

The Principle of Proportional Ownership, Investor Protection and Firm Value in Western Europe*

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ABSTRACT: Previous research initiated by Claessens *et al.* (2002) has established a value discount of disproportional ownership structures. Due to omitted variables problems it is difficult to provide a causal interpretation of these findings. We provide a thorough analysis of this value discount in a large sample of Western European firms, which strengthens the causal interpretation that the discount is driven by incentive and entrenchment effects. First, we show that the value discount is higher in firms with low cash flow concentration, in family firms, in industries with higher amenity value and in countries with better investor protection. Second, we show that these findings are consistent with the predictions of a theoretical model of incentive and entrenchment effects. Third, we find little empirical evidence for a number of alternative omitted variable explanations, including: protection of private benefits; voting and block premia; low-liquidity discount; and, protection against uninvited takeovers. Fourth, we present the puzzling finding that the value discount is significantly higher in firms with dual class shares than in firms with pyramidal ownership. Fifth, we find no impact of disproportional ownership structures on operating performance. Finally, we discuss policy implications of these findings in relationship to the ongoing process of harmonization of the European capital markets.

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1 Introduction

The European Commission has initiated a number of policy proposals directed at affecting the distribution of ownership and control in European companies.¹ A common trend in these initiatives is to promote the so-called “principle of proportional ownership,” which states that it is desirable to have proportional distributions of cash flow and control rights among investors in publicly traded corporations. According to this principle, it is undesirable to use mechanisms - such as dual class shares, pyramidal ownership structures, cross-ownership, golden shares and voting caps - that create a wedge between the nominal income rights and the voting rights that the ultimate owners possess. In this paper, we scrutinize the premise of this principle in a sample of more than 4,000 publicly traded corporations from 14 Western European countries.

Prior research² has focused on two effects of ownership concentration on the governance of corporations: an incentive effect, which makes the monitoring of management more efficient, and an entrenchment effect, which makes it easier for opportunistic owners to behave in a manner that enriches themselves at the cost of other owners. Starting with Claessens, Djankov, Fan and Lang (2002) a number of studies have empirically established a value discount on disproportional ownership structures. Although this is consistent with incentive and entrenchment effects, we argue that there exists at least five alternative explanations: the discount can be driven by marginal investors’ expected loss from protection of private benefits or their expected loss from protection against uninvited takeovers; lack of liquidity; and, measurement errors related to premia on superior voting shares and/or block holdings. In the absence of valid instruments for ownership concentration, omitted variables and measurement bias make any causal interpretation of the observed relationship highly contestable. The main contribution of the present paper is to provide evidence that strengthens the interpretation of the value discount being related to incentive and entrenchment effects. We do this in three steps.

¹The EU Action Plan on “Modernizing Company Law and Enhancing Corporate Governance in the EU” from 2003 suggests prohibiting the listing of “abusive” pyramids on the stock exchange and examining “the consequences of an approach aiming at achieving a full shareholder democracy (one share - one vote).” Backed by the recommendations of the “Final Report of the High-Level Group of Company Law Experts” (Winter *et al.* 2002), the Commission previously proposed the so-called Break-Through rule, allowing owners of 75 percent or more of the cash flow rights in a corporation to exercise control, even if they possess less than 50 percent of the votes (see Bennedsen and Nielsen 2004 for an analysis of the impact of the Break-Through rule on European firms). This proposal was later removed due to political obstacles; however, the current Internal Market and Services Commissioner, Charlie McCreevy, has vowed to come up with new initiatives in 2007 to promote the principle of proportional ownership, starting with a large external study of the proportionality between ownership and control in listed corporations in the EU.

²The following subsection provides a thorough survey of the previous studies of disproportional ownership.

First, we build a simple model based on incentive and entrenchment effects that yields a number of testable and refutable predictions of the relationship between disproportional ownership structures and firm value. The model predicts that corporations with disproportional ownership structures have lower firm value, and that this discount is strictly larger in firms where the controlling owners possess little cash flow, in family firms and in firms with a large scope for extraction of private benefits. Moreover, when investor protection primarily increases the owners' ability to monitor the management, our model predicts that the value discount will be larger in countries with higher investor protection.

Second, we investigate these predictions empirically and find that the value discount related to disproportional ownership structure is larger a) when large owners have low cash flow stakes, i.e., where disproportional ownership provides most added control for the largest owners; b) in family-controlled firms where the incentive problems are smaller and c) in firms with higher amenity value. Furthermore, we show that the value discount increases in the level of investor protection, which indicates that disproportional ownership structures and legal investor protection are substitute governance mechanisms from the perspective of outside investors.

Third, we show that even though alternative arguments can explain the presence of a value discount, these are inconsistent with the added implications of our theoretical model. To rule out these arguments, we make use of the cross-country and cross-industry variation in our sample: e.g., the potential measurement bias related to unobserved premia on block holdings implies that we should observe a higher value discount in countries where this premium is large. However, empirically the block premium is larger in countries with low investor protection. This implies that the potential bias should be higher in low investor protection countries, which is contradicted by our result that the discount is increasing in the level of investor protection. We establish similar empirically based contradictions for each of the other alternative explanations.

In addition to these results, we provide two puzzling insights that are not captured in our incentive and entrenchment model: We separate the effect of different mechanisms of creating disproportional ownership structures and find that dual class shares are associated with a significantly larger value discount than pyramids and other separating mechanisms. We also show that there is no effect of disproportional ownership on operating performance.

Our results have important implications for the harmonization of EU company law.³ Reg-

³It is worth noticing that our premise in the present analysis and the related policy discussion is that firms' economic value include both the security value and potential net private benefits, i.e., we do not discuss the distribution of value between different groups of owners.

ulation that promote proportional ownership structures can increase firm value in Northern Europe, where investor protection is high. However, such regulation may not have the desired effect in countries with lower investor protection. In addition, in the absence of effects on operating performance, policy makers must believe that firm value is a legitimate policy goal. Thus, our analysis does support the argument that currently *one size does not fit all* with respect to harmonizing the company law in Europe.

The paper proceeds as follows. In the next section, we provide a simple model of incentive and entrenchment effects and derive a number of testable results. Section 3 describes our data. Section 4 presents evidence consistent with the testable implications of our model. In Section 5, we analyze alternative explanations for the observed value discount. Section 6 provides a comparison of dual class shares and pyramids and further shows that we cannot find any effects on operating performance. In the final section, we discuss policy implications of our findings.

Related literature

A number of studies have analyzed the consequences of disproportional ownership structures. In a sample of 1,301 publicly traded corporations in eight East Asian countries, Claessens *et al.* (2002) show that ownership concentration increases firm value, but that separation of cash flow and control decreases firm value. Lins (2003) investigates firm performance and managerial ownership in 1000+ corporations in 18 emerging markets and finds that firm value is lower whenever votes are more concentrated than cash flow. Gompers, Ishii and Metrick (2004) analyze a sample of US firms with dual class shares and show that the relationship of firm value to managerial ownership concentration, measured with cash flow, is positive and concave, whereas the relationship to voting concentration is negative and convex.⁴ Cronqvist and Nilsson (2003) analyze the impact of controlling minority shareholders on firm value and firm performance in a sample of 309 publicly traded Swedish firms. They show that the presence of controlling minority owners decreases firm value and performance, an effect that is most significant when these controlling minority shareholders are families. In a sample of 174 Finnish firms, Maury and Pajuste (2004) document that firm value is lower when large owners control firms through disproportional ownership structures.

Compared to the studies above, our contribution is to a) provide strong evidence consistent

⁴Consistent evidence is provided by Gompers *et al.* (2004), where sales growth, capital expenditures and R&D spending are regressed on managerial ownership. Entrenched managers under invest, whereas managers with high cash flow rights pursue more aggressive investment strategies.

with that the value discount is driven by incentive and entrenchment effects, including documenting that the value discount is increasing in the level of investor protection;⁵ b) explicitly analyze alternative explanations of the observed value discount and c) disentangle the impact of dual class shares from pyramids.⁶

Our paper is related to the literature that shows the relationship between firm value and investor protection (see survey by La Porta, Lopez-de-Silanes, Shleifer and Vishny 2000). We borrow our measures of investor protection from Djankov *et al.* (2005), but distinguish ourselves from this literature by focusing explicitly on disproportional ownership structures and the underlying mechanisms.

There is a vast literature on ownership concentration and firm valuation and performance. The main distinction in this literature is whether ownership is endogenous. Following Demsetz and Lehn (1985), a number of studies have found no significant relationship between ownership and performance, consistent with ownership being endogenous; whereas a second group of studies, initiated with Morck, Shleifer and Vishny (1988), have found a non-linear relationship as the combined outcome of incentive and entrenchment effects, consistent with restrictions on the ability of private parties to choose the socially optimal ownership structure. Our study has little to say about ownership concentration; as such, we focus on disproportionality and how it interacts with ownership concentration.

There are a number of papers that measure private benefit of control, either through measuring voting premia on shares with superior voting rights (see Rydqvist 1987, Zingales 1994, 1995b, Nenova 2003 and references herein) or on block trades (see Dyck and Zingales 2004). We use the fact that these premia are higher in countries with lower investor protection to rule out valuation bias as an alternative explanation of the established value discount.

⁵From an analytical point of view, Lins (2003) is the first paper to address the issue of substitution or complementary effects between ownership structure and legal systems empirically. Lins (2003) shows that the impact of managerial control and non-managerial block holding is larger in countries with lower investor protection.

⁶Claessens *et al.* (2002) also attempt to measure the importance of different separating mechanisms. However, their sample is dominated by pyramidal ownership in Asian business groups and they are, therefore, not able to disentangle which disproportionality instrument is associated with the highest valuation discount. Our previous working paper, Bennedsen and Nielsen (2005), is to our knowledge the first study that disentangles the impact of various instruments. More recently, Villalonga and Amit (2006) have shown similar results using data on US corporations.

2 A Model of Incentive and Entrenchment Effects

The literature's main explanation of the impact of disproportionality on firm value is based on the interaction of incentive and entrenchment effects. A disproportional ownership structure *reduces* the incentive problem because it makes it easier for controlling owners to monitor the management, and it *increases* the entrenchment problem because it improves controlling owners' ability to exploit non-controlling owners. We present these arguments in a simple model that delivers a number of testable implications that can guide our empirical analysis in the following sections.

The model has three types of agents: a manager, m , a controlling owner, o , and a group of passive non-controlling owners. At date zero, the manager chooses to divert an amount of the firm's cash flow, $e_d^m \geq 0$, at a private cost of $(e_d^m)^2$. At date 1, the controlling owner does two things: she monitors the manager and she diverts corporate resources for her own private benefits. We assume that both types of diversion are observable but non-verifiable; however, monitoring increases the likelihood that the manager is caught in a verifiable way. Finally, at date 2, the residual cash flow is distributed equally among all owners. The controlling owner receives a fraction, c , equivalent to her share of the nominal income rights, and the non-controlling owners receive the rest.

The owner needs to be backed by a certain limit, l , of the votes both to take action against the manager and to receive the full benefits of the corporate resources she diverts. If her own share of votes, v , exceeds l , she is fine, and we denote this as the case of *absolute control*. If $v < l$, which we define as the case of *shared control*, we assume that she has to spend resources on negotiating with a fraction of the other owners. Formally, if the controlling owner provides monitoring effort of e_m^o at cost $(e_m^o)^2$ and has votes v , the negotiating fraction of the monitoring effort is $\tilde{n} = \text{Max}[0, l - v]$, which implies that the probability of getting caught for the manager is $\tilde{p} = (1 - \tilde{n})e_m^o$. We assume for simplicity that if the manager gets caught, the cash flow will return to the corporation without further punishment. Similarly, if the owner diverts e_d^o at a private cost of $(e_d^o)^2$, she has to share the diversion with a fraction, \tilde{n} , of the other owners.⁷

⁷Notice that the manager is assumed to save negotiation costs and potential private benefits by negotiating with a minimum coalition of owners - conditional on this coalition controlling a share of the votes larger than l . This assumption is similar to the results in Bennedsen and Wolfenzon (2000). We assume that the controlling owner, by identity, always has an advantage in extracting private benefits, i.e., she keeps the share $1 - \tilde{n} > 0$. Similarly, even with a negligible amount of votes she, does not have to spent all her monitoring effort on negotiating if $l < 1$.

The expected payoff for the manager, given the controlling owner's monitoring effort, is

$$\pi^m = (1 - \tilde{p})e_d^m - (e_d^m)^2.$$

The controlling owner's payoff is given by:

$$\pi^o = (1 - \tilde{n})e_d^o - c(1 - e_d^o - (1 - \tilde{p})e_d^m) - (e_m^o)^2 - (e_d^o)^2.$$

In this model, the *incentive problem* is the dilution of corporate resources by the manager and the *entrenchment problem* is the dilution of corporate resources for private benefits by the owner. We are looking for a subgame perfect equilibrium and focus on the effect of disproportional ownership on the incentive and entrenchment problems and the resulting impact on residual firm value. We focus on residual firm value for two reasons. First, residual firm value, measured through stock prices, reflects the value to the marginal investor and does not include private benefits. Hence, the residual firm value in the model matches the firm value used in the empirical analysis. Second, due to the private effort cost of diversion and monitoring, first best is attained when the residual firm value is maximized and the monitoring effort is zero. The following proposition characterizes equilibrium:

Proposition 1 *The equilibrium amount of diversion and residual firm value, RFV, is given by:*

1. *Under shared control ($v < l$):*

$$\begin{aligned} e_d^o &= \frac{1 - l + v - c}{2}, \\ e_d^m &= \frac{1}{2} \left(1 - \frac{1}{\frac{4}{c(1-l+v)^2} + 1} \right), \\ RFV_{sc} &= 1 - \frac{1 - l + v - c}{2} - \frac{1}{2} \left(1 - \frac{1}{\frac{4}{c(1-l+v)^2} + 1} \right). \end{aligned}$$

2. *Under absolute control ($v \geq l$):*

$$\begin{aligned} e_d^o &= \frac{1 - c}{2}, \\ e_d^m &= \frac{2}{4 + c}, \\ RFV_{ac} &= 1 - \frac{1 - c}{2} - \frac{2}{4 + c}. \end{aligned}$$

All proofs are in the Appendix. This proposition has strong testable implications for the study of the effect of disproportional ownership structures on firm value.

Corollary 1 *Let $l > v$. An increase in v reduces e_d^m , i.e., disproportionality decreases the incentive problem.*

The benefit of disproportionality is that it improves incentives to monitoring, because the controlling owner wastes less effort on negotiating with other owners. Since the incentive to monitor improves, the manager ends up diverting less corporate resources, which *ceteris paribus* increases residual firm value.

Corollary 2 *Let $l > v$. An increase in v increases e_d^o , i.e., disproportionality increases the entrenchment problem.*

The cost of disproportional ownership structures is that self-interested controlling owners do not need to share diluted corporate resources with other owners, thus it increases the incentive for the controlling owner to extract private benefits, which has a negative impact on firm value.

None of these corollaries is easy to prove empirically, since it is hard to measure the two effects isolated. In general, the combined effect on residual firm value of improving the incentive problem and deteriorating the entrenchment problem does depend on the parameters of the model. However, in the present configuration, we can show the following result:

Corollary 3 *Let $\frac{2}{3} \geq l > v$ and assume $v \geq c$. An increase in v decreases residual firm value.*

This corollary yields that the combined effect of increased disproportionality on residual firm value is negative when an owner can obtain absolute control with two-thirds (or less) of the votes and when the controlling owner possesses at least as many votes as nominal income rights. In our empirical analysis below, the second condition is almost always satisfied, whereas the vast majority of firms can be controlled with two-thirds of the votes. Under these reasonable assumptions, the corollary implies that we should expect to observe a negative relation between disproportionality and residual firm value.

Corollary 4 *Let $v \geq l$. An increase in v does not affect residual firm value.*

The effect of disproportionality on firm value is absent when the controlling owner already has absolute control. The empirical implication of this corollary is that the overall negative impact of disproportionality on firm value shall be driven by firms where the controlling owners possess relatively little cash flow. Since empirically $v > c$, we expect to see a stronger effect of disproportionality on firm value in firms where the controlling owner possesses little cash flow.

To consider the next empirical implication we define *unified ownership and control* as firms where the controlling owner is also the manager and *separated ownership and control* as firms where ownership and management are separated.

Corollary 5 *Let $l > v$. An increase in v has a larger (negative) effect in firms with unified ownership and control than in firms with separated ownership and control.*

Unified ownership and control implies that the controlling owner and the manager are the same person. In such situations, the controlling owner has no incentive to monitor her alter ego, the manager. Hence, disproportionality does not improve the efficiency of monitoring and, therefore, the benefit of disproportionality from Corollary 1 is absent. On the other hand, disproportionality still reduces the fraction of other owners that the controlling owner has to share her private benefits with. Hence, the cost of disproportionality (Corollary 2) is unchanged. We therefore expect to see a larger negative impact of disproportionality in firms with unified ownership and control. Empirically, most family firms have unified ownership and control, in particular, family firms where a member of the family is also the manager.

Our final empirical implications of the model focus on the relationship between investor protection, amenity value and the effect of disproportionality on firm value. To study these issues, we assume that the marginal costs of effort are $i_m^o(e_m^o)^2$, $i_d^o(e_d^o)^2$, and $i_d^m(e_d^m)^2$, respectively. The marginal cost of effort increases in the corresponding parameter i . Using subscript sc to denote separated control, we prove the following corollary in the Appendix:

Corollary 6 *Let $l > v$, then a) $\frac{\partial RFV_{sc}^2}{\partial v \partial i_d^o} > 0$, b) $\frac{\partial RFV_{sc}^2}{\partial v \partial i_m^o} > 0 \Leftrightarrow \frac{\partial RFV_{sc}}{\partial v} < 0$ and c) $\frac{\partial RFV_{sc}^2}{\partial v \partial i_d^m} < 0$*

Part a) of the corollary states that a decrease in the owner's marginal cost of extracting private benefits increases the effect of disproportionality on residual firm failure under separate control. The intuition is that an increase in i_d^o decreases the entrenchment problem, which is the cost of having disproportional ownership structures. Since the benefit is unchanged, disproportionality yields a more positive (or less negative) effect on firm value. According to Demsetz and Lehn (1985), certain industries have a larger scope for extracting private benefits, which they denote as a higher degree of *amenity value*. Higher amenity value in our model is captured through a lower i_d^o . The corollary, therefore, states the empirical prediction that disproportionality has a larger (negative) effect on firms with higher amenity values.

Investor protection is a broad term for any activity that improves the security of outside owners' investments (Shleifer and Vishny 1997). In our setup, increased investor protection can be

attained through an increase in i_d^o , a decrease in i_m^o or an increase in i_d^m . It is straight forward to show that any of these improvements in the degree of investor protection will increase firm value, consistent with the positive correlation between investor protection and firm value, documented empirically by La Porta *et al.* (2000) and predicted theoretically by Shleifer and Wolfenzon (2002). However, in the present analysis we focus on how the impact of disproportionality on firm value is affected by the level of investor protection.

Corollary 6 tells us that when increased investor protection primarily increases the cost of managerial diversion and/or decreases the cost of monitoring managers, then the negative effect of disproportionality on residual firm value increases with the level of investor protection. The key is that investor protection reduces the benefit of disproportionality because the manager's higher cost of diversion and/or the owner's better monitoring technology reduce the incentive problem. If investor protection does not affect the cost for controlling owners of diverting resources, then increased investor protection does not affect the cost of disproportionality. Hence, in this case we should observe a larger (negative) value discount in countries with higher investor protection.

On the other hand, Part c) of Corollary 6 yields that if investor protection increases the cost of owner diversion without affecting the cost of monitoring, nor the cost of managerial diversion, then the impact of disproportionality on firm value is less negative (or more positive) in countries with high investor protection. The reason is that, in this case, investor protection reduces the cost of disproportionality (i.e., reduces the entrenchment problem) without affecting the benefit (i.e., the incentive problem).

We conclude that disproportionality can be a substitute or a compliment for investor protection, depending on which of the two agency problems are most affected by a change in investor protection. Our model suggests the presence of an empirical relationship between investor protection and the impact of disproportionality, but it does not provide us with a clear prediction for the direction of this relationship.

3 Data and Sample Selection

The sample of firm-level ownership, accounting and market data from 14 Western European countries is constructed by combining two different sources. The data on ownership structure and firm organization are primarily obtained from Faccio and Lang's (2002) study of firms in

Western Europe. We have extended their data set with firms in Denmark and Sweden.⁸ Therefore, we have ownership information on 5,521 Western European firms. All ownership variables are defined according to Faccio and Lang (2002), where the ownership measures represent the ultimate ownership of voting and cash flow rights.⁹

Accounting and market data are from Worldscope from 1996 to 1998. We use the name of the firm as the identifier between the two data sets. We have checked for changes in firm name and de-listings to increase the accuracy of this matching procedure. However, not all listed firms in Europe are included in Worldscope.¹⁰ The total number of firms for which we have ownership, accounting and market information is therefore reduced from 5,521 to 4,410.

In the regressions, we control for a wide range of firm characteristics that are likely to affect firm performance. Unfortunately, not all firms in Worldscope report all of the control variables; we therefore exclude 314 firms where either market value, sales, sales growth or asset tangibility are missing. We further exclude five firms with assets under 1 million dollars and four firms with extreme sales growth. Thus, the empirical analysis is carried out with 4,096 observations.¹¹ This sample is a representative subsample of Faccio and Lang's data with respect to the employment of disproportionality mechanisms. Table 1 provides summary statistics on country level.

We measure firm value by the ratio of market value of assets to book value of assets. Market value is defined as the sum of the market value of common stocks and the book value of debt and preferred stocks. For firms with dual class shares, we calculate firm value on the basis of the publicly traded shares. Thus, in the event that the firm has an unlisted share class, we mark this to the market price of the listed share class. We thereby assume that non-traded superior voting shares carry zero voting premium. Obviously this assumption implies a valuation bias that, in theory, can drive our empirical results. However, we reject this possibility in Section 5 because it is inconsistent with the existing evidence on the value of control across countries.

For firms with pyramidal ownership structures, we evaluate the value of each firm in the pyramid separately. Thus, firm value is evaluated firm-by-firm and firms within each pyramid are counted as independent observations. A firm is classified as having a pyramidal ownership

⁸The ownership structures of Danish and Swedish firms are obtained from Greens and SIS Ägarservice, respectively. Danish firms were not included in Faccio and Lang's study, whereas we were able to extend the number of Swedish firms from 245 to 335.

⁹This includes the ultimate ownership of private firms' ownership of listed firms in our sample.

¹⁰In particular, only 170 out of 604 listed Spanish firms are included.

¹¹We are missing adequate information on the return on assets for 46 of the 4,096 firms. Thus, in Section 6, where we analyze the link between disproportional ownership structures and operating performance, the number of observations is reduced to 4,050.

structure if it has an ultimate owner who controls the firm indirectly through another corporation that it does not fully control.¹² As a consequence, we can only evaluate the effect of pyramidal ownership for firms below the top level of the corporate pyramid, as our data do not identify firms at the top layer. The firm-by-firm approach has one clear advantage: as we focus on each firm in the pyramid separately, the discount (if any) cannot be explained by the well-documented diversification discount on conglomerates.¹³ For firms with cross-ownership, we follow the firm-by-firm approach and treat each firm as an independent observation.

Table 2 shows that the share of firms with dual class shares, pyramidal ownership, cross-ownership and other mechanisms¹⁴ of separating votes from cash flow varies a lot across countries. We investigate this further in Section 6.

4 Evidence of Incentive and Entrenchment Effects

This section contains the results from our empirical analysis. First, we provide partial evidence for Corollaries 3 to 6 through focusing on the average firm value across various subgroups of firms. Second, we confirm this insight in cross-sectional regressions of a) the impact of disproportional ownership structures on firm value and b) the effect of investor protection on these results. The lack of time variation in our analysis naturally raises concerns about the interpretation of our findings, since we cannot rule out the existence of endogeneity problems due to, e.g., omitted variables and/or reverse causality. In the absence of valid instruments for ownership concentration, our empirical strategy is to provide evidence for Corollaries 3 to 6, which link the results to the incentive and entrenchment issues identified in our theoretical model and, therefore, raise the bar for what alternative stories must be able to explain. In addition, we use these results to rule out five alternative explanations in the following section.

¹²For example, if a family owns 25 percent of Firm X, which in turn owns 20 percent of Firm Y, then Y is controlled through a pyramid. If Firm X holds 100 percent of Firm Y, then Y is a subsidiary and not a pyramid. In case the firm is classified as a pyramid, the ownership of votes is measured by the weakest-link approach, whereas the ownership of cash flow rights is the product of ownership along the control chain.

¹³One caveat of this approach is that for very large pyramids the observations are not independent, as we might include multiple firms from the same corporate pyramid (to the extent these firms are listed). We acknowledge this potential heteroskedasticity problem and use the White estimator of variance to obtain robust standard errors.

¹⁴The last group is defined as the residual group. These firms have disproportional ownership structures that do not belong to the three former groups. Examples are restrictions on voting rights (voting caps) or government control through golden shares.

4.1 Simple means

Firm value and disproportional ownership structures are negatively correlated (Corollary 3): Panel A in Table 3 shows that the average market-to-book (MB) ratio for firms with a proportional ownership structure is 1.36, whereas the MB ratio for firms with a disproportional ownership structure is 1.17. This difference of 0.19 in the MB ratios is economically large (14 percent) and statistically significant at the 1 percent level.

The negative correlation between firm value and disproportional ownership structures is larger when controlling owners have little cash flow (Corollary 4): In Panel B, we split the firms according to the controlling owner's cash flow stake on firm level. High (low) cash flow concentration means that the largest owner's cash flow stake is higher (lower) than the median across all firms. In the firms with low cash flow concentration, the value discount on disproportional ownership is more than three times larger compared to firms in which the largest owner has more cash flow. This difference is statistically significant at the 1 percent level.

The negative correlation between firm value and disproportional ownership structures is larger in firms with unified ownership and control (Corollary 5): Our prime example of unified control is family-owned firms, where the controlling family has strong incentives and better opportunities to monitor the management. Panel C shows that the average value discount related to disproportional ownership structures is more than three times larger in family-controlled firms than in non-family firms. This large difference is statistically significant at the 1 percent level. To push the argument further, we look at family firms where the manager is a member of the controlling family.¹⁵ In this subgroup, where the incentive problem (but not the entrenchment problem) is eliminated, the value discount is almost five times larger than in non-family firms. The difference is significant at the 5 percent level.

The negative correlation between firm value and disproportional ownership structures is larger in firms with high amenity values (Corollary 6): Following Demsetz and Lehn (1985), we expect the amenity value to be higher in certain industries, such as sports and media.¹⁶ In Panel D, we split the sample according to if the firms are operating in such private benefits industries or not. The value discount of disproportional ownership is more than twice as large in such industries compared

¹⁵Family managed is defined as family firms where the CEO, honorary chairman, chairman or vice-president is a member of the controlling family.

¹⁶In the spirit of Demsetz and Lehn (1985), we classify media (SIC-codes: 2711, 2732, 2741, 7383, 7812, 7819, 7822, 7829, 7832), sport and entertainment (7911, 7922, 7929, 7933, 7941, 7948, 7991-3, 7996-7, 7999) and advertising (7311, 7312, 7313, 7319) as industries with high amenity value.

to the rest of the sample. Due to the small number of firms, this effect is only significant at the 5 percent level for the private benefit group. This indicates that the value discount is larger in firms with higher potential for extraction of corporate resources as private benefits.

The interaction between investor protection, disproportional ownership structures and firm value: (Corollary 6): Panel E yields the interaction effect between investor protection and the value discount on disproportional ownership structures. The choice of the measure of investor protection is discussed in the following section. Here we focus on the revised anti-director rights (and in Panel F, on the aggregated anti-self-dealing index) from Djankov *et al.* (2005). We split the sample into high and low investor protection countries according to the median anti-director rights score on country level. Consistent with La Porta *et al.* (2002) and Djankov *et al.* (2005), we observe that firm value is significantly higher in countries with high investor protection. However, more interesting for the present analysis, we notice that the value discount associated with disproportional ownership structures is higher in countries with high anti-director rights. In countries with high investor protection, this effect is significant at the 1 percent level, whereas the effect is insignificant in countries with low investor protection. Panel F interacts disproportionality with the anti-self-dealing index. The results are similar to Panel E: the discount from disproportional ownership structures is significantly higher in countries with good protection against self-dealing.

Our model does not allow for the possibility that the mechanism through which the disproportional ownership structure is created can have an impact on firm value. However, in the last column we compare the difference in the value discount between firms with dual class shares and firms with pyramidal ownership structure, which are the two most common mechanisms of separating control from cash flow (See Table 2). Firms using any of these mechanisms have significantly lower firm value; however, the value discount on firms with dual class shares is more than twice as large as the value discount on firms that are part of a corporate pyramid. The difference between these mechanisms is significant at the 1 percent level. Panels B through E of this column show that the difference is economically larger and statistically more significant in firms with low cash flow concentration, in non-family-controlled firms, in industries with low amenity value and in countries with high investor protection.

4.2 Regression results

We estimate a cross-sectional model of the average of the three yearly observations from 1996 to 1998. This is done because Faccio and Lang’s data on the ownership structure in each country are not collected in the same year for all countries. Thus, we assume that the ownership structure is constant for the period 1996 to 1998 and focus on the variation between firms.

We include both industry- and country-specific effects. We thereby pick up differences between industries and the overall lower valuation of firms in countries with low investor protection. Further, the country effects are “fixed effects” to control for country-specific firm invariant heterogeneity. This is important if our basic model omits country-specific variables that are correlated with the explanatory variables, such as investor protection and/or takeover activity.

Table 4 analyzes the impact of disproportional ownership structures on firm value measured by the ratio of market value of assets to book value of assets. We measure ownership and control concentration as the amount of residual income rights and votes that the *largest* owner possesses.¹⁷ Throughout the paper, we control for size, leverage (ratio of book value of debt to book value of assets), asset tangibility, sales growth and industry effects.¹⁸

Table 4 reveals a negative but highly insignificant effect of ownership concentration on firm value and firm performance. Hence, on the aggregate level, we cannot conclude any significant linear relationship between firm value and ownership concentration. Claessens *et al.* find a positive and significant effect of ownership concentration in their sample of Asian firms, whereas Lins (2003) find no effect in emerging markets.¹⁹

Firm value and disproportional ownership structures are negatively correlated (Corollary 3): In Model 1 we include a dummy variable for whether a given firm has a disproportional ownership structure, which is defined as the presence of a separating mechanism (such as dual class shares, pyramidal ownership structure, cross-ownership, etc.) that creates a wedge between the amount

¹⁷As a robustness check, we have run all regressions focusing on the residual income rights and votes possessed by the group of largest owners, which we define as the joint ownership of all owners who possess more than 10 percent of the votes. To save space, we are not reporting these regressions; however, it suffices to note that none of our results are sensitive to any of the measures we use.

¹⁸In addition, we could have included return on assets as a control variable in the valuation regression. We have done this as a robustness check with no effect on our results. As we later proceed to evaluate the effect of disproportional ownership structures on operating performance, we have chosen to present the results without return on assets as a control variable.

¹⁹Obviously, our result does not exclude that there could be a significant non-linear relationship, as documented by Morck *et al.* (1988). In unreported regressions, we have included cash flow squared, which does not change our results significantly. Since the literature on these questions is extensive (see, e.g., the recent handbook survey by Becht, Bolton and Roell (2003) and the many references herein), we have decided not to pursue this question further.

of votes and cash flow possessed by the largest owner. Firms with disproportional ownership structures have lower firm value. The effect is statistically significant at the 1 percent level and very large: the average firm with disproportional ownership structure has a 0.18 lower MB ratio than the average firm with proportional ownership structure. Given a sample mean of 1.28, this implies that the average discount on firm value is around 14 percent. This is consistent with the evidence for Asian firms provided by Claessens *et al.*. The simple regression model used here has satisfactory explanatory power, with an adjusted R^2 of around 14 percent.

Model 2 analyzes the *degree of disproportional ownership*, defined as the largest owner's share of votes minus her share of residual cash flow. The degree of disproportional ownership is almost significant at the 5 percent level and the marginal effect is large: a 10 percent increase in the wedge between control and cash flow of the largest owner decreases firm value, with 3 percent on average around the sample mean of 1.28. Hence, Models 1 and 2 provide evidence consistent with Corollaries 1 to 3 of our theoretical model.

The negative correlation between firm value and disproportional ownership structures is larger when controlling owners possess little cash flow (Corollary 4): In Model 3 we add a dummy variable, *low cash flow concentration* (LCFC), which takes the value one if the controlling owner's cash flow stake is smaller than the median cash flow across all firms.²⁰ We split the effect of disproportional ownership structures in two: the effect that is common to all firms, and an additional effect for firms where the controlling owner possesses little cash flow. We find that disproportional ownership reduces firm value in all firms; however, the effect in firms where the controlling owner holds little cash flow is significantly larger. Thus, whereas the average discount on firm value is around 14 percent for all firms, it is more than 17 percent (0.25 lower MB ratio around sample mean of 1.39 for firms with low cash flow concentration) in firms where the largest owner possesses little cash flow. Model 4 interacts the low cash flow dummy with the degree of disproportional ownership. Again, we notice that there is an additional discount in firms with diluted cash flow for a given degree of disproportional ownership; however, the effect is now statistically insignificant. Models 3 and 4 indicate, therefore, that the value discount is larger when ownership of cash flow is less concentrated.

The negative correlation between firm value and disproportional ownership structures is larger

²⁰Alternatively, we could have interacted the continuous measure of cash flow concentration with the disproportional ownership dummy. Consistent with the evidence presented in Table 4, we find the largest value discount in firms with low cash flow concentration using the continuous measure. However, to ease the exposition of our results, we have chosen the simple dummy specification.

in firms with unified ownership and control (Corollary 5): As reported in Table 3, we have 1,090 family-controlled firms in our sample. In Model 5 of Table 4, we introduce an indicator for family ownership, *family controlled* (FC), which takes the value one if the largest ultimate owner is a family. We observe that family-owned firms have around 13 percent higher firm value, but that the value discount on disproportional ownership is significantly larger: the discount for all firms is 0.14 and the additional discount in family-owned firms is 0.19, implying a total value discount in these firms of 0.33. This effect is statistically significant and equivalent to a discount on firm value of disproportional ownership structure of 23 percent.²¹ We confirm this insight in Model 6, where we interact family control with the degree of disproportional ownership. Enlarging the wedge between votes and cash flow is associated with a larger value discount in family firms.

The negative correlation between firm value and disproportional ownership structures is larger in firms with high amenity values (Corollary 6): Following Demsetz and Lehn (1985), we identify industries with high amenity value. These include sport clubs, media and advertising firms as private benefit industries.²² In Model 7 we add a dummy for these *private benefit industries* (PBI). Notice that firms in these industries generally have lower firm value. Again, we split the effect of disproportional ownership structures into a general effect and an interaction effect arising in private benefit industries. The interaction effect is large: firms in private benefit industries have an additional value discount associated with disproportional ownership structures of 0.24. However, due to the low number of firms the effect is marginally insignificant, with a p-value of 0.11. This insight is confirmed in Model 8, where we interact the private benefit industry dummy with the degree of disproportional ownership: the interaction term is negative, but not statistically significant.

To sum up, we conclude that firms with a disproportional relationship between cash flow and votes are valued lower by investors. In addition, we find that the value discount is larger in firms where the controlling owner possesses little cash flow, in family-controlled firms and in industries with a higher potential for extraction of private benefits. These findings are consistent with the incentive and entrenchment story laid out in our simple model.

²¹Note that family firms have an average MB ratio of 1.44; thus, a discount of 0.33 corresponds to 23 percent.

²²See footnote 13 for a classification of private benefit industries.

4.3 Investor protection and the value discount of firms with disproportion ownership

In this section, we investigate if the value discount on disproportional ownership structures is related to investor protection, as predicted by our theoretical model (Corollary 6). Motivated by our theoretical focus on incentive and entrenchment issues, we use the *anti-self-dealing* and the revised *anti-director rights* indices from Djankov *et al.* (2005) as our country-level measures of investor protection. The anti-self-dealing index is constructed by asking attorneys from 72 countries about how well investors are protected against self-dealing by managers and controlling owners. It contains two subcomponents: ex ante private control of self-dealing, and ex post private control of self-dealing. The index runs from zero to one and increases with the level of legal investor protection. The anti-director rights index summarizes six specific decision rights granted to minority shareholders by corporate law.

In Table 5, Models 1 and 5, the two overall measures of investor protection are interacted with the disproportionality dummy.²³ To simplify the presentation of the results, we do not report the control variables, which are identical to the ones used throughout the analysis. We start by including the interaction of the anti-self-dealing index with the disproportionality dummy. The interaction effect is negative and highly significant, whereas disproportionality becomes positive and insignificant. Thus, the negative effect of disproportional ownership structures decreases (i.e., becomes stronger) with the level of investor protection, but is insignificant in countries with low levels of investor protection. A simple F-test of the net effect reveals that the negative effect sets in when the anti-director rights score is 3.5 or higher, whereas the effect is insignificant for scores below this level.²⁴ A simple F-test of the net effect shows that the discount is significant for countries with an anti-self-dealing index above 0.45.²⁵

In Model 5 of Table 5, we include the revised anti-director rights index with the disproportionality dummy. The interaction effect is negative and highly significant, whereas disproportionality becomes positive and marginally insignificant. Thus, the effect of disproportional

²³Note that our basic regression model includes a fixed country effect and therefore already controls for the direct effect of the level of legal investor protection, since it is constant within each country. Further, it should be acknowledged that, as the regressions only include 14 countries, the degree of freedom is limited.

²⁴The F-test of the net effect of disproportional ownership structures with an anti-director rights score of 3 yields a F-statistic of 1.08, which is grossly insignificant, whereas the F-value when the score equals 3.5 is 6.70, which is significant at the 1 percent level.

²⁵The F-test of the net effect of disproportional ownership structures with an self-dealing index of 0.45 yields a F-statistic of 3.37, which is significant at the 10 percent level, whereas the F-value when the score equals 0.5 is 6.04, which is significant at the 1 percent level.

ownership structures increases with the level of investor protection, but is insignificant in countries with low levels of investor protection. A simple F-test of the net effect reveals that the negative effect sets in when the anti-director rights score is 3.5 or higher, whereas the effect is insignificant for scores below this level.²⁶

Table 5 also provides additional institutional details on the relationship between investor protection and the disproportionality discount. Columns 2 and 3 report regressions based on the two subcomponents of the anti-self-dealing index. We notice that both *ex ante* and *ex post* measures are significant, but that the *ex post* estimate is slightly more so.²⁷ The fourth model uses the *public enforcement* measure from Djankov *et al.* (2005), which rates the level of punishment that potentially can be imposed on controlling owners and/or managers violating the legal barriers to self-dealing. Public enforcement and anti-self-dealing initiatives are, to a large extent, substitutes, implying that these measures are highly negatively correlated (correlation coefficient of -0.56). Not surprisingly, the interaction term in Model 4 is positive and significant.

Models 6 to 10 of Table 5 introduce the components of the revised anti-director rights.²⁸ *Vote by mail*, *shares not deposited*, *oppressed minority* and *capital* all enter with a negative sign and are statistically significant. The *cumulative voting* dummy is positive but insignificant.

These results are robust toward the measure of disproportionality, since identical results are obtained (but not reported) when investor protection indices are interacted with the degree of disproportionality.²⁹ The economic impact of disproportional ownership structures is larger in countries with high values of our two indices: in the UK, Ireland and Scandinavia, which are the countries that top the two indices, we observe that the discount on firms with a disproportional ownership structure corresponds to around 20 percent of firm value. Our analysis thus indicates that disproportional ownership structures and investor protection, to some extent, are substitute governance mechanisms: when investor protection is inadequate, the benefit of disproportional ownership structure (i.e., the reduced incentive problem from Corollary 1) is as large as the cost (i.e., the increased entrenchment problem from Corollary 2). However, when investor protection

²⁶The F-test of the net effect of disproportional ownership structures with an anti-director rights score of 3 yields a F-statistic of 1.08, which is grossly insignificant, whereas the F-value when the score equals 3.5 is 6.70, which is significant at the 1 percent level.

²⁷The *ex ante* measure focuses on disclosure requirements and the ability to call for independent review of certain actions. The *ex post* measure focuses on the ability to sue controlling agents, information access and ability to hold agents liable. See Djankov *et al.* (2005) for details.

²⁸The anti-director rights index summarizes six provisions of investor protection. However, within our sample of European countries there is no variation in *preemptive rights*, as all 14 countries mandate this by law.

²⁹As a robustness check, we have done all the regressions in Table 5, substituting our disproportionality dummy with our measure of the degree of disproportionality. This does not significantly change the results.

is high, then the increased entrenchment problem dominates, implying that there is a large value discount associated with disproportional ownership structures.³⁰

5 Alternative explanations

In this section we analyze five alternative arguments, each of which is able to explain the negative correlation between disproportional ownership structure and firm value.

5.1 Protection of private benefits

Disproportionality can have a negative impact on the marginal investor's willingness to pay when the ownership structure determines the distribution of private benefits. Zingales (1995a) assumes that the amount of private benefits that can be diverted is fixed, but that the distribution of private benefits among the owners is determined by the ownership structure. Disproportionality implies that non-controlling owners in expectation receive a smaller share of the private benefit and, therefore, will pay less for the stock. In a similar vein, Bebchuk (1999) shows that disproportional instruments are more frequently used whenever private benefits of control are high.

This argument is consistent with our evidence that the value discount is higher when owners have little cash flow and when potential private benefits are higher. However, it is inconsistent with the evidence that the value discount is higher in family firms and in countries with higher investor protection. Protection of private benefits implies that the value discount shall be smaller in family firms, where the private benefit is well protected within the family even in the absence of disproportional ownership structure. As argued above, the entrenchment story would predict a higher value discount, since the incentive problems are smaller. The evidence in Models 5 and 6 in Table 4 is clearly in favor of our interpretation: disproportional ownership structures are associated with a higher value discount in family firms.

If the scope for extracting private benefits is smaller in countries with good investor protection, then the reduction in expected private benefit for the marginal investor from disproportional

³⁰Gomez (2000) analyzes an alternative, reputation-based explanation for why the value discount on disproportional ownership structures may be affected by investor protection. Controlling owners build reputation through abstaining from exploiting non-controlling owners. The incentive to reputation building comes from a higher price on future sale of shares and disproportional increases the amount of shares that can be sold in the future without losing control. Lack of investor protection increases the potential gain from reputation building, since the sales price of shares would be lower without reputation building. Hence, whereas this reputation story cannot explain the general value discount of disproportional ownership structures, it does predict that disproportional ownership structures do relatively better in countries with worse investor protection.

ownership structures is smaller in countries with high investor protection. Hence, the protection of private benefits argument implies that we should observe that the value discount should be smaller in countries with higher investor protection. Clearly, the evidence in Table 5 conflicts this prediction.

A variant of the protection of private benefit argument is that there might exist within-country variation in private benefits. Durnev, Morck and Yeung (2004) and Durnev and Kim (2005) show that certain industries are inherently more transparent than others, which suggests that across industries there might be substantial variation in the ability to extract private benefits of control. This could potentially bias our results; however, we do include industry dummies, and therefore identify the within-industry effect of disproportionality on firm value. In addition, the evidence in Models 7 and 8 of Table 4 shows significant value discount both within and outside high private benefit industries. Hence, we conclude that our results are not driven by unobserved private benefits of control.

5.2 Block premium

Dyck and Zingales (2004) find a significant premium on trades of block holdings across countries and show that these can be substantial even in Western Europe; e.g., Dyck and Zingales (2004) report an average block premium of 16 and 20 percent in Italy and Portugal, respectively. Since our empirical measure of firm value (MB ratio) is based on the marginal investor's willingness to pay, it does not include such block premia. This suggests a systematic valuation bias in our measurement of firm value, which potentially can explain the value discount of disproportional ownership structures.

Whereas it is unclear to what extent this story explains our results regarding a significantly larger value discount of disproportional ownership structures in firms with little cash flow concentration and in family firms, we claim that the explanation is contradicted by cross-country evidence on the interaction between investor protection and the discount on disproportionality.

To show this, we include the measure of the average *block premia* across countries developed by Dyck and Zingales (2004) in Model 1 in Table 6. We interact the block premium with our disproportionality dummy.³¹ The interaction effect is positive and significant at a 5 percent level. This means that the disproportionality discount is numerically *smaller* in countries with *higher* block premia. Since the valuation bias is higher in countries with higher block premia

³¹Notice that the block premia index is not available for Belgium and Ireland. Thus, the number of observations reduces subsequently.

(the opposite), we rule out this channel as an potential explanation of the value discount on disproportional ownership structures.

5.3 Voting premium

Most superior voting shares are not traded on a public stock exchange. It is well documented by Rydqvist (1987), Zingales (1994, 1995b), Nenova (2003) and others that investors are willing to pay more for superior voting shares than for limited voting shares. Nenova (2003) shows that voting premia in Western Europe varies widely; From 30 percent in Italy to 0 percent in Denmark. If superior voting shares are not listed, we cannot observe this premium. Hence, disproportionality would lower firm value if voting premia are significant.

Similar to the block premium argument above, the voting premium is negatively correlated with the value discount of dual class shares. For example, we find the strongest negative effect of dual class shares in Scandinavia, where the average voting premium is zero. If the valuation bias were driving this result, a positive correlation would exist between value discounts and voting premia. Nenova (2003) shows that the average voting premium on country level is negatively related to the level of investor protection, which contradicts our empirical results that the discount is increasing in the level of investor protection.³²

5.4 Low liquidity

There are two variations through which liquidity arguments can explain the value discount. First, as ownership concentration reduces the float relative to the total number of outstanding shares, the general discount on disproportional ownership could be driven by a missing liquidity premium. However, we claim that this argument is theoretically flawed. For any given level of control, v , dual class shares increase the float, since the separation of ownership and control allows the cash flow rights to be traded, whereas without dual class shares these would be kept by the controlling owners. It follows that the degree of disproportionality ($v - c$), as such, is unrelated to liquidity.

Second, in the case of dual class shares, the voting premium on superior voting shares might be adversely affected by low liquidity if the majority of these are kept by the controlling owner. Consistent with this argument, Doidge (2004) reports evidence of a generally lower liquidity of listed superior voting shares. Thus, the large discount on firms with dual class shares might be

³²We only have voting premia for eight countries in our sample; hence, we do not report the exact effects.

explained by the negative effect of low liquidity on the value of the listed superior voting shares, and subsequently on firm value. This hypothesis implies, however, that we empirically should observe a negative relationship between voting premium and the turnover of superior voting shares. In his cross-country study, Doidge (2004) finds no significant relationship between the voting premium and the relative turnover between limited and superior voting shares. Thus, the large discount on firms with dual class shares cannot be explained by a missing liquidity premium on the superior voting shares.

5.5 Protection against uninvited takeovers

Assume that there is a fixed private benefit to controlling owners that is unaffected by the ownership structure. Moreover, assume that the likelihood of a successful uninvited takeover is decreasing in the degree of disproportionality, since the controlling owner's incentive to fight off the attempt to protect the private benefits of control is increasing in her share of votes. A minority investor will then pay less for shares in firms with a disproportional ownership structure, since the expected gain from a future uninvited takeover is smaller.

At first glance, there is some evidence for this potential explanation in our data. The argument implies that the value discount should be higher in countries with active takeover markets. In Column 2 of Table 6 we include an interaction with the level of takeover activity, *M&A volume*, in each country. *M&A volume* is from Rossi and Volpin (2004) and measures the volume of the mergers and acquisition activity by the percentage of traded firms that were targets of successful mergers and acquisitions from 1990 to 1999. Notice that the sign on the interaction term is negative and significant at a 5 percent level, which indicates that countries with higher takeover activity have a larger value discount associated with disproportional ownership. To measure the relative impact of our two channels, we set up a horse race between the agency and the takeover explanations in Column 3, where we include both anti-director rights index and takeover activity and interact these with disproportionality. Notice that the anti-director rights effect is significant at the 5 percent level, whereas the takeover effect is insignificant at any conventional level.³³ We conclude that the agency channel clearly wins the horse race.

In addition to this direct test, we can also compare the two channels on their predictions on the effect of disproportionality in family firms. As mentioned above, the agency argument from our model predicts that the disproportionality discount is higher in family-controlled firms than

³³Similar results are obtained (but not reported) in a horse race where we include both the anti-self-dealing index and takeover activity and interact these with the disproportionality variable.

in non-family firms, which we proved empirically in Table 4. The takeover argument predicts the opposite. To see this, we compare a family-controlled with a non-family-controlled firm for a given takeover pressure and ownership structure. Everything else equal, we expect the family firm to be better protected than the non-family firm against uninvited takeovers. This has two important effects: family firms should generally have lower firm value, and the value discount related to disproportional ownership structures should be smaller. Both of these effects are inconsistent with the evidence in Table 4, where we showed that family firms have higher firm value and - more importantly - that the value discount related to disproportional ownership structures is larger in family-owned and -managed firms.

Finally, the last column of Table 6 refines this argument by restricting the sample to firms in countries with an active takeover market (defined as higher activity than the median M&A activity on country level).³⁴ As family firms are well protected against takeovers, we should not expect to see any effect of disproportional ownership structures if the value discount is driven by a takeover premium on firms with proportional ownership. In this subsample we find that disproportional ownership is still associated with an economically large and statistically significant discount on firm value. More importantly, we find that disproportional ownership in family firms increases this discount further. Thus, the discount on firms with disproportional ownership cannot be explained by a missing takeover premium.

6 Additional evidence

6.1 Dual class shares, pyramidal ownership structure and cross ownership

There are many different mechanisms that can be used to generate additional power for controlling owners. Dual class shares, chains of corporate ownerships (pyramids), cross-ownership and voting caps all create a wedge between owners' possession of cash flow and their influence on firm management. From an analytical perspective, Bebchuk, Kraakman and Triantis (2000) show that any desired separation of ownership and control can be achieved through the use of either dual class shares, pyramids or cross-ownership. However, these mechanisms may serve several goals and yield different implications on firm operation and, ultimately, on firm value. For instance, dual class shares are frequently implemented in firms through IPOs or during successions in family firms, whereas a pyramidal structure often is the result of firm acquisitions.

We recognize that our theoretical model has little to say about the mechanisms through which

³⁴This takes care of the situation where most family firms are located in countries with low takeover activity.

disproportionality is created. There are a number of theoretical contributions that analyze dual class shares focusing on control fights and uninvited takeovers (see Grossman and Hart 1988, Harris and Raviv 1988, among others). Since we reject the takeover pressure as the primary cause of our results, non-takeover based theories of dual class shares may be more relevant in the present setting. Bennedsen and Wolfenzon (2000) show that dual class shares may have a negative impact on firm value because they reduce the pressure on self-interested owners to collaborate. There are few theoretical studies of pyramidal ownership. The main exception is Almeida and Wolfenzon (2005), who analyze the dual question as to why pyramids arise and what determines the structure of a pyramid. Based on the differences in cost of capital, they compare firm value of an ownership structure based solely on dual class shares against firm value of a combination of pyramids and dual class shares. Since firms self-select into the optimal choice of ownership structure, their model does not predict that pyramids or dual class shares, as such, cause a change in firm value.

As seen in Table 2, the frequency of these four groups differs across countries. Dual class shares are widely used in Denmark, Finland, Italy, Sweden, Switzerland and, surprisingly, the UK, whereas they are absent in Belgium, Portugal and Spain and almost absent in France. Pyramids are frequently used in all European countries, but are less pronounced in Finland and Switzerland. Cross-holdings are very rare and only present in Austria, Germany, Italy, Norway, Sweden and the UK.³⁵³⁶

Table 7 provides evidence of the impact of different disproportionality mechanisms on firm value. In Column 1 we use a dummy for each of the four groups of separating mechanisms. *Dual class shares* has a large negative effect, which is significant at the 1 percent level. The firm value of an average European firm with dual class shares is around 19 percent lower than the average firm with a proportional ownership structure. The value discount of dual class shares is indeed

³⁵Overall, we find a higher fraction of firms that use mechanisms to concentrate control in countries with high investor protection (Scandinavia, Ireland and the UK) than in countries with poor investor protection (Central and Southern Europe). However, the wedge between cash flow and votes is generally much smaller in the UK and Ireland than in Continental Europe.

³⁶Apart from the differences in the frequency of these mechanisms, as laid out in Table 2, the legal definition of each mechanism varies from country to country. Dual class shares can be issued without any restrictions in Austria, Ireland and Switzerland, whereas a one-share-one-vote ownership structure is required in Belgium and, in principle, Norway. A majority of the other European countries have a cap on the proportion of the non-voting shares that can be issued. Limited voting shares are not allowed to exceed threshold levels of 50 percent of the nominal capital in Germany, Italy, Portugal and Spain, and 25 percent in France. Denmark, Finland and Sweden have imposed a maximum voting ratio of 10 to 1 between superior and limited voting shares (with potential “grandfather” clauses that provide exemptions for older firms with different voting ratios when the rules were implemented), whereas non-voting shares have been outlawed in the UK since 1968.

higher and more significant when ownership is less concentrated (Column 2), in family-controlled firms (Column 3) and in countries with better protection against self-dealing (Column 4).

Similar to the value discount of dual class shares, *pyramids* have a negative and statistically significant effect on firm value in our sample. The estimated coefficients are smaller than those for dual class shares; however, the economic consequences are still large. On average, the value of a European firm belonging to a corporate pyramid is around 8 percent lower than for a European firm with a proportional ownership structure. The interaction effects of pyramidal structure with little ownership concentration, anti-self-dealing and family control are negative but generally insignificant.

Dual class shares have a significantly stronger negative effect on firm value than pyramids. Using an F-test, we strongly reject the null hypothesis that the effects are identical. Hence, the two coefficients are both economically and statistically different: the value discount of dual class shares is twice as large as the value discount of pyramids.

The effect of *cross-holding* is, on average, positive but insignificant.³⁷ Finally, there are too few firms with other mechanisms to get any significant results for this group.

6.2 The impact of disproportional ownership structures on operating performance

The analysis has so far focused on the impact of disproportional ownership on firm value. Table 8 shows the impact of disproportional ownership on operating performance. Column 1 shows that the effect of disproportional ownership structures disappears when we use return on assets as our endogenous variable. Column 2 focuses on the mechanisms through which disproportional ownership is created. Columns 3 through 8 focus on the interaction effects of disproportional ownership in firms with diluted cash flow, in family firms and in private benefit industries. In general, the effects, which are very clear when we use the MB ratio as endogenous variable, become insignificant in all these regressions. Thus, we cannot provide any evidence of dual class shares or pyramids having a significantly negative impact on operating performance.

It is puzzling that we find strong significant value discounts and that we are not able to find significant effects on firm performance. Ruling out measurement errors above, we believe there are at least two alternative explanations. First, this could be due to the two types of models

³⁷One potential explanation for a positive impact of cross-ownership on firm value could be positive group synergies when families control business groups. As a curiosity, we notice from Column 4 that the cross-ownership effect is much larger and statistically significant in family firms.

having different levels of quality. While the effects are close to zero and highly insignificant, the performance models based on return on assets have very little explanatory power. The R^2 is only around 4 percent, compared to R^2 of around 14 percent in our firm value models.

Second, in the spirit of our incentive and entrenchment model, it could be the case that controlling owners extract a disproportional part of the surplus in the firms they control after operations have been carried out. In this case, potential outside investors will still require a discount for investing in the firm, even though the entrenchment problem does not affect operating performance.³⁸

6.3 Robustness

This section recapitulates a number of robustness checks to the preceding analysis. All the results are robust to the definition of the controlling owner. As mentioned above, we have run all the regressions focusing on the largest group of controlling owners' possession of votes and cash flow (i.e., the joint ownership of all owners who possess more than 10 percent of the votes). Similarly, we have run all regressions using the cross-sectional data from 1996, 1997 and 1998 individually, rather than the average of the period from 1996 to 1998. As we find no effect on return on assets, we have included return on assets as an additional control in the regressions of firm value. To avoid any effects of a correlation between degree of investor protection and the frequency of disproportional ownership structures on our regression results, we have repeated all our regressions on each of the four legal regions (common law, Scandinavian, German and French legal origin), separately. Finally, we have run regressions where we have excluded firms in Belgium, Portugal and Spain in the analysis of the link between disproportional ownership and firm performance. This was done because the empirical analysis relates the performance of a particular firm to the mean of the industry within the country. Thus, the results are likely to suffer from selection bias if the data only cover a small fraction of the total number of listed firms, which leads us to exclude firms in Spain. This is particularly a problem if the total number of listed firms is small, which leads us to exclude firms incorporated in Belgium and Portugal. The number of firms is thereby reduced to 3,741. None of our results change in these robustness checks.

³⁸Finally, it is worth emphasizing that the lack of theoretical foundation behind the results in the last two subsections may indicate that there are more channels through which disproportional ownership affects firm value than the incentive and entrenchment story. A prerequisite for progressing on these issues is to fully understand the comparative aspects of why founders and controlling owners choose various types of disproportional ownership structures. The Almeida and Wolfenzon (2005) study provides one example of such a comparative analysis.

7 Policy implications

The principle of proportional ownership states that it is desirable to have proportional distributions of cash flow and control rights among the investors in publicly listed corporations.

We have shown three important results related to this principle: publicly traded corporations in Western Europe that obey the proportionality principle have higher firm value, and more so in countries with better protection of outside investors; the value discount is larger for dual class shares than pyramids and other mechanisms; and finally, we cannot show that disproportional ownership structures have an impact on operating performance.

These findings shed new light on some recent policy discussions on regulations and recommendations of optimal ownership structures. On the legislative level, the European Commission is engaged in an ongoing process of regulating the company law with a focus on implementing the principle of proportional ownership.³⁹ On the governance level, many countries and international institutions have developed codes of conduct of good corporate governance that highlight rules and procedures that mitigate incentive and entrenchment problems.⁴⁰

Our results provide mixed support for these initiatives and recommendations. As a starting point, the significant value discount of disproportional ownership structures provides indicative support in favor of the principle of proportional ownership. However, there are a number of

³⁹Inspired not least by the Final Report of the High Level Group of Company Law Experts (Winter *et al.* 2002), the promotion of the principle of proportional ownership has been a recurrent theme in the harmonization of the internal capital market within the EU. The Winter Report suggested the introduction of the much-debated Break-Through rule, which in short stated that any owner of at least 75 percent of the cash flow rights shall have complete control of the corporation to facilitate takeovers of firms with a disproportional ownership structure. The proposal was included in the initial version of the new takeover directive, but was removed in the final version (see European Commission 2002, 2003 and Bennedsen and Nielsen 2004). The EU Action Plan (2003) proposes that within the next four years, “abusive” pyramids shall be prohibited from being listed on a stock exchange. Abusive pyramids are defined as holding companies whose sole or main assets are their ownership of shares in another listed company. In the fall of 2006, the current Internal Market and Services Commissioner, Charlie McCreevy, committed to a consortium led by Institutional Shareholder Service, Sherman and Sterling LLP and the European Corporate Governance Institute, to provide a study of proportionality of EU-listed corporations. This study is part of the Commission’s efforts to base any future policy initiatives in this area on objective data.

⁴⁰To illustrate this claim, we collected 53 codes, principles and guidelines on good corporate governance from the home page of the European Corporate Governance Institute (www.ecgi.org), January 1, 2005. We analyzed to what extent they provide discussions and/or recommendation of issues concerning the distribution of cash flow and votes in corporations. Thirty-eight codes out of 53 deal with the conflicts of interest between controlling shareholders and minority shareholders. Out of these, 19 codes directly consider and/or comment on the discrepancy between cash flow rights and voting rights. Eleven codes either recommend that firms follow a one-share-one-vote principle or recommend more generally an alignment between control and ownership. Eight codes explicitly recommend not having dual class shares or comment specifically on the negative effects of having different voting rights attached to shares. Ten codes either emphasize that pyramidal ownership structures shall be disclosed and transparent or directly warn against the use of pyramids. Similarly, 11 codes propose that voting caps either should be disclosed by firms or avoided. Finally, seven codes recommend that shareholder agreements should be disclosed.

caveats to this policy statement.

First, policy makers have to believe that increasing firm value is a valid goal, since we cannot prove any impact on operating performance.⁴¹

Second, the value discount of disproportional ownership structures has to be larger than our valuation bias arising from non-listed superior voting shares and block premia. We conjecture that this is the case in Northern Europe, since we have estimated the discount on disproportional ownership structures to 23 percent of firm value, whereas the average voting and block premium in Northern Europe are 2 and 1 percent, respectively. Thus, voting and block premia are small compared to the value discounts related to disproportional ownership structures. Third, our findings indicate that it may be relevant to focus on the underlying mechanisms that create disproportional ownership structures. Firms with dual class shares and a sufficiently disproportional ownership structure do have lower value than other firms.⁴² In future work, it would be interesting to know more about what causes these differences.

Finally, the significant regional differences, correlating with investor protection and anti-self-dealing measures, indicate that, whereas implementation of the principle of proportional ownership can increase firm value in Northern Europe, it might not be the case in other countries. Taking the existing variation in the legal protection of outside investors as given, it is expected that there may be significant regional variation in the economic consequences of implementing a principle of proportional ownership. Hence, in conclusion, there seems to be some truth to the claim that one size does not fit all countries, with respect to regulative initiatives aimed at promoting the principle of proportionality.

⁴¹The literature on investor protection has documented large positive externalities of the market value of publicly traded corporations on, e.g., the number of IPOs, the development of capital markets and growth (see survey by La Porta *et al.* 2000).

⁴²Interestingly, these firms would have been affected by the now-withdrawn EU proposal regarding the introduction of a Break-Through rule. The EU Action Plan (2003) suggests that in the medium term, abusive pyramids should be regulated, but does not suggest specific regulation for dual class shares. Unfortunately, we have no data on holding companies and, therefore, cannot directly analyze the impact of abusive pyramids relative to other types of disproportional ownership structures.

Appendix

This appendix proves Proposition 1 and Corollaries 1 through 6. To save space, we prove the general model used for Corollary 6. The simplified version used in Proposition 1 and Corollaries 1 to 5 is derived by letting $i_d^m = i_m^o = i_d^o = 1$. We prove that the equilibrium amount of diversion and residual firm value (RFV) is given by:

Proposition 1 *Under shared control ($v < l$):*

$$\begin{aligned} e_d^o &= \frac{1-l+v-c}{2i_d^o}, \\ e_d^m &= \frac{1}{2i_d^m} \left(1 - \frac{1}{\frac{4i_d^m i_m^o}{c(1-l+v)^2} + 1} \right), \\ RFV_{sc} &= 1 - \frac{1-l+v-c}{2i_d^o} - \frac{1}{2i_d^m} \left(1 - \frac{1}{\frac{4i_d^m i_m^o}{c(1-l+v)^2} + 1} \right). \end{aligned}$$

Under absolute control ($v \geq l$):

$$\begin{aligned} e_d^o &= \frac{1-c}{2i_d^o}, \\ e_d^m &= \frac{2i_m^o}{4i_d^m i_m^o + c}, \\ RFV_{ac} &= 1 - \frac{1-c}{2i_d^o} - \frac{2}{4i_d^m + \frac{c}{i_m^o}}. \end{aligned}$$

Proof: Manager's payoff is given by:

$$\pi^m = (1 - \tilde{p})e_d^m - i_d^m (e_d^m)^2.$$

FOC:

$$\begin{aligned} 0 &= (1 - \tilde{p}) - 2i_d^m e_d^m, \\ e_d^m &= \frac{1 - (1-l+v)e_m^o}{2i_d^m}. \end{aligned}$$

The controlling owner's payoff is given by:

$$\pi^o = (1 - \tilde{n})e_d^o - c(1 - e_d^o - (1 - \tilde{p})e_d^m) - i_d^o (e_m^o)^2 - i_d^m (e_d^o)^2.$$

FOC:

$$\begin{aligned} e_d^o &= \frac{1 - \tilde{n} - c}{2i_d^o} = \frac{1 - \text{Max}[0, l-v] - c}{2i_d^o}, \\ e_m^o &= \frac{c}{2i_d^m} e_d^m \frac{\partial \tilde{p}}{\partial e_m^o} = \frac{c}{2} (1 - \tilde{n}) e_d^m = \frac{c}{2} (1 - \text{Max}[0, l-v]) e_d^m. \end{aligned}$$

We are looking for a subgame perfect Nash equilibrium given the distribution of ownership, c, v , and the control limit, l . We have two cases:

Case $v \leq l$: Shared Control The first-order conditions reduce to:

$$\begin{aligned} e_d^o &= \frac{1 - \tilde{n} - c}{2i_d^o} = \frac{1 - \text{Max}[0, l - v] - c}{2i_d^o} = \frac{1 - l + v - c}{2i_d^o}, \\ e_m^o &= \frac{c}{2i_m^o} e_d^m \frac{\partial \tilde{p}}{\partial e_m^o} = \frac{c}{2i_m^o} (1 - \tilde{n}) e_d^o = \frac{c}{2i_m^o} (1 - l + v) e_d^m, \\ e_d^m &= \frac{1 - (1 - l + v) e_m^o}{2i_d^m}. \end{aligned}$$

This implies that:

$$\begin{aligned} e_m^o &= \frac{c}{4i_d^m i_m^o} (1 - l + v) (1 - (1 - l + v) e_m^o) \\ &= \frac{c}{4i_d^m i_m^o} (1 - l + v) - \frac{c}{4i_d^m i_m^o} (1 - l + v)^2 e_m^o \\ \Leftrightarrow & \left(1 + \frac{c}{4} (1 - l + v)^2\right) e_m^o = \frac{c}{4} (1 - l + v) \\ \Leftrightarrow & e_m^o = \frac{(1 - l + v)}{4i_d^m i_m^o + c(1 - l + v)^2} \\ e_d^m &= \frac{1 - (1 - l + v) \frac{c(1 - l + v)}{4i_d^m i_m^o + c(1 - l + v)^2}}{2i_d^m} = \frac{1}{2i_d^m} \left(1 - \frac{1}{\frac{4i_d^m i_m^o}{c(1 - l + v)^2} + 1}\right). \end{aligned}$$

Residual firm value under shared control:

$$RFV_{sc} = 1 - e_d^o - e_d^m = 1 - \frac{1 - l + v - c}{2i_d^o} - \frac{1}{2i_d^m} \left(1 - \frac{1}{\frac{4i_d^m i_m^o}{c(1 - l + v)^2} + 1}\right).$$

Case $v \geq l$: Absolute Control : In this case, there is no waste of monitoring effort through negotiation and the controlling owner, therefore, always prefer to monitor. The first-order conditions reduce to:

$$\begin{aligned} e_d^o &= \frac{1 - c}{2i_d^o}, \\ e_m^o &= \frac{c}{2i_m^o} e_d^m, \\ e_d^m &= \frac{1 - e_m^o}{2i_d^m}. \end{aligned}$$

Thus the equilibrium actions are:

$$\begin{aligned} e_d^o &= \frac{1 - c}{2i_d^o}, \\ e_m^o &= \frac{c}{2i_m^o} e_d^m = \frac{c}{2i_m^o} \frac{1 - e_m^o}{2i_d^m} \Leftrightarrow e_m^o = \frac{c}{4i_d^m i_m^o + c}, \\ e_d^m &= \frac{1 - e_m^o}{2i_d^m} \Leftrightarrow e_d^m = \frac{1 - \frac{c}{4i_d^m i_m^o + c}}{2i_d^m} = \frac{2i_m^o}{4i_d^m i_m^o + c}. \end{aligned}$$

Residual firm value absolute control:

$$RFV_{ac} = 1 - e_d^o - e_d^m = 1 - \frac{1 - c}{2i_d^o} - \frac{2}{4i_d^m + \frac{c}{i_m^o}}.$$

Proof of Corollaries: The proofs of Corollaries 1 and 2 follow from:

$$\frac{\partial e_d^o}{\partial v} = \frac{1}{2i_d^o} > 0$$

and

$$\begin{aligned} \frac{\partial e_d^m}{\partial v} &= \frac{\partial\left(\frac{1}{2i_d^m}\left(1 - \frac{1}{\frac{4i_d^m i_m^o}{c(1-l+v)^2} + 1}\right)\right)}{\partial v} \\ &= -\frac{1}{2i_d^m} \frac{-1}{\left(\frac{4i_d^m i_m^o}{c(1-l+v)^2} + 1\right)^2} \left(4i_d^m i_m^o \left(\frac{-2}{c(1-l+v)^3}\right)\right) (2c(1-l+v)) \\ &= -i_m^o \frac{\frac{1}{c(1-l+v)^2}}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^2} < 0. \end{aligned}$$

Corollary 3 is slightly more involved:

$$\frac{\partial RFV_{sc}}{\partial v} = -\frac{1}{2i_d^o} + i_m^o \frac{\frac{1}{c(1-l+v)^2}}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^2} = -\frac{1}{2} + \frac{\frac{1}{c(1-l+v)^2}}{\left(\frac{1}{c(1-l+v)^2} + 1/4\right)^2},$$

where the last equality uses the assumption $i_d^m = i_m^o = i_d^o = 1$. Now substitute $z = \frac{1}{c(1-l+v)^2}$ and find roots:

$$0 = -\frac{1}{2} + \frac{z}{\left(z + \frac{1}{4}\right)^2} \leftrightarrow 0 = 2z^2 - 3z + \frac{1}{8}$$

implying that

$$z = \begin{cases} \frac{3}{4} - \frac{1}{2}\sqrt{2}, \\ \frac{3}{4} + \frac{1}{2}\sqrt{2}. \end{cases}$$

A sufficient condition is to show that $l > v \geq c$ implies that $z > \frac{3}{4} + \frac{1}{2}\sqrt{2}$. To derive a contradiction, assume that $z \leq \frac{3}{4} + \frac{1}{2}\sqrt{2} \approx 1.46$. Now,

$$z = \frac{1}{c(1-l+v)^2} \Leftrightarrow v = \sqrt{\frac{1}{z * c}} + l - 1 \geq \sqrt{\frac{1}{1.46l}} + l - 1.$$

By inspection $\sqrt{\frac{1}{1.46l}} + l - 1$ has one local minimum in the interval for $0 \leq l \leq 1$. We solve the equation

$$l = \sqrt{\frac{1}{1.46l}} + l - 1 \Leftrightarrow l = 0.68.$$

Hence, for all $\frac{2}{3} \geq l \geq v$, we have that $\frac{\partial RFV_{sc}}{\partial v} < 0$.

Corollary 4 follows directly from the second case in Proposition 1.

Corollary 5: Under unified control, the controlling owner's payoff is given by:

$$\begin{aligned} \pi^{uc} &= (1 - \tilde{n})e_d^o + c(1 - e_d^o - (1 - \tilde{p})e_d^m) + (1 - \tilde{p})e_d^m - i_d^m(e_d^m)^2 - i_m^o(e_m^o)^2 - i_d^o(e_d^o)^2 \\ &= (1 - \tilde{n})e_d^o + c(1 - e_d^o) + (1 - c)(1 - (1 - \tilde{n})e_m^o)e_d^m - (e_d^m)^2 - (e_m^o)^2 - i_d^o(e_d^o)^2. \end{aligned}$$

Since this expression is decreasing in e_m^o , it follows that it is optimal not to monitor at all, i.e., $e_m^o = 0$. Thus, π^{om} , reduces to:

$$\pi^{om} = (1 - \tilde{n})e_d^o + c(1 - e_d^o) + e_d^m - i_d^m(e_d^m)^2 - i_d^o(e_d^o)^2.$$

The solution to the diversion problems is:

$$\begin{aligned} e_d^o &= \frac{1 - l + v - c}{2i_d^o}, \\ e_d^m &= \frac{1}{2i_d^m}, \\ e_m^o &= 0. \end{aligned}$$

The effects on residual firm value of increased disproportionality:

$$\frac{\partial RFV_{sc}^{uc}}{\partial v} = -\frac{1}{2i_d^o} < -\frac{1}{2i_d^o} + i_m^o \frac{\frac{1}{c(1-l+v)^2}}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^2} = \frac{\partial RFV_{sc}^{dc}}{\partial v}.$$

Corollary 6 is proved by:

$$\begin{aligned} \frac{\partial RFV_{sc}}{\partial v} &= -\frac{1}{2i_d^o} + i_m^o \frac{\frac{1}{c(1-l+v)^2}}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^2}, \\ \frac{\partial RFV_{sc}^2}{\partial v \partial i_d^o} &= \frac{1}{2i_d^o{}^2} > 0, \\ \frac{\partial RFV_{sc}^2}{\partial v \partial i_m^o} &= \frac{\frac{1}{c(1-l+v)^2}}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^2} \left(1 - 2i_m^o \frac{\left(\frac{i_d^m}{c(1-l+v)^2}\right)}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^2}\right) \\ &= -2 \frac{\frac{1}{c(1-l+v)^2}}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^2} \frac{\partial RFV_{sc}}{\partial v} > 0 \\ &\Leftrightarrow \frac{\partial RFV_{sc}}{\partial v} = 0, \\ \frac{\partial RFV_{sc}^2}{\partial v \partial i_d^m} &= i_m^o \frac{1}{c(1-l+v)^2} \frac{-1}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^3} \frac{i_m^o}{c(1-l+v)^2} \\ &= -\left(\frac{i_m^o}{c(1-l+v)^2}\right)^2 \frac{1}{\left(\frac{i_d^m i_m^o}{c(1-l+v)^2} + 1/4\right)^3} < 0. \end{aligned}$$

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Table 1, Firm Characteristics by Country

This table shows summary statistics on country level for the dependent variables, *market-to-book ratio* (MB) and *return on assets* (RoA), as well as the control variables used throughout the empirical section. MB is the ratio of market value of assets to book value of assets. Market value is defined as the sum of the market value of common stocks and the book value of debt and preferred stocks. *RoA* is defined as operating profit over book value of assets. *Firm size* is measured by sales in millions of dollars. *Leverage* is book value of debt over book value of assets. *Asset tangibility* is defined as $(1 - \text{book value of intangible assets} / \text{book value of assets})$, while *sales growth* is the growth in sales for the previous year. *Anti-director rights index* is the revised index of the legal protection of minority investors from Djankov, La Porta, Lopez-de-Silanes and Shleifer (2005), where 0 is the lowest and 6 is the highest degree of legal investor protection. *Anti-self-dealing index*, which measures the legal protection of minority investors against expropriation by corporate insiders, is from Djankov *et al.* (2005), where 0 is the lowest and 1 is the highest degree of protection.

Country	N	Market-to-book ratio		Return on Assets		Firm size		Leverage		Asset tangibility		Sales growth		Anti-director rights index	Anti-self-dealing index
		Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median		
Austria	90	0.87	0.70	0.07	0.03	671	219	0.26	0.23	0.97	0.99	0.30	0.13	2.5	0.21
Belgium	85	1.20	0.91	0.08	0.06	1711	245	0.27	0.24	0.95	0.99	0.59	0.14	2.5	0.54
Denmark	164	1.10	0.83	0.07	0.05	380	77	0.23	0.20	0.98	1.00	0.20	0.16	4.0	0.47
Finland	105	1.29	0.94	0.09	0.08	861	137	0.29	0.27	0.95	0.98	0.38	0.20	3.5	0.46
France	495	1.00	0.78	0.04	0.04	2088	214	0.24	0.22	0.91	0.96	0.31	0.13	4.5	0.85
Germany	582	1.23	0.85	0.04	0.04	2437	235	0.21	0.17	0.96	0.99	0.28	0.10	2.5	0.28
Ireland	60	1.59	1.11	0.04	0.07	572	176	0.23	0.22	0.95	1.00	0.15	0.15	4.0	0.79
Italy	169	0.83	0.68	0.04	0.03	2590	442	0.26	0.24	0.96	0.99	0.14	0.12	2.0	0.39
Norway	138	1.33	1.01	0.07	0.06	536	132	0.32	0.31	0.96	0.99	0.30	0.12	3.5	0.44
Portugal	70	0.78	0.70	0.04	0.04	579	149	0.25	0.24	0.93	0.99	0.20	0.17	3.5	0.49
Spain	146	1.08	0.85	0.06	0.05	863	213	0.19	0.16	0.97	0.99	0.51	0.15	5.0	0.37
Sweden	200	1.80	1.21	0.04	0.07	965	115	0.23	0.21	0.92	0.97	0.54	0.12	3.5	0.34
Switzerland	161	1.05	0.80	0.06	0.05	1996	281	0.26	0.24	0.97	1.00	0.15	0.09	3.0	0.27
UK	1632	1.47	0.98	0.05	0.06	829	87	0.19	0.16	0.98	1.00	0.20	0.08	5.0	0.93
All countries	4096	1.28	0.90	0.05	0.05	1316	143	0.22	0.19	0.96	1.00	0.26	0.11	3.5	0.49

Table 2, Application of Mechanisms of Separating Cash Flow and Control by Country

This table summarizes the use of mechanisms of separating cash flow and control rights on country level across Western Europe. The columns show the number and share of firms controlled via different disproportionality mechanisms: *dual class shares*, *pyramid*, *cross-holding* and *other mechanisms*. Firms with multiple mechanisms appear under each mechanism. The last column, *all mechanisms*, shows the total number and share of firms that are using at least one mechanism of separating cash flow and control.

Country	N	Dual class shares		Pyramid		Cross-holding		Other mechanisms		All mechanisms	
		N	Share	N	Share	N	Share	N	Share	N	Share
Austria	90	21	0.23	23	0.26	1	0.01	0	0.00	39	0.43
Belgium	85	0	0.00	23	0.27	0	0.00	5	0.06	28	0.33
Denmark	164	48	0.29	28	0.17	0	0.00	9	0.05	75	0.46
Finland	104	46	0.44	7	0.07	0	0.00	7	0.07	56	0.54
France	495	15	0.03	72	0.15	0	0.00	0	0.00	86	0.17
Germany	582	112	0.19	137	0.24	18	0.03	3	0.01	233	0.40
Ireland	60	15	0.25	11	0.18	0	0.00	2	0.03	25	0.42
Italy	169	73	0.43	42	0.25	2	0.01	1	0.01	93	0.55
Norway	138	15	0.11	45	0.33	3	0.02	1	0.01	57	0.41
Portugal	70	0	0.00	9	0.13	0	0.00	0	0.00	9	0.13
Spain	146	0	0.00	24	0.16	0	0.00	3	0.02	27	0.18
Sweden	200	123	0.62	53	0.27	1	0.01	0	0.00	147	0.74
Switzerland	161	84	0.52	10	0.06	0	0.00	0	0.00	93	0.58
UK	1632	411	0.25	358	0.22	2	0.00	10	0.01	689	0.42
All countries	4096	963	0.24	842	0.21	27	0.01	41	0.01	1657	0.40

Table 3, Valuation of Firms with Mechanisms of Separating Cash Flow and Control in Western Europe (Market-to-Book Ratio)

The market-to-book ratio (MB) is the ratio of the market value of assets to the book value of assets. We report the average MB ratio for the period 1996 to 1998. Market value is defined as the sum of the market value of common stocks and the book value of debt and preferred stocks. We divide the sample into firms with a proportional and disproportional ownership structure according to whether the firm has implemented mechanisms of separating cash flow and control. In Panels A) to F), the average MB ratios are reported by country and firm characteristics: A) *all firms*, B) *cash flow concentration*, C) *family firms* and *non-family firms*, D) *private benefit industries*, E) investor protection measured by the revised *anti-director rights index* from Djankov, La Porta, Lopez-de-Silanes and Shleifer (2005) and F) investor protection measured by the *anti-self-dealing index* from Djankov *et al.* (2005). High and low splits are defined according to the median on firm level for cash flow concentration and to the median on country level for investor protection indices. *Family controlled* firms are firms where the largest ultimate owner is a family. *Family managed* is defined as family firms where the CEO, honorary chairman, chairman or vice-chairman is a member of the controlling family. Number of observations is reported in brackets. Difference is a mean comparison test with t-statistics reported in parenthesis. ***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

Description	Ownership structure				Difference	
	Proportional (I)	Disproportional				
		All (II)	Dual class shares (III)	Pyramid (IV)	(II) – (I)	(III)-(IV)
A. All firms	1.360 [2439]	1.172 [1657]	1.099 [963]	1.278 [648]	-0.187*** (4.27)	-0.179*** (3.28)
B. Cash flow concentration						
High	1.259 [1407]	1.171 [626]	1.119 [370]	1.272 [237]	-0.089 (1.35)	-0.153 (1.50)
Low	1.497 [1032]	1.173 [1031]	1.086 [593]	1.281 [411]	-0.324*** (5.28)	-0.195*** (3.13)
C. Family firms						
Family controlled	1.635 [677]	1.261 [413]	1.232 [311]	1.271 [94]	-0.374*** (3.50)	-0.039 (0.32)
Family managed	1.673 [429]	1.161 [218]	1.086 [161]	1.305 [51]	-0.512*** (3.45)	-0.219 (1.50)
Not family controlled	1.251 [1761]	1.143 [1244]	1.035 [554]	1.279 [652]	-0.108** (2.38)	-0.244*** (3.93)
D. Private benefit industries						
High amenity value	1.692 [101]	1.216 [40]	1.134 [23]	1.326 [17]	-0.476** (2.40)	-0.192 (1.33)
Low amenity value	1.345 [2338]	1.171 [1617]	1.098 [940]	1.276 [631]	-0.174*** (3.88)	-0.178*** (3.20)
E. Anti-director rights index						
High	1.449 [1777]	1.224 [1162]	1.157 [673]	1.326 [454]	-0.224*** (4.19)	-0.169*** (2.75)
Low	1.119 [662]	1.049 [495]	0.964 [290]	1.164 [194]	-0.071 (0.96)	-0.199* (1.81)
F. Anti-self-dealing index						
High	1.420 [1642]	1.160 [968]	1.050 [535]	1.303 [398]	-0.260*** (4.58)	-0.253*** (4.04)
Low	1.235 [797]	1.189 [689]	1.160 [428]	1.237 [250]	-0.046 (0.68)	-0.077 (0.79)

Table 6, Test of Alternative Explanations of the Value Discount on Disproportional Ownership Structures in Western Europe

The dependent variable is the ratio of market value of assets to book value of assets. Market value is defined as the sum of the market value of common stocks and the book value of debt and preferred stocks. All variables are the averages of the yearly values in the period 1996-1998. We include firm size, leverage, asset tangibility, sales growth and the largest owner's cash flow stake as control variables. *Disproportionality* (DP) is an indicator variable taking the value one if the firm has mechanisms of separating cash flow and control. *Block premia* is from Dyck and Zingales (2004) and measures the average premium paid for controlling ownership blocks in each country. *M&A volume* is from Rossi and Volpin (2004) and measures the volume of mergers and acquisitions activity by the percentage of traded firms that are targets of successful mergers or acquisitions from 1990 to 1999 in each country. The revised *anti-director rights index* is from Djankov, La Porta, Lopez-de-Silanes and Shleifer (2005). *Family controlled* is an indicator variable equal to one if the largest owner is a family. In Model (4) we restrict the sample to countries with high takeover activity (defined as above-median M&A volume on country level). We include industry and country effects. Country effects are treated as fixed effects. t-statistics based on robust standard errors are reported in parenthesis. ***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

	(1)	(2)	(3)	(4)
Disproportionality (DP)	-0.230*** (-4.70)	0.202 (1.26)	0.434* (2.17)	-0.229*** (-4.14)
Block premia * DP	0.881** (2.07)			
M&A volume * DP		-0.809** (-2.41)	-0.448 (-1.33)	
Anti-director rights index * DP			-0.100** (-2.54)	
Family controlled				0.077 (0.86)
Family controlled * DP				-0.210* (-1.89)
Control variables	YES	YES	YES	YES
Industry effects	YES	YES	YES	YES
Country effects	YES	YES	YES	YES
Adjusted R-squared	0.144	0.145	0.146	0.164
N	3951	4096	4096	2737

Table 7, The Effect of Mechanisms of Separating Cash Flow and Votes on Firm Value in Western Europe

The dependent variable is the ratio of market value of assets to book value of assets. Market value is defined as the sum of the market value of common stocks and the book value of debt and preferred stocks. All variables are the average of the yearly values in the period 1996-1998. We include firm size, leverage, asset tangibility, sales growth and the largest owner's cash flow stake as control variables. *Dual class shares* (DCS) is an indicator equal to one if the firm has dual class shares. *Pyramid* (PYR) is an indicator equal to one if control is held through a pyramidal structure. *Cross-holding* (CRO) is an indicator variable equal to one if the firm has cross-ownership with another firm. *Other types of disproportionality* (OTH) is an indicator equal to one if the firm has other mechanisms of separating cash flow and votes than dual class shares, pyramid or cross-holding. *Low cash flow concentration* (LCFC) is an indicator variable equal to one if the largest owner's cash flow stake is below the median on firm level. *Family controlled* (FC) is an indicator variable equal to one if the largest owner is a family. *Anti-self-dealing index* (ASDI), which measures the protection of minority investors against expropriation by corporate insiders, is from Djankov, La Porta, Lopez-de-Silanes and Shleifer (2005). We include industry and country effects. Country effects are treated as fixed effects. t-statistics based on robust standard errors are reported in parenthesis. ***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively.

	(1)	(2)	(3)	(4)
A. Mechanisms				
Dual class shares (DCS)	-0.256*** (-6.30)	-0.152** (-2.31)	-0.257*** (-5.80)	0.015 (0.14)
Pyramid (PYR)	-0.105** (-2.32)	-0.054 (-0.70)	-0.088* (-1.76)	0.015 (0.139)
Cross-holding (CRO)	0.377 (1.63)	0.398 (0.78)	0.263 (1.21)	0.511 (1.18)
Other types of disproportionality (OTH)	-0.209 (-1.20)	-0.174* (-1.64)	-0.328*** (-2.41)	0.368 (1.04)
B. Interactions with low cash flow concentration (LCFC)				
DCS * LCFC		-0.167** (-2.07)		
PYR * LCFC		-0.084 (-0.89)		
CRO * LCFC		-0.003 (-0.00)		
OTH * LCFC		-0.064 (-0.20)		
C. Interactions with family controlled (FC)				
DCS * FC			0.013 (0.20)	
PYR * FC			-0.074 (0.73)	
CRO * FC			2.633*** (9.74)	
OTH * FC			0.709 (0.93)	
D. Interactions with anti-self-dealing index (ASDI)				
DCS * ASDI				-0.425** (-2.89)
PYR * ASDI				-0.166 (-0.99)
CRO * ASDI				-0.451 (0.60)
OTH * ASDI				-0.972** (-2.30)
Control variables	YES	YES	YES	YES
Industry effects	YES	YES	YES	YES
Country effects	YES	YES	YES	YES
Adjusted R-squared	0.146	0.146	0.148	0.147
N	4096	4096	4096	4096

