownership and financial data before 1990.

[3]Franks, Mayer, Volpin, and Wagner (2012) show that families own the largest fraction of listed firms in several countries in continental Europe: 66% in Italy, 48% in France, and 35% in Germany. La Porta et al. (1999) report similar evidence for other European countries such as Sweden (55%) and Belgium (50%), East Asian countries such as South Korea (35%), and Latin American countries such as Argentina (65%) and Mexico (100%).

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TABLE 1

CMPC's Largest Shareholders

Table 1 presents CMPC's ownership concentration, its controller-related shareholders, and the stake of each controller-related shareholder in 1990, 2000, and 2009. CMPC is one of the largest and most emblematic Chilean companies and is controlled by the Matte family, one of the country's main business groups. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS).

Shareholders	1990	2000	2009
Matte-Related Shareholders			
Forestal Cominco S.A.	19.5%	19.5%	19.6%
Forestal Const. y Comerc. del Pacífico Sur	19.1%	19.1%	19.2%
Forestal O'Higgins S.A.	6.4%	6.9%	7.1%
Forestal Bureo S.A.	3.9%	4.0%	4.0%
Forestal Coindustria	1.8%	1.8%	1.8%
Others			4.0%
Matte's stake	50.7%	51.3%	55.8%
Others Shareholders among 12 Largest			
AFP Provida (pension fund)	1.0%	3.9%	2.1%
AFP Habitat (pension fund)		2.2%	1.8%
AFP Capital (pension fund)		2.1%	1.5%
Other pension funds		2.9%	
Other shareholders among 12 largest	9.7%	3.5%	8.0%
Sum of Non-Matte Shareholders among 12 Largest	10.7%	14.6%	13.4%
Others	38.6%	34.1%	30.8%

We know from Franks et al. (2012) that family ownership is quite stable in the 1,000 largest (listed and private) companies in Germany, France, and Italy between 1996 and 2006. The stability of the control structure of CMPC over a 20-year period is, however, noteworthy and is, moreover, not an exception in our sample. For example, only 17% of firms change controller between 1990 (or the 1st year they appear in the sample) and 2009.

We follow the same procedure illustrated for CMPC with more than 3,000 firm-year observations in our sample. Our methodology may have some biases. For instance, if the controlling shareholder holds other smaller stakes not included among the 12 largest, we would be underestimating the size of the controlling stake. However, this bias is bound to be very small given that in Chile the combined average stake of the 12 largest shareholders reaches 77% in 1990 and 87% in 2009.

Our database contains almost all listed, nonfinancial Chilean companies, excluding only highly illiquid and small entities such as country clubs and schools. The sample covers 85% of Chilean stock market capitalization in an average year, with financial companies accounting for most of the remaining 15%. Another sign of stability is that nearly 90% of the companies that were listed in 1990 are also listed in 2009.

An interesting fact about Chile is that the majority of large firms are listed, rather than privately held. In contrast, Franks et al. (2012) find that listed firms are an exception among the 1,000 largest companies in Germany, France, and Italy. In this respect we benefit from Chile's unique recent history. Due to President Salvador Allende's nationalization scheme in the early 1970s and the debt crisis of the 1980s, many large companies came under state ownership. Between 1985 and 1989 the government of General Augusto Pinochet implemented a privatization program through the stock market. Most of those companies are in our database. In addition, a few state-owned water companies were privatized in the mid-1990s.

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Despite the fact that we study only listed firms, our sample therefore represents a large fraction of the Chilean economy, and by almost any measure our database includes the country's largest companies.

B. Pyramids, Cash-Flow Rights, and Voting Rights

The separation of control and cash-flow rights is common in East Asia (Claessens et al. (2000)), Europe (Faccio and Lang (2002)), and the United States (Villalonga and Amit (2009)) as well as in Chile (Lefort and Walker (2000)). This wedge is mainly achieved through the use of pyramids and multiple-class shares. We compute controllers' cash-flow rights, that is, the fraction of dividends received by the controller, either by multiplying all blockholdings in the pyramidal chain or by determining the control and cash-flow rights of each share class and then multiplying them with the stake the controller holds in each class.

For example, Viña Santa Rita, one of Chile's largest wine producers, is controlled by the Claro family through a chain of 2 listed companies (Elecmetal and Cristalerías) and several intertwined privately held companies. The Claro family controls approximately 50% of Elecmetal, which holds 34% of Cristalerías, which in turn holds 55% of Santa Rita. Considering only the links through these listed companies, the claim of the Claro family on Santa Rita's dividends would be 9.3% ($= 50\% \times 34\% \times 55\%$). Once the holdings through privately held companies are added, the BHS of the Claro family in Santa Rita increases from 55% to 78% and their cash-flow rights increase to 20%. The wedge is still a sizable 58%.[4]

Pyramids are more common than multiple-class shares in Chile. Approximately ⅓ of firms are controlled through pyramids, while no more than 10 are controlled through multiple-class shares. Fortunately, Chilean pyramidal structures are simpler than, say, the standard Korean chaebol (Almeida, Park, Subrahmanyam, and Wolfenzon (2011)). The typical pyramid has only 2 listed firms. Another simplifying factor in the configuration of Chilean pyramids is the legal prohibition on cross-holdings introduced in the aftermath of the debt crisis of the 1980s. For example, Copec, the largest listed Chilean company, is controlled by the Angelini family through a chain that involves only one publicly traded company (Antarchile) and one privately held company (Inversiones Angelini). The latter holds 70% of Antarchile, and Antarchile holds approximately 60% of Copec. Therefore, the wedge in Copec's case is 18% ($= 60\% - 70\% \times 60\%$). As was the case with the Matte family and CMPC, the Angelini family also managed to transform Copec, a diversified conglomerate, into one of the world's main players in the pulp industry and the leader in the Chilean gasoline station market.

[4]When compared to the literature on pyramidal structures (e.g., Adams and Ferreira (2008)), our methodology for computing voting rights corresponds to the last link in the pyramid. For example, under the last-link methodology, the controller owns 55% of the voting rights of Santa Rita. Another way of measuring voting rights is the weakest link, which considers the smallest blockholding stake in the chain of control. The weakest link in the case of Santa Rita would be 34%. While Claessens et al. (2000) use the weakest link, other papers such as La Porta et al. (1999) and Lins (2003) use the last link. The last link is the appropriate measure for our purposes, since it captures the ownership structure of the firm of interest and not that of other firms in the pyramid.

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Another difference with Korean or Japanese pyramids is that most pyramids in Chile are not formed by existing firms listing subsidiaries or acquiring other listed firms. Instead, we often see a family listing a holding company that owns shares of other already-listed firms. For example, Quiñenco, the holding company of the Luksic family, was listed in 1996 although many firms of the Luksic group (e.g., CCU (Chile's largest brewery) and Telefónica del Sur (a telecommunications company)) were already listed. Thus, unlike the evidence from pyramidal structures in other countries, pyramids in Chile do change throughout our sample period, mostly by controlling shareholders adding new firms at the top, as in the Quiñenco example. Further details about the use of pyramids and multiple-class shares can be found in the online Appendix.

Most of the theoretical and empirical literature on pyramids finds that more valuable and profitable firms are at the top of the pyramid, while less valuable and less profitable firms are at the bottom (Claessens et al. (2002), La Porta, López-de-Silanes, Shleifer, and Vishny (2002), Almeida and Wolfenzon (2006), and Almeida et al. (2011)). Table 2 compares firms controlled with a wedge (through pyramids or dual-class shares) and firms that do not show a wedge in their ownership structure. Also, within pyramids we compare firms with a wedge (i.e., firms at the bottom of the pyramid) and firms without a wedge (i.e., firms at the top of the pyramid). Firms controlled with a wedge are larger, and they have slightly lower stock returns and lower Tobin's Q, which is in line with previous literature, although the differences are not statistically significant across groups. Only the ratio of earnings before interest and taxes (EBIT) to sales is higher in firms with a wedge (12% vs. 10%); however, the effect disappears within pyramids. Overall, the wedge between cash-flow and voting rights is not clearly associated with over- or underperformance in this market.

TABLE 2

Sample Averages for Firms With and Without Ownership Wedge

Table 2 presents the means of certain variables separating firms according to whether there is a wedge in the ownership structure or not. Wedge is the difference between control and cash-flow rights. Firms with positive wedges include firms in pyramids below the top position and firms with dual-class shares. Blockholding share (BHS) is the fraction of shares held by the controlling shareholder. Stock returns are the firm's stock returns. Stock turnover corresponds to the volume of shares traded as a fraction of outstanding shares. Log of assets is the logarithm of the book value of assets in 2008 Chilean pesos. Tobin's Q is the fraction of market value of equity plus book value of debt over book value of total assets. Leverage is defined as total liabilities over book value of assets and asset growth defined as the annual growth of book value assets. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

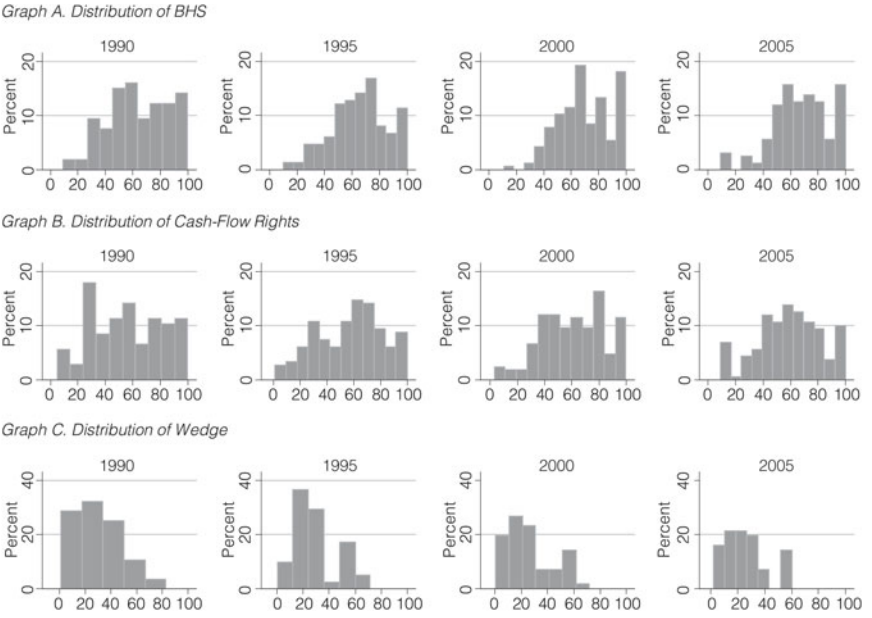
	All Firms			Pyramidal Firms		
Variable	Positive Wedge	Nonwedge	*t*-Test	Positive Wedge	Nonwedge	*t*-Test
BHS	0.68	0.68	0.73	0.67	0.67	0.22
Stock returns	0.15	0.18	1.19	0.14	0.18	1.06
Stock turnover	0.09	0.08	0.70	0.09	0.08	1.28
Log of assets	18.43	18.07	4.44***	18.74	18.42	3.58***
Tobin's Q	1.31	1.34	0.93	1.31	1.36	1.09
EBIT/Sales	0.12	0.10	1.91*	0.13	0.12	0.58
Leverage	0.37	0.37	0.44	0.36	0.32	3.82***
Asset growth	0.08	0.10	1.63	0.08	0.10	1.53

Figure 1 plots the distribution of the BHS and cash-flow rights in 1990, 1995, 2000, and 2005. We see that ownership is extremely concentrated throughout the

FIGURE 1

Distribution of the Level of BHS, Cash-Flow Rights, and Wedge by Year

Blockholding share (BHS) is the fraction of voting rights held by the controlling shareholder. Graph A of Figure 1 shows the distribution of the BHS for 1990, 1995, 2000, and 2005. Cash-flow rights is the fraction of dividends finally received by the controller. Graph B shows the distribution of cash-flow rights for 1990, 1995, 2000, and 2005. The wedge is the difference between control and cash-flow rights. Graph C shows the distribution of the wedge for 1990, 1995, 2000, and 2005. The sample covers all nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS).



sample period, and there is even a slight shift to the right (more concentration) in the latter part of the sample. The wedge remains sizable throughout the sample period, as seen in Graph C of Figure 1 (which shows only firms with a positive wedge).

Table 3 presents the annual mean and median BHS and cash-flow rights. The average BHS increased slightly from 63% in 1990 to 68% in 2009, but it has remained stable since the end of the 1990s. Average cash-flow rights also increased from 56% to 59%. The median BHS implies that in most years 50% of the firms have a BHS larger than ⅔.[5] Under Chilean law some important decisions (e.g., divestments, mergers, board composition, and dividend policy) require a ⅔ majority, which explains the attractiveness of the ⅔ stake.

Chilean securities law improved significantly in 2000 (effective 2001) under a reform designed mainly to regulate tender offers. As a result, control transfers

[5]Our evidence is similar to that reported in previous research on Chilean companies using subsamples of our data set. Lefort (2005) finds that the largest shareholder in 2002 holds 55% of the shares, while the 3 largest shareholders hold a combined 74%. Majluf, Paredes, and Silva (2006) study Chilean listed firms in 2000 and find that the mean of controllers' blockholdings is 65% while the mean of cash-flow rights is 53%. A follow-up paper by Majluf and Silva (2008) uses data from 2000 and 2003 and finds that controllers' stakes are on average 66%. Finally, Lefort and Walker (2007) show that the stake owned by the 3 largest shareholders for the period 1990–2002 averages 59%.

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TABLE 3

Changes in Ownership through Time and Industry

Table 3 presents the mean and median levels of blockholding share (BHS) and cash-flow rights for each year. BHS is the fraction of shares held by the controlling shareholder. Cash-flow rights are the fraction of dividends received by the controlling shareholder. Negative (positive) changes are defined as a decrease (increase) of 5 percentage points or more in the BHS in a year. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS).

	BHS		Cash-Flow Rights		Negative Change in BHS		Positive Change in BHS	
Year	Mean	Median	Mean	Median	No. of Firms	Fraction of Firms	No. of Firms	Fraction of Firms
Panel A. Descriptive Statistics for BHS, Cash-Flow Rights, and Changes in BHS								
1990	0.63	0.61	0.56	0.56				
1991	0.65	0.65	0.57	0.57	6	0.06	6	0.06
1992	0.66	0.67	0.58	0.59	14	0.12	11	0.10
1993	0.65	0.67	0.57	0.59	18	0.14	8	0.06
1994	0.65	0.64	0.56	0.59	13	0.09	7	0.05
1995	0.65	0.65	0.57	0.60	9	0.06	10	0.07
1996	0.66	0.65	0.57	0.59	11	0.07	10	0.07
1997	0.66	0.65	0.57	0.60	12	0.08	18	0.11
1998	0.68	0.67	0.59	0.60	5	0.03	19	0.12
1999	0.69	0.68	0.61	0.62	10	0.06	23	0.14
2000	0.70	0.69	0.61	0.63	3	0.02	18	0.11
2001	0.70	0.70	0.62	0.64	8	0.05	7	0.04
2002	0.71	0.71	0.63	0.65	3	0.02	11	0.07
2003	0.71	0.71	0.63	0.64	2	0.01	4	0.02
2004	0.70	0.70	0.62	0.63	19	0.12	13	0.08
2005	0.70	0.70	0.61	0.62	6	0.04	1	0.01
2006	0.70	0.71	0.62	0.62	5	0.03	6	0.04
2007	0.68	0.70	0.59	0.61	11	0.07	1	0.01
2008	0.68	0.68	0.60	0.61	4	0.02	7	0.04
2009	0.68	0.67	0.59	0.61	4	0.03	9	0.06
All	0.68	0.68	0.59	0.61	163	0.06	189	0.07

Industry	1990–1994	1995–1999	2000–2004	2005–2009	Full Sample (%)
Panel B. Changes in BHS by Industry and Year					
Negative Change in BHS (no. of firms)					
NAICS 1 (Agriculture and forestry)	0	1	1	0	0.01
NAICS 2 (Mining, utilities, and construction)	7	5	1	8	0.13
NAICS 3 (Manufacturing)	26	14	12	11	0.39
NAICS 4 (Retail and wholesale trade)	5	7	3	5	0.12
NAICS 5 (Information, finance, and others)	13	20	17	5	0.34
NAICS 6 (Educational and health services)	0	0	1	1	0.01
NAICS 7 (Recreation and accommodation)	0	0	0	0	0.00
Full sample (%)	0.31	0.29	0.21	0.18	1
Positive Change in BHS (no. of firms)					
NAICS 1 (Agriculture and forestry)	2	0	1	0	0.02
NAICS 2 (Mining, utilities, and construction)	9	19	11	4	0.23
NAICS 3 (Manufacturing)	4	25	17	7	0.28
NAICS 4 (Retail and wholesale trade)	4	6	6	2	0.10
NAICS 5 (Information, finance, and others)	13	26	17	9	0.35
NAICS 6 (Educational and health services)	0	3	1	1	0.03
NAICS 7 (Recreation and accommodation)	0	0	0	1	0.01
Full sample (%)	0.17	0.42	0.28	0.13	1

must now be made public and an appropriate exit for minority shareholders has to be offered. In addition, related-party transactions require the approval of the board, and boards must include independent directors. Despite this movement toward transparency and protection of minority shareholders, we do not see an immediate change in controllers' blockholdings after the law was passed, which reinforces the idea of persistence and slow movement in ownership structures.

Control and cash-flow rights are higher in Chile than in Europe (Barca and Becht (2001), Faccio and Lang (2002)) but not so much as to make a significant

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difference. The median blockholding in our sample is 68%, compared to 57% in Germany and 50% in France. Median cash-flow rights are 48% in Germany and 38% in Italy. The average wedge between control and cash-flow rights is 9% in Chile, which is comparable to the 10% in Italy and 6% in Germany observed by Faccio and Lang. The Chilean wedge is, however, much lower than the average wedge found by Almeida et al. (2011) in Korea, which is more than 40%.

C. Changes in the BHS

We report the frequency of large changes in the BHS in Table 3. In line with the previous literature on ownership dynamics, we study decreases in the BHS that are larger than 5 percentage points (Helwege et al. (2007), Foley and Greenwood (2010)). We also study increases in concentration, unlike previous papers. Despite the aggregate stability we find in the BHS, these changes are not infrequent: 6% (7%) of the firms experience such a decrease (increase) in the BHS in a typical year. The early 1990s are more active in terms of ownership dilution than later years. The decrease in the number of firms concentrating ownership is particularly marked after the legal changes introduced in 2001.

Panel B of Table 3 indicates that both dilution and increases in concentration are well spread through time and industrial sectors. The North American Industry Classification System (NAICS) 2–5 contain most changes, but that is simply because more than 90% of the firm-year observations in our sample belong to those sectors. The fact that changes in ownership are evenly spread through the sample suggests that our events do not correspond to short-lived stock market bubbles, in some periods or industries. This is reinforced by the lack of high-tech and real estate firms in the Chilean stock market, which are usually considered to be industries that are more prone to bubbles. Complementing this analysis, within each industry we compare firms that dilute with those that do not dilute ownership. We find no significant difference in Tobin's Q in the year before dilution. On average, market-to-book ratios are higher in firms diluting (2.90) compared to their industry peers (2.04), but this difference is not statistically significant either. Something similar occurs when we look at those firms that further concentrate ownership.

Figure 2 shows the histogram of annual changes in the BHS and cash-flow rights. This figure highlights the stability of ownership structures. Almost 80% of firm-year observations show zero change. The corresponding figure for U.S. firms as reported by Helwege et al. (2007) is less than 60%. We also find that controllers' cash-flow rights are very stable. Most cash-flow rights stay constant, and the few significant changes we see are increases rather than decreases. In Table 4 we explore the connection between the frequency of dilution or concentration and the wedge between voting and cash-flow rights. We separate negative and positive changes in blockholdings and, within each, further distinguish between firms with and without a wedge. Firms with a wedge have a significantly lower frequency of dilution than other firms (2% vs. 7%). However, there is no clear difference between firms with and without a wedge in the case of increases in concentration (6% vs. 7%).

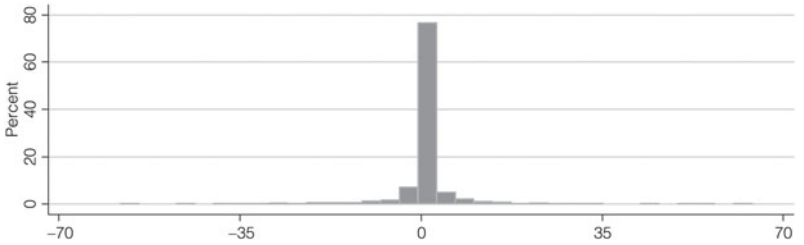
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FIGURE 2

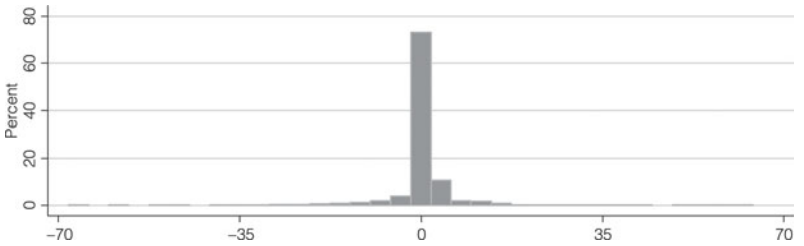
Distribution of Changes in the BHS and Cash-Flow Rights

Blockholding share (BHS) is the fraction of voting rights held by the controlling shareholder. Graph A shows the distribution of the percentage annual changes in the BHS for the entire sample. Cash-flow rights is the fraction of dividends received by the controller. Graph B shows the distribution of the percentage annual changes in cash-flow rights for the entire sample. The sample covers all nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS).

Graph A. Changes in BHS (%)



Graph B. Changes in Cash-Flow Rights (%)



We further distinguish two channels for dilution: block sales and equity issuance. The decomposition of the change in the BHS (α_t) is

$$\Delta\alpha_t = \frac{S_t}{N_t} - \frac{S_{t-1}}{N_{t-1}} = \frac{\Delta S_t}{N_{t-1}} - \alpha_t \frac{\Delta N_t}{N_{t-1}}, \quad (1)$$

where N_t is the number of shares outstanding at time t and S_t is the number of shares held by the controller at time t. The 1st term in equation (1) represents changes in the BHS that occur through block sales (if negative), while the 2nd term represents dilution through issuance of new shares. Following Foley and Greenwood (2010), we assume that a decrease in the BHS occurs through issuance if issuance is positive and through a block sale if issuance is 0 or negative. This definition is somewhat arbitrary, since block sales and issuance can happen simultaneously, but it is nevertheless informative given that issuance is infrequent in our sample. Table 4 indicates that decreases through block sales and issuance are almost equally likely and that both seem to depend on the absence of a wedge between voting and cash-flow rights. Block sales represent 4% of observations when there is no wedge and only 1% when there is a wedge. The same numbers apply to dilution through issuance.

Figure 3 shows the experience of some individual firms in our sample. We divide firms into 2 sets according to whether there is a wedge between control and cash-flow rights or not. For example, Parauco (one of the biggest mall chains

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TABLE 4

Fraction of Firms Experiencing Changes in the BHS Conditional on the Wedge between Control and Cash-Flow Rights

Table 4 presents the fraction of firms that experience a negative (positive) change in the level of blockholding share (BHS) each year conditional on the wedge, which is defined as the difference between control and cash-flow rights and is lagged by 1 period. Negative (positive) changes are defined as a decrease (increase) of 5 percentage points or more in the BHS in a typical year. Negative changes are further disaggregated into block sale and share issuance. The change in BHS occurs through share issuance if issuance is a positive amount; otherwise it is considered a block sale. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS).

	Negative Changes in BHS						Positive Changes in BHS	
			Negative Change in BHS through Block Sale		Negative Change in BHS through Share Issuance			
Year	No Wedge	Positive Wedge	No Wedge	Positive Wedge	No Wedge	Positive Wedge	No Wedge	Positive Wedge
1991	0.06	0.04	0.03	0.00	0.04	0.04	0.06	0.04
1992	0.13	0.10	0.05	0.03	0.09	0.06	0.09	0.13
1993	0.18	0.03	0.04	0.03	0.14	0.00	0.04	0.12
1994	0.11	0.06	0.05	0.03	0.06	0.03	0.05	0.06
1995	0.07	0.05	0.02	0.00	0.05	0.05	0.08	0.05
1996	0.09	0.02	0.03	0.00	0.06	0.02	0.08	0.02
1997	0.11	0.00	0.05	0.00	0.05	0.00	0.11	0.13
1998	0.05	0.00	0.03	0.00	0.02	0.00	0.11	0.14
1999	0.08	0.02	0.04	0.02	0.04	0.00	0.14	0.14
2000	0.03	0.00	0.03	0.00	0.00	0.00	0.10	0.13
2001	0.06	0.02	0.05	0.02	0.01	0.00	0.04	0.05
2002	0.02	0.02	0.01	0.02	0.01	0.00	0.08	0.04
2003	0.02	0.00	0.02	0.00	0.00	0.00	0.04	0.00
2004	0.18	0.00	0.15	0.00	0.03	0.00	0.11	0.04
2005	0.05	0.00	0.01	0.00	0.04	0.00	0.01	0.00
2006	0.05	0.00	0.04	0.00	0.01	0.00	0.04	0.04
2007	0.10	0.02	0.04	0.02	0.06	0.00	0.01	0.00
2008	0.03	0.02	0.02	0.00	0.01	0.02	0.05	0.03
2009	0.04	0.00	0.00	0.00	0.04	0.00	0.06	0.05
All	0.07	0.02	0.04	0.01	0.04	0.01	0.07	0.06

in Chile and now successfully expanding through Latin America) shows a slow dispersion of ownership through block sales. The equity issues of Parauco are matched by block purchases so they do not represent a change in the BHS. In Fasa (one of the biggest pharmacy chains) the two big equity issues of the late 1990s represent a significant dilution of the controller's stake. The decreases in the BHS in LAN Airlines also occur through block sales in 1994 and 2004. We also show 3 firms with a positive wedge between voting and cash-flow rights and find that the wedge may increase or decrease even if the BHS stays constant. This happens because cash-flow rights vary as a result of changes in the rest of the pyramid (e.g., in the case of San Pedro, a wine company controlled by the Luksic family).

D. Changes in the BHS and Control

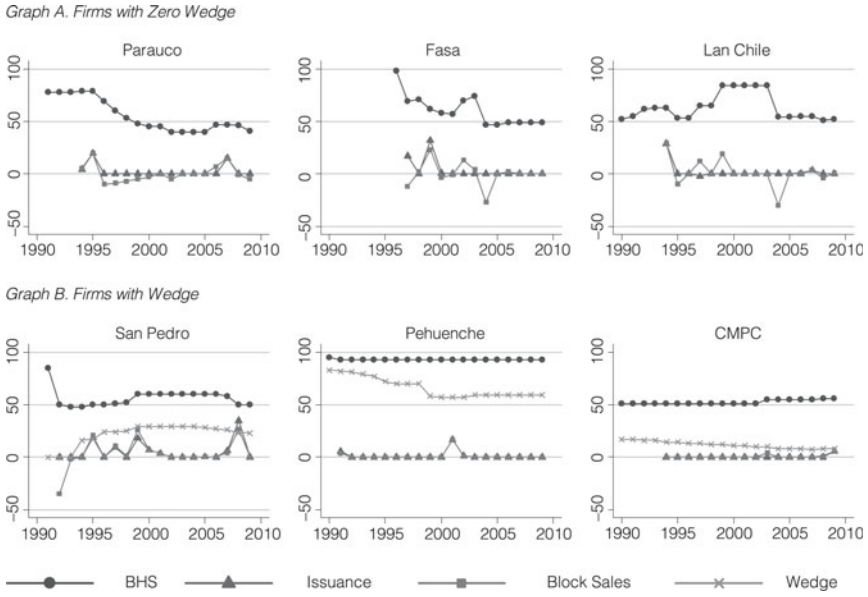
We study 3 dimensions that help to build a more complete picture of changes in the BHS. First we study whether full control was transferred in these transactions. This is quite infrequent, as shown in Table 5. Only 10% of block sales and 4% of share issuances are related to the arrival of a new controlling shareholder. Similarly, in the case of increases in the BHS, only 10% are associated with changes in the identity of the controlling shareholder.

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FIGURE 3

BHS Dynamics for Firms With and Without a Wedge

Figure 3 shows 6 examples of the dynamics of changes in the blockholding share (BHS) for listed Chilean firms from 1990 to 2009. The change in the BHS can occur in 2 ways: by a change in the fraction of voting rights held by the controlling shareholder through a block sale, or through a seasoned equity offering (SEO). The BHS is the fraction of shares held by the controlling shareholder. The wedge is the difference between control and cash-flow rights. Graph A shows the dynamics of changes in the BHS for 3 firms with a zero wedge (Parque Arauco, Fasa, and LAN Airlines) and Graph B for 3 firms with a positive wedge (San Pedro, Pehuenche, and CMPC). Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS).



Second, we study whether changes in the BHS are associated with changes in the board of directors (in size and composition) during the subsequent year. These changes can represent strategic motives such as sealing an alliance with another family or financing partner by their incorporation into the board. We find that 65% of block sales are followed by a change in the composition of the board, and 20% by changes in its size. The numbers are smaller when dilution takes place through share issuance: Only 48% of these events are followed by changes in the composition of the board, and 15% by changes in its size. This suggests that strategic motives are more common in block sales. This is not surprising given that large blocks are typically negotiated privately (see, e.g., Barclay and Holderness (1989), (1991)). Moreover, in the case of block sales, the average decrease in the BHS is 14.3%, which is precisely the amount required to gain a seat on a typical 7-member board (14.3% = ⅐ of shares).[6] A clear example of a block sale that involved a strategic motive is given by Ripley, one of Chile's main retail stores. During the year 2009 the controlling family (brothers Alberto and Maxo Calderón Crispín) reduced its stake from 81% to 61%. The 20% block,

[6]Further details on the mean and median change in the BHS, including positive and negative changes and, in negative changes, distinguishing between block sales and share issuance, can be found in the online Appendix.

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TABLE 5

Changes in the BHS and Control

Table 5 presents some reasons why controlling shareholders decrease (increase) their blockholding share (BHS) by 5 percentage points or more in a year. The table analyzes changes in the BHS due to: i) the controlling shareholder invites other shareholders into the company and allows them to join the board within the year subsequent to the change in the BHS; ii) changes in the controlling shareholder the same year or the year before the change in the BHS; and iii) pension funds' activity in the same year as the change in the BHS. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Focus Plus, and Superintendencia de Valores y Seguros (SVS).

Panel A. Negative Change in BHS through Block Sale (79 in total)		
Change in board structure	Change in board size in (t) and ($t + 1$)	16 (20.3%)
	Change in board composition in (t) and ($t + 1$)	51 (64.6%)
Change in controlling shareholder in ($t - 1$) and (t)		6 (10.1%)
Pension fund involvement	Acquire 15.6% of the block sale	
Panel B. Negative Change in BHS through Share Issuance (84 in total)		
Change in board structure	Change in board size in (t) and ($t + 1$)	13 (15.5%)
	Change in board composition in (t) and ($t + 1$)	40 (47.6%)
Change in controlling shareholder in ($t - 1$) and (t)		2 (3.6%)
Pension fund involvement	Acquire 14.8% of the share issuance	
Panel C. Positive Changes in the BHS (189 in total)		
Change in controlling shareholder in ($t - 1$) and (t)		18 (9.5%)
Pension fund involvement	Sell 2.0% of all the new shares being acquired by the controlling shareholder	

which gives both a board seat and the right to enter a controllers' agreement, was acquired by the Saieh family. This block sale could be motivated by cash needs, although it also enables the firm to develop an integrated retail concept, since the Saieh family controls a supermarket chain and there are obvious synergies between the businesses.

Finally, we look at the involvement of institutional investors in these changes in ownership structure. We focus on pension funds because, following the privatization of social security in the early 1980s, they have become the largest institutional players in the Chilean market (see, e.g., pension funds in the ownership structure of CMPC in Table 1). Pension funds are arguably the market's most sophisticated investors and are seen as playing a role in monitoring companies' controllers. As a consequence, the presence of pension funds can deter controllers from managing the ownership structure of their companies opportunistically. A controller's reputation is best protected by persuading them to participate actively in the transaction at hand. We find that pension funds are indeed involved in such transactions, but their participation appears to be marginal. For example, pension funds acquire on average around 15% of block sales or share issuances. Pension funds tender only 2% of the shares acquired by the controller in the case of increases in concentration.

IV. The Ex Ante Determinants of Ownership Dynamics

In this section we study the empirical determinants of ownership dispersion and concentration through a multivariate probit analysis. We define p_{it} as the

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probability that the BHS in firm i decreases (or increases) by more than 5% in year t. This probability is modeled as a function of the 3 sets of variables:

$$p_{it} = \phi\big(\alpha'\text{Ownership}_{i,t-1} + \beta'\text{StockMarket}_{i,t-1} + \gamma'\text{FirmCharacteristics}_{i,t-1}\big), \quad (2)$$

where Φ is the cumulative standard normal distribution. It should be noted that all variables are measured 1 year prior to changes in ownership structure. In some specifications we also include dummy variable indicators for each year, which summarize marketwide movements.

Panel A of Table 6 studies decreases in the BHS. Column 1 includes only ownership variables. The most interesting ownership variable for our purposes is the wedge between voting and cash-flow rights. The coefficient of –1.02 in column 1 implies that an increase of 10 percentage points in the wedge reduces the likelihood of ownership dilution by 1 percentage point (it should be remembered that the unconditional frequency of dilution events is 6%). This result can be interpreted in several complementary ways. On the one hand, pyramidal structures enable controlling shareholders to finance new investments with the retained earnings of other companies in the pyramid (Almeida and Wolfenzon (2006)). If firms controlled with a wedge need to raise equity, the controlling shareholder can easily contribute funds using the cash flows from other firms without the need to dilute her stake in the firm. Thus, we would expect to see less dilution in pyramidal structures. On the other hand, the wedge has been interpreted as a proxy of agency problems. Under this view, outside investors would be reluctant to buy shares, as the interests of the controller are poorly aligned with those of investors. It is easier for controlling shareholders to sell shares further up in the pyramid (where there is no wedge) rather than to sell shares in the firms at the bottom, where the divergence of incentives scares away potential investors. Furthermore, the controlling shareholder may be reluctant to sell shares in firms low in the pyramid precisely because she is extracting private benefits from those firms at a relatively low personal cost. Finally, the wedge may represent ownership leverage willingly given by minority investors to a skilled large investor. Minority investors may be reluctant to dilute the holdings of the skilled shareholder, not because of agency considerations, but because they want to retain the influence of that shareholder over the firm. As the previous examples of the Matte family in CMPC or the Angelini family in Copec show, some Chilean families have been very successful in developing their businesses well beyond Chile's relatively small market. Unfortunately, our data do not allow us to discriminate between these different explanations. What is clear though is that some ownership structures are less prone to dilution than others.

Other ownership variables are also relevant predictors of dilution. As would be expected, a higher BHS in the previous year increases the chances of ownership dispersion this year. This implies that the effect of the wedge between voting and cash-flow rights is not the same as the effect of concentration, which is better captured by this 2nd variable. Simply put, it is not the case that there is less dilution in firms with a wedge solely because the controlling shareholder already has a low stake. We also include a dummy that takes the value of 1 if there was

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any change (positive or negative) in the ownership structure in the previous year, which captures attempts at quick rebalancing after changes in ownership. Finally, a dummy for the post-2000 period under the new securities law is not statistically significant.

Column 2 in Table 6 examines the impact of stock market variables on the probability of dilution. As in previous literature, we focus on stock returns and turnover, which is a proxy for liquidity. The stock return of the firm in the previous year is the strongest predictor of dispersion among market variables. The coefficient of 0.17 implies that a 10% increase in returns increases the likelihood

TABLE 6

Probit Regressions for Changes in the BHS

A negative (positive) change is defined as a decrease (increase) of 5 percentage points or more in the blockholding share (BHS) in a year. Panel A of Table 6 reports a probit model with robust standard errors model for instances of negative changes in the BHS. Panel B presents a probit model with robust standard errors model for instances of positive changes in the BHS. Independent variables include the difference between control and cash-flow rights the previous year (wedge); the fraction of shares held by the controlling shareholder the previous year (BHS); change in BHS is a dummy variable equal to 1 if the firm experienced a negative or positive change the previous year. Market variables include firm and market returns and turnover over the previous year, idiosyncratic volatility the previous year, and a dummy variable that takes the value of 1 after the year 2000 when the law on tender offers was passed. Firm characteristics include (all lagged 1 period): the logarithm of the book value of assets in 2008 Chilean pesos; book-to-market equity ratio (BM); free cash flow, defined as EBIT over sales; leverage, defined as total liabilities over book value of assets; and asset growth, defined as the annual growth of book value assets. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS). Robust standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	1	2	3	4	5
Panel A. Dependent Variable: Negative Change in BHS					
Wedge ($t-1$)	−1.02**			−1.77***	−1.79***
	(0.452)			(0.627)	(0.622)
BHS ($t-1$)	0.65**			0.87*	0.86*
	(0.278)			(0.458)	(0.466)
Change in BHS dummy ($t-1$)	0.43***			0.40**	0.52***
	(0.121)			(0.167)	(0.177)
2000 law dummy	−0.12			0.05	
	(0.090)			(0.178)	
Stock return ($t-1$)		0.17**		0.16*	0.25**
		(0.084)		(0.091)	(0.118)
Market return ($t-1$)		0.25		0.34	
		(0.293)		(0.328)	
Stock turnover ($t-1$)		0.11		0.86**	0.75**
		(0.397)		(0.370)	(0.366)
Market turnover ($t-1$)		−0.58		−0.90	
		(1.075)		(1.285)	
Idiosyncratic volatility ($t-1$)		0.44**		0.39*	0.43*
		(0.209)		(0.227)	(0.245)
Log assets ($t-1$)			−0.08**	−0.08*	−0.09*
			(0.035)	(0.048)	(0.050)
BM ($t-1$)			−0.01	0.04	0.05
			(0.050)	(0.045)	(0.047)
EBIT/Sales ($t-1$)			0.54***	0.66**	0.66***
			(0.170)	(0.261)	(0.253)
Leverage ($t-1$)			0.60*	0.49	0.53
			(0.308)	(0.385)	(0.401)
Asset growth ($t-1$)			0.45***	0.02	−0.02
			(0.162)	(0.246)	(0.235)
Year fixed effect	No	No	No	No	Yes
No. of obs.	2,620	1,577	2,118	1,453	1,453
No. of firms	180	149	164	144	144

(continued on next page)

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TABLE 6 (continued)

Probit Regressions for Changes in the BHS

Variable	1	2	3	4	5
Panel B. Dependent Variable: Positive Change in BHS					
Wedge ($t-1$)	0.35			0.12	0.13
	(0.280)			(0.326)	(0.343)
BHS ($t-1$)	−1.32***			−1.28***	−1.40***
	(0.188)			(0.286)	(0.310)
Change in BHS dummy ($t-1$)	0.21*			0.23	0.24
	(0.121)			(0.158)	(0.161)
2000 law dummy	−0.34***			−0.38***	
	(0.077)			(0.118)	
Stock return ($t-1$)		−0.02		0.17	0.13
		(0.111)		(0.125)	(0.133)
Market return ($t-1$)		−0.19		−0.31	
		(0.226)		(0.257)	
Stock turnover ($t-1$)		0.80***		0.10	0.22
		(0.274)		(0.382)	(0.407)
Market turnover ($t-1$)		−2.63***		−0.84	
		(0.771)		(0.875)	
Idiosyncratic volatility ($t-1$)		−0.14		−0.33	−0.11
		(0.231)		(0.254)	(0.243)
Log assets ($t-1$)			−0.05*	−0.09***	−0.10***
			(0.026)	(0.032)	(0.034)
BM ($t-1$)			0.01	0.04	0.01
			(0.031)	(0.037)	(0.043)
EBIT/Sales ($t-1$)			−0.12	−0.05	0.01
			(0.116)	(0.121)	(0.116)
Leverage ($t-1$)			0.24	0.60*	0.47
			(0.269)	(0.332)	(0.332)
Asset growth ($t-1$)			−0.03	−0.38	−0.29
			(0.190)	(0.276)	(0.279)
Year fixed effect	No	No	No	No	Yes
No. of obs.	2,620	1,577	2,118	1,453	1,453
No. of firms	180	149	164	144	144

of ownership dilution by 0.14 percentage points. Idiosyncratic volatility is also a strong predictor of dispersion, as some theories of optimal diversification would predict.[7] DeMarzo and Urosevic (2006) provide a supply-side explanation for ownership dilution, pointing out that the controlling shareholders of more volatile firms should be more willing to dilute in order to achieve a better-diversified portfolio.

In column 3 of Table 6 we consider firm-level characteristics. Larger firms (proxied by the log of total book assets) are less likely to experience ownership dilution. Cash flow (EBIT/sales) has a positive effect, which is opposite to the one found by Helwege et al. (2007) and Foley and Greenwood (2010). In those papers, this variable is taken as a proxy for free cash-flow problems (Jensen (1986)). On the other hand, the positive cash-flow effect may simply signal that more profitable firms are better able to disperse ownership more quickly. This effect can also be related to the wedge between voting and cash-flow rights, since Almeida

[7]We measure idiosyncratic volatility as the average absolute deviation of returns from the market return in the previous 3 years.

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and Wolfenzon (2006) show that more profitable firms are positioned at the top of pyramids, where the wedge is smaller. Including all variables together (column 4), adding year fixed effects (column 5), adding other control variables such as asset growth, industry growth, or leverage, and performing robustness checks with different econometric methodologies does not change previous results in a significant way.[8]

The regressions for increases in the BHS (Panel B of Table 6) mirror the regressions for decreases in some respects. For example, a larger BHS reduces the likelihood of observing further concentration. An important difference with the case of ownership dispersion is that the wedge between voting and cash-flow rights has no predictive power. Given the many nonexclusive reasons why a wedge may deter controlling shareholders from further reducing their stake, it is far from obvious why it should prompt them to increase it. If pyramidal structures allow easy financing of new investments, or if minority investors are unwilling to sell their shares in successful businesses, why would controlling shareholders, who control their firms through pyramidal structures, be willing to further concentrate their ownership? The 2nd important difference is the lower likelihood of concentration events as from 2001. This suggests that the law on tender offers passed in 2000 was effective in limiting concentration. This is not surprising, as the law prohibits private negotiation of equity purchases that increase the BHS to above ⅓. Contrary to events of dispersion, returns have no explanatory power for the frequency of concentration events.

We also explore the importance of other proxies for agency problems, more specifically, the fraction of shares held by pension funds. Pension funds are potentially good monitors given the relatively large stakes they hold. The regressions mimic those of Table 6, but now considering these new proxies for agency problems. The results (in the online Appendix) show that the effect of pension funds on ownership dilution is not significantly different from 0. The wedge between voting and cash-flow rights still appears as the main obstacle to disperse ownership. Unlike the wedge, pension funds reduce the likelihood of controlling shareholders' increasing concentration.

Table 7 explores the different channels of ownership dilution. Interestingly, the wedge between voting and cash-flow rights significantly reduces the likelihood of dilution through block sales, but not through issuance. The coefficient on the wedge variable is also much larger in magnitude among block sales. On the other hand, firm- and market-level turnover increase the likelihood of dilution through issuance but reduce the likelihood of block sales. In other words, liquidity seems to be an incentive for issuance but not for block sales. As we saw in Table 5, block sales are more often associated with changes in the board of directors. It is arguably harder for the controller to exploit mispricing in a situation where the other party in the transaction is also an informed shareholder with

[8]Regressions with industry effects are not reported to save space. We also checked linear probability models, logit, and Gary King's rare event logic specification (http://gking.harvard.edu/software), with results very similar to those reported for probit.

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a large stake and looking to secure a seat in the board. On the contrary, it may be relatively easier to behave opportunistically in an equity issue with dispersed investors. Overall, we can say that the wedge between voting and cash-flow rights is an obstacle particularly for block sales, while positive market conditions seem to be an important stimulus for big equity issuances.

TABLE 7

Probit Regressions for Change in the BHS through Block Sale or Share Issuance

Table 7 presents a probit model with robust standard errors for cases of negative changes in the blockholding share (BHS), distinguishing between share issuance and block sale. Negative changes are defined as a decrease of 5 percentage points or more in the BHS in a year. The change in the BHS occurs through share issuance if issuance is a positive amount; otherwise it is considered a block sale. Panels A and B report negative changes in the BHS through block sales and share issuance, respectively. Independent variables are ownership characteristics (all lagged by 1 period): the proportion of shares in the firm held by pension funds (Pension funds); the difference between control and cash-flow rights (Wedge); and the fraction of shares held by the controlling shareholder (BHS); change in the BHS is a dummy variable equal to 1 if the firm experienced a negative or positive change. Market variables include firm and market returns and turnover in the previous year, idiosyncratic volatility in the previous year, and a dummy variable that takes the value of 1 after 2000, when a new law on tender offers was passed. Firm characteristics (all lagged by 1 period) are the logarithm of the book value of assets expressed in 2008 Chilean pesos; book-to-market equity ratio (BM); free cash flow, defined as EBIT over sales; leverage, defined as total liabilities over book value of assets; and asset growth, defined as the annual growth of book value assets. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS). Robust standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Negative Change in BHS					
	Through Block Sale			Through Share Issuance		
Variable	1	2	3	4	5	6
Wedge ($t-1$)	−2.45**		−2.42**	−0.67		−0.47
	(1.135)		(1.123)	(0.658)		(0.615)
Pension funds ($t-1$)		−1.03	−0.40		−3.25	−2.90
		(1.029)	(1.007)		(1.980)	(2.033)
BHS ($t-1$)	0.66	0.36	0.61	0.70	0.22	0.39
	(0.479)	(0.540)	(0.533)	(0.576)	(0.594)	(0.660)
Change in BHS dummy ($t-1$)	0.40**	0.38*	0.39*	0.54**	0.49*	0.51*
	(0.200)	(0.199)	(0.202)	(0.261)	(0.282)	(0.272)
2000 law dummy	0.12	0.11	0.11	−0.06	−0.02	−0.06
	(0.229)	(0.219)	(0.228)	(0.243)	(0.227)	(0.236)
Stock return ($t-1$)	0.11	0.11	0.11	0.16	0.17	0.16
	(0.105)	(0.097)	(0.105)	(0.143)	(0.148)	(0.150)
Market return ($t-1$)	0.29	0.34	0.30	0.65	0.67*	0.68*
	(0.390)	(0.380)	(0.389)	(0.404)	(0.382)	(0.410)
Stock turnover ($t-1$)	−0.02	−0.08	0.03	1.29***	1.28***	1.42***
	(0.505)	(0.471)	(0.510)	(0.364)	(0.338)	(0.359)
Market turnover ($t-1$)	−3.38**	−3.27**	−3.43**	3.46*	3.07*	3.38*
	(1.318)	(1.314)	(1.342)	(1.873)	(1.789)	(1.895)
Idiosyncratic volatility ($t-1$)	0.19	0.23	0.18	0.66**	0.52*	0.59**
	(0.285)	(0.288)	(0.288)	(0.284)	(0.307)	(0.295)
Log assets ($t-1$)	−0.05	−0.04	−0.04	−0.10	−0.08	−0.06
	(0.056)	(0.060)	(0.057)	(0.064)	(0.065)	(0.067)
BM ($t-1$)	0.03	0.03	0.03	0.02	0.00	0.00
	(0.049)	(0.049)	(0.049)	(0.059)	(0.061)	(0.062)
EBIT/Sales ($t-1$)	0.76**	0.62*	0.76**	0.44**	0.51**	0.49**
	(0.387)	(0.371)	(0.382)	(0.204)	(0.215)	(0.212)
Leverage ($t-1$)	0.58	0.75*	0.59	0.18	0.81	0.30
	(0.441)	(0.437)	(0.435)	(0.407)	(0.514)	(0.413)
Asset growth ($t-1$)	−0.16	−0.20	−0.17	0.16	0.12	0.10
	(0.449)	(0.384)	(0.445)	(0.152)	(0.156)	(0.150)
Constant	−1.45	−1.63	−1.50	−2.23*	−2.30*	−2.57**
	(1.234)	(1.326)	(1.213)	(1.265)	(1.214)	(1.208)
No. of obs.	1,435	1,439	1,435	1,417	1,422	1,417

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V. The Aftermath of Changes in Ownership

In this section we study whether changes in ownership have an effect on future firm outcomes. As in the related literature, we focus mostly on ownership dilution. We study real outcomes (e.g., asset growth, profitability, or control turnover) and stock returns.

A. Real Outcomes

Our main regression follows the style of Pagano et al. ((1998), Tab. IV):

$$(3) \qquad y_{it} = \sum_{k=1}^{3} \beta_k \text{Negative Change in BHS}_{i,t-k} + \text{Fixed Effects} + \varepsilon_{it},$$

where y_{it} is the outcome of interest (e.g., asset growth) for firm i in year t. Negative Change in $\text{BHS}_{i,t-k}$ is a dummy variable equal to 1 if there was negative change in the BHS of more than 5 percentage points in year $t - k$. We explore a horizon of up to 3 years as in Pagano et al. (1998). The regression includes year fixed effects and firm-level fixed effects. Some regressions also include firm-level controls.

Table 8 indicates that ownership dilution is not a good predictor of most common real outcomes. Dilution does not predict future asset growth, suggesting that dilution is not primarily a source of funds for new investment. Similarly, it is not a good predictor of debt growth or leverage, contradicting the idea of dilution as relaxing borrowing constraints. We also find that the return on assets (ROA) does not decrease after dilution as the adverse selection hypothesis predicts. Thus, we can hardly argue that dilution is driven by controllers' desire to finance new investment, relax financial constraints due to recent high growth, or incorporate new profitable businesses. For all these outcome variables, the lack of predictive power of ownership dilution contrasts with the significant power of standard variables such as Tobin's Q or past leverage (see Panel B of Table 8).

In Table 8 we also explore the frequency of control transfers as a function of previous ownership dilution. The dependent variable is a dummy variable that takes the value of 1 if there is a change in the controller in that year.[9] In the model of Zingales (1995) controllers decide to disperse ownership without transferring control as a way to maximize the value of the company in a potential future sale. As a consequence, control transfers should be more frequent after events of dilution. We find that this is not the case, which was expected given that transfers of control are so rare in our sample.

B. Stock Returns

In Table 9 we study the behavior of stock returns after events of dilution and concentration. We run a regression similar to equation (3) with annual stock

[9]The ordinary least squares (OLS) regression with this dummy variable as dependent variable corresponds to a linear probability model. We obtain very similar results with probit or logit.

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TABLE 8

Changes in the BHS and Firms' Future Outcomes

Table 8 presents panel OLS regressions with robust and firm-clustered standard errors for growth in total assets, growth in debt, leverage, return on assets (ROA), and control transfers. Panel A reports regressions on asset growth, debt growth, leverage, and control transfers on changes in the blockholding share (BHS) without considering ownership, firm, and market controls. Panel B reports regressions on asset growth, debt growth, leverage, and control transfers when considering ownership, firm, and market controls. Dependent variables are measured in real terms, except for control transfers, which is a dummy variable that takes the value of 1 when there is a change in controlling shareholder. Independent variables include ownership variables (all lagged by 1 or more periods): negative change defined as a decrease of 5 percentage points or more in the BHS in a year; the difference between control and cash-flow rights (wedge); and the fraction of shares held by the controlling shareholder (BHS). Market variables (all lagged by 1 period) include firm returns and the fraction of market value of equity plus book value of debt over book value of total assets (Tobin's Q). Firm variables (all lagged by 1 period) include the logarithm of the book value of assets expressed in 2008 Chilean pesos; free cash flow, defined as EBIT over sales; leverage, defined as total liabilities over book value of assets; and asset growth, defined as the annual growth of book value assets. Year and firm fixed-effect dummy variables are added as shown in the table. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS). Robust and firm-clustered standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Negative Changes in the BHS and Future Firms' Outcomes

Variable	Asset Growth	Debt Growth	Leverage	ROA	Control Transfer	Asset Growth	Debt Growth	Leverage	ROA	Control Transfer
Negative change in BHS ($t-1$)	0.013	0.05	0.04**	0.01	0.02	0.00	0.11	0.00	0.01	0.01
	(0.03)	(0.15)	(0.02)	(0.01)	(0.02)	(0.03)	(0.17)	(0.01)	(0.01)	(0.02)
Negative change in BHS ($t-2$)	0.02	−0.14**	0.04**	0.02	0.00	0.01	−0.08	−0.01	0.01	−0.01
	(0.03)	(0.07)	(0.02)	(0.01)	(0.01)	(0.03)	(0.06)	(0.01)	(0.01)	(0.02)
Negative change in BHS ($t-3$)	−0.01	−0.13*	0.04*	0.01	0.00	−0.02	−0.05	−0.01	0.01	0.00
	(0.03)	(0.07)	(0.02)	(0.01)	(0.01)	(0.03)	(0.08)	(0.01)	(0.01)	(0.01)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
No. of obs.	2,091	2,230	2,092	2,092	2,357	2,091	2,230	2,092	2,092	2,357

Panel B. Negative Changes in the BHS and Future Firms' Outcomes When Considering Controls

Variable	Asset Growth	Debt Growth	Leverage	ROA	Control Transfer
Negative change in BHS ($t-1$)	−0.01	0.10	0.01	0.00	0.00
	(0.03)	(0.15)	(0.01)	(0.01)	(0.01)
Negative change in BHS ($t-2$)	0.00	0.01	0.02*	0.00	0.01
	(0.03)	(0.06)	(0.01)	(0.01)	(0.02)
Negative change in BHS ($t-3$)	−0.02	−0.08	−0.01	0.01	0.00
	(0.03)	(0.06)	(0.01)	(0.01)	(0.01)
Wedge ($t-1$)	−0.05*	−0.17	−0.04***	0.04	0.04
	(0.03)	(0.15)	(0.01)	(0.03)	(0.03)
BHS ($t-1$)	−0.09**	−0.16	−0.01	−0.01	0.01
	(0.04)	(0.14)	(0.01)	(0.04)	(0.02)
Stock return ($t-1$)	0.02	0.03	−0.01	0.01	0.01
	(0.01)	(0.06)	(0.01)	(0.01)	(0.01)
Tobin's Q ($t-1$)	0.02*	0.5*	0.01**	0.02	0.00
	(0.01)	(0.03)	(0.00)	(0.02)	(0.00)
Log assets ($t-1$)	0.01	0.02	0.00	0.00	0.00
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)
EBIT/Sales ($t-1$)	−0.01	−0.27*	−0.01	0.12***	0.01**
	(0.03)	(0.15)	(0.01)	(0.04)	(0.00)
Leverage ($t-1$)	−0.16***	−1.37***	0.91***	−0.08*	0.04**
	(0.04)	(0.26)	(0.02)	(0.04)	(0.02)
Asset growth ($t-1$)	0.07**	0.12**	0.00	0.01	0.01
	(0.03)	(0.06)	(0.01)	(0.01)	(0.02)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	No	No
No. of obs.	1,484	1,484	1,484	1,484	1,487

returns as the dependent variable. The set of controls includes the (log) book-to-market ratio (BM), (log) market capitalization, and idiosyncratic volatility, all measured in the year before the stock return. The BM ratio and market capitalization are standard controls in cross-sectional return regressions since Fama and French (1992). Ang, Hodrick, Xing, and Zhang (2006) show that idiosyncratic volatility negatively predicts returns in the United States. Given the high volatility of emerging markets, we expect this effect to be more salient in our sample. All regressions include year fixed effects.[10]

TABLE 9

Changes in the BHS and Future Returns

Table 9 presents panel OLS regressions with robust and yearly clustered standard errors for stock returns on ownership and firm variables. Independent variables are negative changes in the blockholding share (BHS) in up to the 3 previous years, with negative change defined as a decrease of 5 percentage points or more in the BHS in a year; idiosyncratic volatility in the previous year; logarithm of the book-to-market equity ratio in the previous year (BM); and the firm's total market value in the previous year (Firm market value). Year fixed effects are also included. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS). Robust and yearly clustered standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	1	2	3	4	5	6	7	8	9
Negative change in BHS ($t-1$)		−0.06 (0.033)			−0.03 (0.028)				
Negative change in BHS ($t-2$)			−0.14*** (0.034)		−0.13*** (0.037)				
Negative change in BHS ($t-3$)				−0.05 (0.043)	−0.04 (0.045)				
Positive change in BHS ($t-1$)						−0.02 (0.049)			−0.02 (0.050)
Positive change in BHS ($t-2$)							−0.01 (0.048)		−0.01 (0.051)
Positive change in BHS ($t-3$)								0.01 (0.051)	0.01 (0.050)
Idiosyncratic volatility ($t-1$)	−0.09** (0.040)	−0.08* (0.043)	−0.08* (0.041)	−0.09* (0.042)	−0.07 (0.043)	−0.08* (0.044)	−0.09* (0.041)	−0.09* (0.042)	−0.08* (0.044)
BM (in log) ($t-1$)	0.09** (0.036)	0.08** (0.037)	0.08** (0.037)	0.08** (0.036)	0.08** (0.037)	0.08** (0.037)	0.08** (0.037)	0.08** (0.036)	0.08** (0.037)
Firm market value (in log) ($t-1$)	−0.02 (0.013)	−0.02 (0.013)	−0.02 (0.013)	−0.02 (0.013)	−0.02 (0.013)	−0.02 (0.013)	−0.02 (0.013)	−0.02 (0.013)	−0.02 (0.013)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	1,436	1,417	1,418	1,419	1,413	1,417	1,418	1,419	1,413
R^2	0.284	0.280	0.283	0.281	0.284	0.280	0.280	0.280	0.280

More interestingly, we find that ownership dilution (a negative change in the BHS) predicts low returns with a 2-year lag. The coefficient of –0.14 implies that returns 2 years after dilution are 14% lower, which is a sizable effect when compared to an average annual return of 17% in our sample (standard deviation of 57%). This evidence is consistent with the idea that controllers time the sale of ownership stakes to coincide with periods of overvalued stocks (Loughran and Ritter (1995)). Positive changes in the BHS do not predict high future returns. The strongest predictor of returns is the BM ratio, which shows that the value premium is also present in this market. Idiosyncratic volatility has a negative impact on

[10]Fama-MacBeth (1973) regressions give similar results to those reported here. The panel regression is a more efficient way of using the data given the relatively small number of cross sections.

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returns, as in Ang et al. (2006). Size has a negative sign as expected, but it is not significant.

In Table 10 we study variations in the predictability of returns according to how much control was transferred. We start by splitting events of dilution depending on whether the board of directors changes. When there is a change in the board, the dilution is most likely to correspond to a controller's sale of a stake to a relatively large shareholder or a coalition that joins forces to name a new director. Both are arguably sophisticated shareholders who, as compared to diluted shareholders, can more easily spot an opportunistic motive behind the controller's decision to dilute. However, we find that the negative effect of dilution is equally present in both types of events, with or without a change in the board, and the magnitudes are not statistically different.

TABLE 10

Future Returns on Negative Changes in BHS and Changes in Board, Controlling Shareholder, and Pension Funds

Table 10 presents panel OLS regressions with robust and yearly clustered standard errors for stock returns on the interaction between negative changes in the blockholding share (BHS) and changes in the board, controlling shareholder, and pension funds in up to the 3 previous years. Panel A reports the interaction between negative changes in the BHS and changes in the board and controlling shareholder, where change in board and controlling shareholder are dummy variables that take the value of 1 if there is a change in board composition or controlling shareholder along with the negative change in the BHS. Panel B gives the interaction between negative changes in the BHS and changes in pension funds, including changes in both the latter's overall stake (pension funds) and its distribution among different pension funds (change in pension funds). Negative changes in the BHS are defined as a decrease of 5 percentage points or more in the BHS in a year. Other independent variables (all lagged by 1 period) are idiosyncratic volatility; the logarithm of the book-to-market equity ratio (BM); and the logarithm of the firm's total market value (Firm market value). Year fixed effects are also included. The results of *t*-tests are presented at the bottom of the table, showing whether the indicated pairs of variables are equal or not. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS). Robust and yearly clustered standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Future Returns on Negative Changes in BHS and Changes in Board/Controlling Shareholder

	Future Returns on Negative Changes and Board Changes	Future Returns on Negative Changes and Changes in Controlling Shareholder
(1)	Negative change in BHS × Board change ($t-1$)	−0.05 (0.05)	0.08 (0.10)
(2)	Negative change in BHS × No board change ($t-1$)	−0.01 (0.07)	−0.04 (0.03)
(3)	Negative change in BHS × Board change ($t-2$)	−0.12** (0.05)	−0.28*** (0.07)
(4)	Negative change in BHS × No board change ($t-2$)	−0.16** (0.06)	−0.13*** (0.04)
(5)	Negative change in BHS × Board change ($t-3$)	−0.03 (0.06)	−0.30** (0.13)
(6)	Negative change in BHS × No board change ($t-3$)	−0.04 (0.05)	−0.03 (0.05)
(7)	Idiosyncratic volatility ($t-1$)	−0.07 (0.04)	−0.08 (0.04)
(8)	BM (in log) ($t-1$)	0.08** (0.04)	0.08** (0.04)
(9)	Firm market value (in log) ($t-1$)	−0.02 (0.01)	−0.02 (0.01)
	Year fixed effects	Yes	Yes
	No. of obs.	1,413	1,413
	t-tests		
	(1) = (2); *p*-value = 0.76	(1) = (2); *p*-value = 0.28
	(3) = (4); *p*-value = 0.60	(3) = (4); *p*-value = 0.09
	(5) = (6); *p*-value = 0.93	(5) = (6); *p*-value = 0.07

(continued on next page)

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TABLE 10 (continued)

Future Returns on Negative Changes in BHS and Changes in Board, Controlling Shareholder, and Pension Funds

Panel B. Future Returns on Negative Changes in BHS and Changes in Pension Funds

Future Returns on Negative Changes and Pension Funds' Holdings		Future Returns on Negative Changes and Changes in Pension Funds' Holdings	
Negative change in BHS ($t-1$)	−0.03	Negative change in BHS ($t-1$)	−0.03
	(0.04)		(0.03)
Negative change in BHS × Pension funds ($t-1$)	−0.12	Negative change in BHS × Changes in pension funds ($t-1$)	−0.98
	(0.53)		(2.00)
Negative change in BHS ($t-2$)	−0.13***	Negative change in BHS ($t-2$)	−0.14***
	(0.04)		(0.04)
Negative change in BHS × Pension funds ($t-2$)	−0.02	Negative change in BHS × Changes in pension funds ($t-2$)	0.35
	(0.31)		(0.53)
Negative change in BHS ($t-3$)	−0.02	Negative change in BHS ($t-3$)	−0.04
	(0.05)		(0.05)
Negative change in BHS × Pension funds ($t-3$)	−0.29	Negative change in BHS × Changes in pension funds ($t-3$)	−0.09
	(0.21)		(0.27)
Idiosyncratic volatility ($t-1$)	−0.07	Idiosyncratic volatility ($t-1$)	−0.07
	(0.04)		(0.04)
BM (in log) ($t-1$)	0.08**	BM (in log) ($t-1$)	0.08**
	(0.04)		(0.04)
Firm market value (in log) ($t-1$)	−0.02	Firm market value (in log) ($t-1$)	−0.02
	(0.01)		(0.01)
Year fixed effects	Yes	Year fixed effects	Yes
No. of obs.	1,413	No. of obs.	1,413

The negative effect of dilution on future returns is stronger and longer lasting when there is full control turnover. The dummy variable for the 2-year lag of the negative change in the BHS is –0.28 when there is a control transfer and –0.13 when the same controller remains in the firm. The *p*-value of this difference is only 9%, since there are few observations with control transfers. The 3-year lag is large and significant only in the case of control transfers. These effects are not present for longer lags. The new controller may be as sophisticated as the previous controller and understand the latter's motives but still be willing to pay the premium to obtain control of the company and access to private benefits (see, e.g., Urzúa (2009) for tunneling in Chilean companies). However, given the very small number of changes of control in our sample, it would be unwise to attach too much weight to this evidence.

The presence of institutional investors (pension funds), and the fact that they buy more of the ownership stake being sold by the controller, does not affect return predictability. We test this by including interactions of the main dummy variables with the stake held by pension funds and the change in their holdings. These interactions are never significant.

In Table 11 we look at whether the predictive power of ownership dilution depends on the method of dilution. The explanatory variable is a dummy variable that takes the value of 1 if the negative change in the BHS occurred through issuance or through a block sale as defined earlier. We find that dilution through share issuance is a strong predictor of low returns, with lags of 1 and 2 years. On the other hand, block sales do not predict low returns. This is consistent with the

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evidence in Table 7, since dilution through issuance is preceded by high market returns and high turnover, but not dilution through block sales. The fact that share issuance has a strong predictive power as regards future returns coincides with recent cross-sectional evidence for the United States (Fama and French (2008), Pontiff and Woodgate (2008)) and other markets (McLean, Pontiff, and Watanabe (2009)).

TABLE 11

Future Returns on Negative Change in the BHS through Block Sale and Share Issuance

Table 11 presents panel OLS regressions with robust and yearly clustered standard errors for stock returns on negative changes in blockholding share (BHS) in up to the 3 previous years, distinguishing between share issuance and block sale. Negative changes in the BHS are defined as a decrease of 5 percentage points or more in a year. Share issuance occurs through an issuance if issuance is a positive amount; otherwise, it is considered a block sale. Other independent variables (all lagged by 1 period) are idiosyncratic volatility; the logarithm of the book-to-market equity ratio (BM); and the logarithm of the firm's total market value (Firm market value). Year fixed effects are also included. The sample covers nonfinancial listed Chilean firms from 1990 to 2009. Data are from Economatica, Fecus Plus, and Superintendencia de Valores y Seguros (SVS). Robust and yearly clustered standard errors are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	1	2	3	4	5	6	7	8
Negative change in BHS through share issuance ($t-1$)	−0.16*** (0.05)			−0.13** (0.05)				
Negative change in BHS through share issuance ($t-2$)		−0.24*** (0.05)		−0.23*** (0.05)				
Negative change in BHS through share issuance ($t-3$)			−0.04 (0.06)	−0.03 (0.06)				
Negative change in BHS through block sale ($t-1$)					0.01 (0.04)			0.03 (0.04)
Negative change in BHS through block sale ($t-2$)						−0.09 (0.05)		−0.08 (0.05)
Negative change in BHS through block sale ($t-3$)							−0.05 (0.06)	−0.05 (0.06)
Idiosyncratic volatility ($t-1$)	−0.08* (0.04)	−0.08* (0.04)	−0.09* (0.04)	−0.06 (0.04)	−0.09* (0.04)	−0.09* (0.04)	−0.09* (0.04)	−0.08* (0.04)
BM (in log) ($t-1$)	0.08** (0.04)	0.09** (0.04)	0.08** (0.04)	0.09** (0.04)	0.08** (0.04)	0.08** (0.04)	0.08** (0.04)	0.08** (0.04)
Firm market value (in log) ($t-1$)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	1,417	1,418	1,419	1,413	1,417	1,418	1,419	1,413

Overall we find two main patterns in the aftermath of ownership changes. First, it is hard to see any change in real variables, such as investment, profitability, financing, or the likelihood of control turnover. Second, stock returns are significantly lower after events of dilution through share issuance.

VI. Conclusions

In this paper we study ownership dynamics in a market where most firms are controlled by large shareholders, a common feature of many firms throughout the world. For this purpose we hand-assemble a 20-year database of nonfinancial listed firms in Chile, which provides a unique setting to study ownership dynamics given data availability and the regulatory and institutional developments that took place during the sample period (1990–2009). Our results show that the wedge between voting and cash-flow rights and market variables are the most robust

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predictors of changes in the stake of the controlling shareholder. The probability of ownership dilution decreases as the wedge increases, which suggests that pyramidal structures are less prone to dilution. This could have demand- or supply-side explanations. On one hand, outside investors may be reluctant to buy stakes in firms with large wedges because of the misalignment between the interests of the controlling shareholder and investors, or because they do not want to reduce the influence of a skilled controlling shareholder over the firm. On the other hand, controlling shareholders may be reluctant to sell stakes in firms from which they extract large private benefits at low personal cost (i.e., firms with a large wedge), or because they can finance investment in those firms using funds from other firms inside the pyramid, as suggested by Almeida and Wolfenzon (2006).

Ownership dilution is preceded by high stock returns and followed by low stock returns, both of which are consistent with controlling shareholders timing the sale of large ownership stakes. Market timing is more pronounced in cases of issuance than in block sales, and it does not seem to be affected by the presence of institutional investors or by simultaneous changes in the board. Whether this form of market timing is opportunistic (i.e., at the expense of less-informed shareholders) or a stabilizing force against stock market bubbles is something that we cannot fully resolve with the currently available data.

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