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 endogeneity 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 is consistent with a causal interpretation that the discount is driven by incentive and entrenchment effects. First, we show that the value discount is higher in family firms, in firms with low cash flow concentration, 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 address a number of specific endogeneity problems related to omitted variable bias, measurement bias and reverse causality. Fourth, we show 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 on operating performance, likelihood of going bankrupt, dividend policy or growth. 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 research[2] 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 negative correlation between firm value and disproportional ownership structures. We confirm this value discount in our sample covering most of the publicly traded firms in the Western European countries.

Investigations of the effect of ownership structures on firm value is bound to be plagued by endogeneity problems. The main contribution of the present paper is to provide evidence that is consistent with the interpretation of the value discount being related to incentive and entrenchment effects. In addition, we present additional insights that allows us to address a number of specific endogeneity problems that rule out alternative explanations of the observed relationship between disproportional ownership structure and firm value.

First, we build a simple model based on incentive and entrenchment effects that yields a

[1] The 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, commissioned a.o. the European Corporate Governance Institute to analyze the economic consequences of promoting one-share-one-vote (Adams and Ferreira, 2007; and Burkart and Lee, 2007).

[2] The following subsection provides a review of the previous studies of disproportional ownership.

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 family firms; firms with dispersed cash flow distribution; and, in firms with a large scope for extraction of private benefits. Moreover, our model provides a channel through which the value discount of disproportional ownership structures intervenes with the degree of legal protection of outside investors.

Second, we investigate these predictions empirically and find that there is a significant value discount of disproportional ownership structures in Western Europe and provide new insight consistent with the theoretical model: The value discount is larger a) in family-controlled firms where the incentive problems are absent; b) in firms with higher amenity value where the scope for entrenchment is larger; and c) when large owners have small cash flow stakes, i.e., where disproportionality provides most added control for the largest owners. 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 address a number of specific endogeneity problems related to omitted variable bias, measurement bias and reverse causality. A popular approach to establish causality is to use instrumental variables. Two conditions must be satisfied for the instrumental variable estimation strategy to work. First, the instrument should be correlated with the endogenous regressor for reasons we can verify and explain. Second, the instrument in itself should not be related to firm value. Finding good instruments for ownership is known to be a difficult task and to date there has been few attempts in the prior literature. Lins (2003) uses proxies for firm volatility (beta) as instrument for managerial ownership concentration, whereas Gompers, Ishii and Metrick (2004) use proxies for private benefits of control (i.e. media dummy, company name dummy, state anti-takeover law, etc.) as instrument for dual class shares. Our key concern with these instruments is that they are likely to affect firm value through several other channels. As an example, the dummy for whether the family name appears in the firm name used by Gompers, Ishii and Metrick (2004) increases the frequency of family control and family ownership. Family ownership and control do increase the use of disproportional ownership structures; however, it does also affect firm value directly and through other indirect channels (see e.g. the recent survey by Bertrand and Schoar, 2006). Thus, whereas this instrument satisfies the identifying

assumption it is contestable whether it satisfies the exclusion restriction. We believe that the same critique can be raised against other variables that have been proposed as instruments for disproportional ownership structures. Moreover, from the microeconometric literature we know that using invalid instruments can lead to a bias in the resulting estimates that is much greater than the bias in ordinary least squares estimates (Angrist and Kruger 2001).

In the absence of valid instruments for disproportional ownership we directly address the specific endogeneity problems that figure most prominent in the literature. In particular, we examine whether the value discount can be explained by omitted variable bias in the form of missing takeover premia and protection of private benefits; measurement bias due to missing voting premia, missing block premia and low liquidity; and reverse causality, i.e. that firms with low firm value choose a disproportional ownership structure. To rule out these specific endogeneity stories, we make use of the cross-country and cross-industry variation in our sample. As an example, consider the potential measurement bias related to unobserved premia on block holdings, which 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 (Dyck and Zingales 2004). 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 specific endogeneity stories.

Our analysis also provide two new insights which do not follow directly from our model of incentive and entrenchment effects, nor from any other theoretical model that we are aware of. First, we investigate the overall effect of disproportionality on various alternative measures of corporate performance. We show that there is no difference in terms of operating performance, likelihood of going bankrupt, dividend policy or firm growth. Thus, whereas our results are consistent with that disproportional ownership structures reduce firm value we do not find any indication of that corporate resources are used less efficient. From a theoretical viewpoint this may indicate that controlling owners extract a disproportional part of the surplus in the firms they control after operations have been carried out. Second, we find that dual class shares are associated with a significantly larger value discount than pyramids and other separating mechanisms. In addition, we show this difference is related to that firms with dual class shares are less frequently taken over by other firms, have lower operating performance, pay out less dividends and have lower growth in assets.

Our results have important implications for the ongoing harmonization of EU company law.[3] Regulation that promote proportional ownership structures may have different effects in Northern Europe, where investor protection is high, than in countries with lower investor protection. In the absence of solid evidence that firms with disproportional ownership structures use corporate resources less efficient, 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 address endogeneity issues and rule out a vast number of alternative explanations to the observed value discount. Section 6 provides a comparison of dual class shares and pyramids and further shows that we cannot find any overall effects on other measures of corporate 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

[3] It 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.

[4] Consistent 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.

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. In a recent and comprehensive survey of this literature Adams and Ferreira (2007) conclude that disproportional ownership structures correlate negatively with firm value but there is no universal causal link from control enhancing mechanisms to firm outcome.

Compared to the studies above, our contribution is in the context of Western European firms to a) provide strong evidence consistent 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 address the endogeneity concerns that figure prominent in the literature 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 mea-

[5]From 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.

[6]Claessens *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 (2006b) have shown similar results using data on US corporations.

suring 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.

2 A Model of Incentive and Entrenchment Effects

The leading analytical 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.[7]

The model has three dates and three types of agents: a manager, m, a controlling owner, o, and a group of passive non-controlling owners. The manager creates value, v, in the firm. 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 $\frac{1}{2}e_d^{m2}$. At date 1, the controlling owner chooses two actions: First, she monitors the manager (too be specified below) and, second, she diverts corporate resources, e_d^o, at a private effort cost of $\frac{1}{2}e_d^{o2}$. We assume that both types of diversion are observable but non-verifiable to third parties; 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.

Given cash flow rights, c, the controlling owner possesses control rights (votes) of $c+d$ where d is the degree of disproportional ownership structure. If the controlling owner has a lot of votes - i.e. $c+d$ is high - she can almost unilaterally decide on actions such as monitoring the manager or diverting cash flow on her own. If she has less votes, she must negotiate with other owners before taking action. Formally, if the controlling owner provides effective monitoring effort of e_m^o, we assume that her private monitoring effort cost is $\frac{1}{2}(1+n){e_m^o}^2$, where $n \equiv n(1-c-d)$, $n(0)=0$, $n'>0$, and $n''>0$. Thus, control through votes mitigates the owner's private cost of

[7] See Burkart and Lee (2007) for a comprehensive survey of alternative theoretical explanations of the economic consequences of separating cash flow and votes.

monitoring the manager. For simplicity we assume that the likelihood of catching the manager in a verifiable way is $p = e_m^o$, and if the manager is caught, the cash flow will return to the corporation without further punishment.

In a similar vein, we assume that when the owner does not have absolute control, she must share part of the diverted cash flow with a supporting group of owners. To be specific we assume that she has to share a fraction n of the diverted cash flow with the other owners.

With these assumptions, expected residual firm value (RFV) is the potential firm value v less the amount of corporate resources that the owner and the manager divert net of what is returned to the corporation due to monitoring, i.e. $RFV = v - e_d^o - (1-p)e_d^m$.

We assume that the marginal private benefit of diverted cash flow, $(1+a)$, is the same for both the manager and the owner. However, in line with Demsetz and Lehn (1985) we define a as the amenity value and assume it varies across industries. The idea is that a certain amount of private benefit extraction may be worth more for the controlling owner in industries such as media, entertainment and sport.

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

$$\pi^m = (1+a)(1-p)e_d^m - \frac{1}{2}e_d^{m2}.$$

The controlling owner's payoff is given by:

$$\pi^o = (1+a)(1-n)e_d^o + c(v - e_d^o - (1-p)e_d^m) - \frac{1}{2}(1+n)e_m^{o\,2} - \frac{1}{2}e_d^{o2}.$$

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 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. *Equilibrium level of diversion and residual firm value are:*

$$\begin{aligned} e_d^o &= (1+a)(1-n)-c, \\ e_d^m &= \frac{(1+n)(1+a)}{1+n+(1+a)c}, \\ RFV_{sc} &= v-((1+a)(1-n)-c)-(1-p)(\frac{(1+a)(1+n)}{1+n+(1+a)c}). \end{aligned}$$

All proofs are in the Appendix. The owner's diversion increases in the amenity value of private benefits and in control, because more votes implies that she has to share less of the diverted resources with other owners, and it decreases in nominal cash flow rights, c, which is the owner's share of the residual cash flow. The interpretation of the equilibrium level of managerial diversion is more involved since the manager takes into account the monitoring effort of the owner. Notice that both $\frac{\partial e_d^m}{\partial a}$ and $\frac{\partial e_d^m}{\partial n}$ are positive; hence, the managerial diversion increases in the amenity value and decreases in the amount of control that the owner possesses. More control decreases monitoring cost, which increases the likelihood that the manger is caught for a given level of diversion.

Proposition 2. *A more disproportional ownership structure*

a) decreases the incentive problem,

b) increases the entrenchment problem,

c) decreases residual firm value.

Proposition 2 illustrates the basic cost and benefit of a disproportional ownership structure. The benefit is that it improves incentives to monitor, 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.

The cost of disproportional ownership structures is that a self-interested controlling owner needs to distribute a smaller share of diluted corporate resources to other owners. Therefore, she has stronger incentive to divert resources which *ceteris paribus* decreases residual firm value.

Neither part a) nor part b) is easy to prove empirically, since it is hard to measure the two effects isolated from each other. Part c), however, yields that the enlargement of the entrenchment problem dominates the improvement of the incentive problem implying that disproportionality reduces residual firm value. Thus, the model predicts that we should observe a negative relation between disproportionality and residual firm value.

The next result focuses on the subset of firms where the controlling owner is also the manager of the firm:

Proposition 3. *The negative effect of disproportional ownership structures on residual firm value is enlarged in owner managed firms.*

In owner managed firms, the controlling owner has no incentive to monitor her alter ego, the manager. In this case, disproportionality does not improve the efficiency of monitoring and, therefore, does not reduce the incentive problem. Hence, with respect to residual firm value there is no benefit of disproportional ownership structures in owner managed firms. On the other hand, disproportionality still reduces the fraction of other owners that the controlling owner has to share her private benefits with. Thus, the cost of disproportionality is unchanged. We therefore expect to see a larger negative impact of disproportionality in owner managed firms than in other firms.

Empirically, we claim that there are less conflicts between the owners and managers in family firms. This is even more so whenever a member of the family is also the manager. Proposition 3, therefore, predicts a stronger negative relationship between disproportionality and residual firm value in family firms than in non-family firms and an even stronger relationship in family firms where the manager is a member of the controlling family.

In this model the value discount is driven by the impact of disproportionality on how much time and resources the controlling owner has to spend on negotiating and sharing resources with the non-controlling owners. Hence, we expect the impact to be larger for controlling minority owners, i.e. controlling owners that possess little cash flow and have less than the majority of the votes.

Proposition 4. *The negative impact of disproportional ownership structure on residual firm value is stronger for low cash flow concentration in owner managed firms.*

A controlling owner that possess a majority of the income and control rights has ultimate control even without any disproportionality. Thus, we expect to see that the value discount of disproportional ownership structures is larger in firms where the controlling owner possesses little cash flow. Proposition 4 yields that this indeed is the case in owner managed firms. We also conjecture this to be the case for other firms; however, we cannot derive close form solutions for this result when monitoring is positive.

We now address the question if disproportionality has a larger or smaller effect in industries with higher amenity value. Since $\frac{\partial e_d^m}{\partial a}$ and $\frac{\partial e_d^o}{\partial a}$ are both positive, higher amenity value increases both the incentive and the entrenchment problem. However, we are more focused on how the

effect of disproportional ownership structure on residual firm value is influenced by the scope for private benefit extraction:

Proposition 5. *Higher amenity value*

a) enhances the mitigating effect of disproportional ownership structure on the incentive problem,

b) enhances the enlarging effect of disproportional ownership structure on the entrenchment problem,

c) enhances the negative effect of disproportional ownership structure on residual firm value.

The first part of the proposition yields that the positive effect of disproportionality - the reduction in the incentive problem - is larger in industries with higher amenity values. Thus, for a given degree of disproportionality we shall observe a larger reduction in managerial diversion in industries with higher scopes for private benefit extraction.

The second part of the proposition yields that the negative effect of disproportionality - the increase in the entrenchment problem - is larger in industries with higher amenity values. Thus, for a given degree of disproportionality we shall observe a larger increase in owner diversion in industries with high amenity values.

These two effects have opposite impact on residual firm value. The third part of the proposition shows that the negative effect in b) dominates the positive effect in a). Empirically, Proposition 5 predicts a larger value discount of disproportional ownership structures in industries characterized by high amenity value such as media, entertainment and sport.

Our final empirical implication of the model focuses on the interaction between investor protection and the effect of disproportionality on firm value. Investor protection is a multidimensional concept that covers any activity that improves the protection of outside investors' return on their investment. In this simplified framework we will assume that increased investor protection makes it harder to divert corporate resources. To be specific we will assume that the marginal cost of diversion is $1 + i$, where the parameter i is a proxy for the degree of investor protection. For simplicity we will assume the same diversion cost for both the manager and the owner. In the appendix we solve this extended model and prove the following:

Proposition 6. *Improved investor protection*

a) increases residual firm value by reducing both the incentive and the entrenchment problem,

b) reduces the mitigating effect of disproportionality on the incentive problem,

c) reduces the enlarging effect of disproportionality on the entrenchment problem.

Part a) shows the relationship between firm value and investor protection. Increased investor protection always reduce the amount of diverted resources by the owner. It also reduce the incentives to divert resources for the manager given the level of monitoring by the owner. However, there is a caveat since the reduced incentive for managerial diversion decreases the owner's incentive to monitor, which ceteris paribus increases the manager's incentive to divert again. Part a) yields that the combined effect of these opposing forces is that improved investor protection reduces the total amount of diverted resources and, therefore, increase residual firm value. Thus, our model is consistent with Shleifer and Wolfenzon (2002).

In the following we are interested in whether we observe a higher or smaller value discount of disproportional ownership structure in countries with higher investor protection. Part b) states that the positive effect of disproportionality (reducing the incentive problem) is reduced in countries with higher investor protection. Thus, a given degree of disproportional ownership structure implies a relative smaller reduction in the amount of corporate resources that the manager diverts in countries with high investor protection.

Contrary to this, Part c) yields that the negative effect of disproportionality is reduced in countries with high investor protection. A given degree of disproportional ownership structure implies a relative larger reduction in the amount of corporate resources that the owner diverts in countries with high investor protection.

These two effects have counteracting implications for residual firm value. Thus, it remains an open empirical question whether the value discount of disproportional ownership structure shall be higher or lower in countries with good investor protection.

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

[8]The 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.

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 firms is classified as having a pyramidal ownership structure if it has an ultimate owner who controls the firm indirectly through another corporation

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

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

[11] We 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. In similar vein, the number of observations is reduced when we focus on the status of the firm in 2005, the dividend yield and growth rates.

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 mechanisms[14] 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 on Firm Value

This section contains the results from our empirical analysis. First, we provide partial evidence for Proposition 2 through 6 focusing on the average firm value across subgroups of firms. Second, we confirm these insights 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. In the absence of valid instruments for ownership concentration, our empirical strategy is to provide evidence for Proposition 2 through 6, which link the results to the incentive and entrenchment problems identified in our theoretical model and, therefore, raise the bar for what alternative stories must be able to explain. In the following section we address a number of specific endogeneity concern.

4.1 Simple means

Firm value and disproportional ownership structures are negatively correlated (Proposition 2): 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

[12]For 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.

[13]One 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.

[14]The 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.

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 in owner managed firms (Proposition 3): Our prime example of owner managed firms is family-owned firms, where the controlling family has strong incentives and better opportunities to monitor the management. Panel B 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 when the controlling owner possesses little cash flow (Proposition 4): We proved this statement in the case of owner managed firms. Hence, in Panel C we focus on family firms and look at average value discount of disproportional ownership across two subgroups: Family firms with low cash flow concentration and family firms with high cash flow concentration. The effect of disproportionality is economically small and statistically insignificant in the group of family firms with concentrated cash flow distribution. Contrary to this, for family firms with dispersed cash flow distribution, we notice that the value discount of disproportionality is four times larger than for the average of all firms shown in Panel A and that this effect is significant at a one pct. level. In the theoretical section we conjectured that this result should not be limited to family firms only, so in Panel D we split the total population of firms according to high or low cash flow concentration. We notice again that the value discount is small and not statistically different from zero in the group of firms with concentrated cash flow distribution and that it is larger than the average in Panel A) and statistically significant at a one pct. level for the group of firms with dispersed cash flow distribution.

The negative correlation between firm value and disproportional ownership structures is larger in firms with higher amenity values (Proposition 5): In the spirit of Demsetz and Lehn (1985), we classify media (SIC-codes: 2711, 2732, 2741, 7383, 7812, 7819, 7822, 7829, 7832), sport

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

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. In Panel D, we split the sample according to whether the firms are operating in such private benefits industries or not. The value discount of disproportionality is more than twice as large in these industries compared 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. However, 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: (Proposition 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 index (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 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 choice of control enhancing mechanisms affects 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 non-family-controlled firms, in firms with low cash flow concentration, 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.[16] 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.[17]

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.* (2002) find a positive and significant effect of ownership concentration in their sample of Asian firms, whereas Lins (2003) find no effect in emerging markets.[18]

Firm value and disproportional ownership structures are negatively correlated (Proposition 2): In Model 1 we include a dummy variable for whether a given firm has a disproportional

[16] As 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.

[17] In 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.

[18] Obviously, 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.

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 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 disproportionality*, defined as the largest owner's share of votes minus her share of residual cash flow. The degree of disproportionality 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. Collectively Model 1 and 2 provide evidence consistent with Proposition 2 of our theoretical model. However, at first glance it may seem at odds with theory that the estimated effect appears to be stronger for the disproportionality dummy compared to the degree of disproportionality. We believe this difference can be attributed to the observability of the two measures: Whereas the marginal investors can easily observe whether a firm have dual class shares or pyramidal ownership, it requires significantly more insight to observe the exact ultimate ownership distribution of cash flow and votes (which will require information about layers of corporate ownership, cross ownership and the exact distribution of shares within different share classes).

The negative correlation between firm value and disproportional ownership structure is larger in owner managed firms (Proposition 3): As reported in Table 3, we have 1,090 family-controlled firms in our sample. In Model 3 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.[19]

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

We confirm this insight in Model 4, where we interact family control with the degree of disproportionality. Enlarging the wedge between votes and cash flow is associated with a larger value discount in family firms. In addition, we have in unreported regressions interacted disproportionality with an indicator for whether the manager is a member of the controlling family while controlling for family ownership and management. Consistently, we find a significantly larger value discount of disproportionality in family managed firms: The estimated coefficient on the interaction between disproportionality and family manager equals -0.24 (with a p-value of 4.1 percent). Thus, in addition to a discount for all firms of 0.15 family managed firms with disproportionality have a 0.24 lower MB ratio, which corresponds to a 26 percent lower firm value.

The negative correlation between firm value and disproportional ownership structures is larger when the controlling owner possesses little cash flow (Proposition 4): In Model 5 and 6 we focus on the interaction effect of low cash flow concentration and disproportionality focusing on family firms only. Model 5 adds 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 thereby 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. As Model 5 includes low cash flow concentration and disproportionality, the interaction effect isolates the additional effect of disproportionality when it provides most added control for the largest owner. We find that disproportionality reduces firm value in all family firms; however, the effect in firms where the controlling owner holds little cash flow is larger. The interaction effect is not statistically significant when we use the disproportionality dummy in Model 5, but a F-test of the combined effect of disproportionality and disproportionality in firms with low cash flow concentration is significant at the 5-percent level. Consistently, in Model 6 the interaction term is significant at a 5 pct. level when we use degree of disproportionality. Thus, we find support for proposition 4 in our data.

The broader conjecture of the importance of the interaction effect in all firms is confirmed in Model 7 and 8. We find that disproportionality reduces firm value in all firms; however, the effect in firms where the controlling owner holds little cash flow is significantly larger. Thus, whereas

[20] Alternatively, we could have interacted the continuous measure of cash flow concentration with the disproportionality 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.

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 8 interacts the low cash flow dummy with the degree of disproportionality. Again, we notice that there is an additional discount in firms with diluted cash flow for a given degree of disproportionality; however, the effect is now statistically insignificant. Models 5 through 8, therefore, confirms 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 in firms with high amenity values (Proposition 5): In Model 9 we add a dummy for the *private benefit industries* (PBI) which is defined as in the univariate case above. 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 10, where we interact the private benefit industry dummy with the degree of disproportionality: 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 family-controlled firms, in firms where the controlling owner possesses little cash flow, 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.

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

In this section, we investigate if the value discount on disproportional ownership structures is related to investor protection. 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.[21] 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 increases (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 shows that the discount is significant for countries with an anti-self-dealing index above 0.45.[22]

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 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.[23]

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 interaction between two subcomponents of the anti-self-dealing index and disproportional ownership. We notice that both *ex ante* and *ex post* measures are significant, but that the ex post estimate is slightly more so.[24] 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

[21]Note 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.

[22]The 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.

[23]The 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.

[24]The 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.

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 interaction terms with the components of the revised anti-director rights.[25] *Vote by mail*, *shares not deposited*, *oppressed minority* and *capital* all enter with a negative sign and are statistically significant. The interaction with *cumulative voting* 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.[26] 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 structures is as large as the cost. However, when investor protection is high, then the increased entrenchment problem dominates, implying that there is a significant value discount associated with disproportional ownership structures.[27]

4.4 Dual class shares, pyramids and other mechanisms

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 golden shares 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

[25] The 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.

[26] As 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.

[27] Gomez (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 disproportionality increases the amount of shares that can be sold in the future without loosing 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.

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 specific control enhancing mechanisms. There are a number of theoretical contributions that analyze the consequences of dual class shares focusing on takeover based arguments (Grossman and Hart 1988, Harris and Raviv 1988, among others) and non-takeover based arguments (Bennedsen and Wolfenzon (2000)). There are few theoretical studies of pyramidal ownership. The main exception is Almeida and Wolfenzon (2006), who analyze the dual question as to why pyramids arise and what determines the structure of a pyramid. Based on 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.[28][29]

Table 6 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

[28] Overall, 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.

[29] Apart 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.

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 higher and more significant when ownership is less concentrated (Column 3) and in countries with better protection against self-dealing (Column 4), whereas there is no significant difference for family-controlled firms (Column 2).

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.[30] Finally, there are too few firms with other mechanisms to get any significant results for this group.

In summary, our empirical results demonstrate a significantly larger value discount on firms with dual class shares than pyramids. At first glance this might be puzzling as both mechanisms can create any desired separation of ownership and control (Bebchuk, Kraakman and Triantis, 2000). However, we will in the following provide additional evidence that dual class share and pyramidal firms differ on important corporate matters. In particular, we show that firms with dual class shares have worse operating performance, pay out lower dividends, are less frequently merged or acquired and have lower growth in assets compared to pyramidal firms.

5 Endogeneity issues

Despite the fact that endogeneity of ownership concentration has been debated since Demsetz and Lehn (1985), to our knowledge only two papers have attempted to instrument disproportionality. Lins (2003) uses firm beta to instrument ownership concentration, whereas Gompers,

[30] One 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.

Ishii and Metrick (2004) use eight proxies for private benefits of control.

A good instrument must, in our case, a) be correlated with ownership concentration, and b) uncorrelated with firm performance. Whereas we agree that these instruments meet the identifying assumption, we are not convinced that they meet the exclusion restriction: CAPM provides a direct link from beta to firm performance measured by the expected return. Thus, beta shall not be excluded in the performance regression. Gompers, Ishii and Metrick (2004) uses eight proxies for private benefits - family name, media industry, active founder, two measures of local market share, state laws, profit rank and total sales to regional sales - measured at the time of the IPO to instrument ownership concentration. This approach is clever as the specification benefit form the time separation in the measurement of instruments and outcomes.

Pecuniary private benefits of control must have a negative effect on firm performance as controlling owners are extracting corporate resources. If dual class shares serve as a remedy to help controlling owners extract pecuniary private benefits, private benefits will correlate with ownership concentration, but not be exclusive in the second stage. Thus, to serve as a good instrument private benefits have to be non-pecuniary; however, even assuming this we contest that the eight instruments used in Gompers, Ishii and Metrick satisfy the exclusion restriction.[31]

In summary, we follow the advice of Angrist and Kruger (2001) that without a valid instrument, IV-analysis is inappropriate as the association between the instrumental variable and omitted variables can lead to a bias in the resulting estimates that is much greater than the bias in ordinary least squares estimates. In the lack of qualified instruments we therefore turn to the better alternative, which is to address three specific types of endogeneity problems: Omitted variables; measurement errors; and, reverse causality.

[31] In the following we will provide our concern with each of the eight instruments: *Name* measures whether the firm name includes a family name as proxies for private benefits of control. Although, family name is correlated with dual class shares, it is also correlated with being a family firm which does have effects on corporate decisions and outcomes independently of the disproportional ownership structure (Bertrand and Schoar 2006). *Media* is an indicator for whether the firm operated in the media industry with high amenity value. With a single industry indicator it is difficult to isolate the amenity effect from the industry effect. Active founders (proxied by *SalesRank*) do have a direct effect on firm value and performance as shown in Villalonga and Amit (2006a). Local market share captures higher private benefits of being the "only game in town". Although the identifying assumption assumes a negative correlation with ownership concentration, the two variables (*%Sales* and *%Firms*) enter with opposite signs. Finally, the remaining three out of the eight instruments (*StateLaw*, *ProfitRank* and *Sales/Regional Sales*) in Gompers, Ishii and Metrick (2004) are insignificant in the first stage regression, and do therefore not meet the identifying assumption.

5.1 Omitted variables

A. Protection against uninvited takeovers

In our regressions we do not explicitly take into account that disproportionality might function as a defense against uninvited takeovers. For this omitted variable to explain the observed valuation discount, we can assume that there is a fixed private benefit to controlling owners whose size is unaffected by the ownership structure. Furthermore, in the event of an uninvited takeover any premium is paid out based on the distribution of cash flow. Finally, 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. In such a setting, a minority investor will pay less for shares in firms with a disproportional ownership structure, since the expected gain from a future uninvited takeover is smaller. Even though we do acknowledge this theoretical channel through which the value discount can be explained, we reject it on empirical grounds, since it is inconsistent with at least three observations in our data:

The first observation is that this explanation empirically is less powerful than the agency explanation. The take-over argument implies that the value discount should be higher in industries or countries with active takeover markets. In Column 1 and 2 of Table 7 we include an interaction with the level of takeover activity, *M&A volume*, in each industry and in each country. Following Rossi and Volpin (2004) we construct, *M&A volume*, such that it measures the volume of the mergers and acquisition activity by the percentage of traded firms that were targets of successful mergers and acquisitions from 1998 to 2005. We construct the measure on both industry and country level. In Column 1 we find that the negative effect of disproportional ownership is independent of the level of M&A activity at the industry level. In Column 2 where we interact the disproportionality dummy with M&A volume on country level the sign on the interaction term is negative and significant at a 5 percent level. This 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 1 percent level, whereas the takeover effect is insignificant at any conventional level. Column 4 yields similar results when we include both industry and country

level takeover activity and investor protection.[32] We conclude that the agency channel clearly wins the horse race.

The second observation is that the takeover explanation is inconsistent with our findings regarding family controlled firms. The incentive/entrenchment argument predicts that the disproportionality discount is higher in family-controlled firms than in non-family firms (Proposition 3 in our model), which we showed empirically in Table 4 and 5. 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 and 5, 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.

Columns 5 of Table 7 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).[33] 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 disproportionality is still associated with an economically large and statistically significant discount on firm value. More importantly, we find that disproportionality in family firms increases this discount further.

The final observation is that the premise of the takeover channel that firms with proportional ownership structures are more active in mergers and acquisition does not hold. To see this, we perform a direct test of this premise in Columns 6 through 9. Our ownership data is from 1996 through 1998 and we have collected data for the status of our firms in 2005. Thus, we know whether the firms have merged or been acquired during the last decade. In Column 6 we examine whether firms with a disproportional ownership structure are less active on the takeover market than firms with proportional ownership structure. We run a logit regression with an indicator variable for status as merged or acquired as the endogenous variable. In total 27 percent of the firms either merged or were acquired before 2005. Interestingly, the

[32]Similar 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.

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

likelihood of being merged or acquired is *higher* for firms with disproportional ownership. The coefficient corresponds to a marginal effect of 3.75 percent in the probability of merging or being acquired. Moreover, the effect is significant at a 1 pct. level. We confirm this in Column 8 where the dependent variable is an indicator taking the value one if the firm was acquired. The marginal effect of disproportional ownership on the probability of being acquired is 3.2 percentage point relative to a baseline probability of being acquired of 22.2 percent. Hence, firms with disproportional ownership structures are more active on the takeover market than firms with proportional ownership structures, which is exactly the opposite of the premise of the missing takeover premium argument.

Although the missing takeover premium argument cannot explain the general value discount; it may provide some explanation as to why dual class shares are valued lower than pyramids. In Column 7 we investigate how the individual mechanisms correlate with the likelihood of being merged or acquired. We notice a strong difference between dual class shares and pyramids. The effect of dual class shares on M&A probability is negative but insignificant, whereas the effect of pyramids is positive and very significant. Companies that are part of a pyramidal structure is traded much more than other companies and in particular more than firms with dual class shares. This difference is economically large as the marginal effect of dual class shares and pyramids is -5.1 and 8.2 percent, respectively. Thus, the likelihood of a merger or takeover is 13.3 percentage points higher for pyramids compared to dual class shares. This is confirmed in Column 9 where we focus on only acquired firms. The difference in the marginal effects of being acquired for dual class shares and pyramids is 8.3 percentage points. Thus, this evidence indicates that the larger expected takeover premium may be one explanation for why pyramids are valued higher than dual class shares.

In sum, the missing takeover premium cannot explain the general value discount of disproportional ownership structures. However, we believe that it can provide some explanation as to why the value discount is higher for dual class shares than for pyramidal ownership structures.

B. 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) and Gompers, Ishii and Metrick (2004) show that disproportionality 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 3 and 4 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 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. The evidence in Table 5 conflicts strongly 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 Measurement bias

A. 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 have (in unreported regressions) included the measure of the average *block premia* across countries developed by Dyck and Zingales (2004). When we interact the block premium with our disproportionality dummy,[34] 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 (the opposite), we rule out this channel as an potential explanation of the value discount on disproportional ownership structures.

B. 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

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

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.[35]

C. 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 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.

5.3 Reverse causality

The final type of endogeneity issues that we address in this section is reverse causality. In our regressions result we show that firm value and disproportional ownership structures are negatively correlated and we provide evidence consistent with that disproportional ownership

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

structure causes the discount on firm value. In theory this correlation can be due that firms with low value chose to have disproportional ownership structure.

To provide a fully satisfying investigation of this issue we would need appropriate instruments, which we do not have. Alternatively, we provide evidence which is inconsistent with the most convincing version of a reverse causality argument suggested by Adams and Ferreira (2007).

Assume that firms differ on their future investment opportunities and that the market to book ratio is a proxy for (good) investment opportunities. In firms with good investment opportunities the controlling shareholder would have to pass up many positive NPV projects to invest in inferior pet projects that create private benefits. If disproportional ownership makes it easier to pursue pet projects, there exists a tradeoff between passing up good investment opportunities and pursuing pet projects. In such settings firms with poorer investment opportunities will both have lower market to book ratio and stronger incentives to choose disproportional ownership structure. This will predict a negative correlation between market to book value and disproportional ownership structure; however, the causality runs from investment opportunities (and thus firm value) to ownership structure.

Whereas this story is consistent with the negative correlation between disproportionality dummies and firm value presented in Table 4, it is inconsistent with a number of our additional results. First, it cannot explain that the value discount is stronger for firms with low cash flow concentration. The cost of choosing private pet projects - i.e. the share of the foregone revenue from other investment activities - increases in the share of cash flow. If the controlling owner, therefore, choose disproportional ownership structure with a high cash flow stake it implies that the outside investment opportunities are smaller. Hence, these firms should have a lower firm value than firms with disproportional ownership structure and low cash flow possession by the controlling owner. This prediction is inconsistent with the evidence in Column 5 to 8 of Table 4.

Second, firms in southern Europe have lower firm value on average. According to the reverse causality story above, this implies that we should observe a higher frequency of firms with disproportional ownership structure. Table 2 shows that this is clearly not the case. Alternatively, firms in Northern Europe on average should have more pet projects and, therefore, larger potential for private benefit extraction. As discussed above the literature on value of control reach the opposite conclusion, i.e. that the scope for private benefit extraction is lower in Northern

Europe.

Finally, the reverse causality story would predict that the tradeoff in Northern and Southern Europe is the same. Hence, we should also observe that firms with relatively fewer investment projects in Southern Europe chooses disproportional ownership structures. However, we do not see any significant correlation between firm value and disproportional ownership structures in Southern Europe.

6 The impact of disproportional ownership structures on alternative performance measures

The analysis has so far focused on the impact of disproportionality on firm value. As Adams and Ferreira (2007) point out, there are very few attempts in the prior literature to analyze the effect of disproportionality on alternative measures of performance. In this section we - therefore - provide novel insights on whether the documented lower firm value coincides with poor operating performance, differences in payout policy, or low growth rates.

Table 8 shows the impact of disproportionality on alternative measures of firm performance. We begin the discussion by focusing on the odd numbered columns, which show that there is limited overall effect of disproportionality on alternative performance measures. Column 1 shows that the effect of disproportional ownership structures disappears when we use return on assets (operating profits over book value of assets) as our endogenous variable. Another and perhaps more drastic measure of operating performance is the likelihood of going bankrupt. In Column 3 we utilize the firm status variable to construct an indicator variable taking the value one if the firm went bankrupt before 2005. Thus, the dependent variable in Column 3 is the indicator for bankruptcy. We examine the probability of bankruptcy in a logit model, which allows fixed country effects. We find that firms with disproportional ownership has a lower probability of going bankrupt, although the effects are insignificant.

Although we find no significant difference in the operating performance of proportional and disproportional firms, the value discount can still be explained by differences in the payout policy. Column 5 examines whether firms with disproportional ownership have a significantly different payout policy. We measure the payout policy by the dividend yield, which is the dividend per share over the price per share. The coefficient on disproportional ownership is positive, but insignificant.

Finally, Column 7, 9 and 11 focus on firm growth measured by the 5-year growth (from 1998

to 2002) in sales, assets and number of employees. Thus, growth in e.g. sales is calculated as the percentage growth in sales over the 5 year period from 1998 to 2002. In general, we find that disproportional ownership structures are negatively correlated with growth - although most coefficients are grossly insignificant. The main exception is growth in assets, where we find a significantly negative effect driven by firms with dual class shares, which we discuss below.

It is interesting that we find strong significant value discounts without any significant effects on alternative performance measures. Ruling out specific endogeneity issues (e.g. measurement bias) above, we believe there are at least two alternative explanations. First, this could be due to the two types of models having different levels of quality. While the effects are close to zero and highly insignificant, the alternative performance models have little explanatory power. The R^2 is between 1 and 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 corporate performance.

Next we turn to the even numbered columns which focus on specific control enhancing mechanisms. Column 2 shows that firms with pyramidal ownership have significantly higher return on assets than other firms. This effect is significant on a 5 pct level. However, this effect does not show up when we use bankruptcy as our performance measure in Column 4. Column 6 yields that pyramidal firms pay higher dividend and that this effect is significant at a 5 pct. level.

Column 8, 10 and 12 show again that most mechanisms have a negative sign with respect our three growth variables but that these effects are insignificant. The only exception is that dual class share firms have less growth in assets. This effect is significant at a one pct. level. This observation is consistent with the notion that family firms - which are overrepresented among firms with disproportional ownership structures - pursue less growth through acquisition. Family firm scholars have emphasized that it often is harder for family controlled firms to rely on external capital because this may imply that the family has to give up control. Thus, family firms have to rely more on retained earnings as a mean to finance growth activities.

To sum up, we have shown in Section 4 that the value discount associated with dual class shares is significantly higher than the value discount associated with pyramidal ownership. We

believe that the evidence in the last two sections provide part of the explanation for why these mechanisms are valuated differently. We have shown that dual class share firms are less frequently traded, have worse operating performance, pay out less dividend and have lower growth in assets relative to pyramidal firms. All of these four features make dual class shares less valuable for the marginal investor.

6.1 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. Similarly, we have run regressions excluding UK firms as they account for around 40 percent of the sample. Finally, we have run regressions where we have excluded firms in Belgium, Portugal and Spain in the analysis of the link between disproportionality 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.

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 four new important results related to this principle: publicly traded corpo-

rations in Western Europe that obey the proportionality principle have higher firm value, and more so in countries with better protection of outside investors; overall we cannot show that disproportional ownership structures have an impact on corporate performance; and finally, the value discount is larger for dual class shares than pyramids and other mechanisms, which reflects that firms with dual class shares are less traded, have lower operating performance, pay out less dividends and have lower growth in assets.

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.[36] 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.[37]

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 caveats to this policy statement.

[36]Inspired 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. These studies (a.o. Adams and Ferreira, 2007; Burkart and Lee, 2007; and the final report ISS 2007) constituted the foundation for a number of conferences in the fall of 2007. McCreevy concluded by the end of 2007 that he will not enforce one-share-one-vote in Europe, rather he will pursue other ways to promote the principle of proportional ownership.

[37]To 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.

First, policy makers have to believe that increasing firm value - as measured by Tobin's Q - is a valid goal, since we cannot prove any impact on the efficiency of corporate operations. It is worth noting that the literature on investor protection has documented large positive externalities of having larger market value of publicly traded corporations. These externalities include higher number of initial public offerings, higher number of initial public offerings and ultimately positive effects on capital investment and economic growth (see survey by La Porta *et al.* 2000). However, there exists another caveat that might counteract this indicative policy conclusion: A social planner would be interested in both total corporate value and the private benefits that owners (and others) have from engaging in the corporations. Obviously we have no direct measures of the size of private benefits that owners derive, but it seems likely that it is larger in firms with disproportional ownership since these include most of the European family firms.

Second, the value discount of disproportional ownership structures has to be larger than the 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.[38] We show that this difference can be attributed to differences in earnings performance and the probability of being taken over. In future work it would be interesting to know more about what causes controlling owners to choose either dual class shares or a pyramidal ownership structure.

Finally, the significant regional differences, correlating with investor protection and anti-self-dealing measures, indicate that, whereas it is possible that implementation of the proportionality principle may increase firm value in Northern Europe, it does not need to be the case in other countries. Taking the existing variation in the legal protection of outside investors as given, it

[38]Interestingly, 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 - i.e. chains of corporate ownership where the top layer is a non-operating holding company - 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.

is expected that will be significant regional variation in the economic consequences of implementing the principle. In conclusion, with respect to regulative initiatives aimed at promoting the principle of proportionality, we find some support for the claim that one size does not fit all countries.

Appendix: Proofs of Propositions 1 through 6.

Proof of Proposition 1:

We are looking for a subgame perfect Nash equilibrium given the distribution of cash flow, c, and the degree of disproportionality, d. First order condition for the the manager's optimal level of diversion yields:

$$e_d^m = (1+a)(1-e_m^o).$$

First order conditions for the controlling owner's diversion and monitoring choice yield:

$$\begin{aligned} e_d^o &= (1+a)(1-n)-c, \\ 0 &= ce_d^m-(1+n)e_m^o \iff \\ e_m^o &= \frac{c}{1+n}e_d^m. \end{aligned}$$

Substituting:

$$\begin{aligned} e_m^o &= \frac{c}{1+n}e_d^m = \frac{c(1+a)}{1+n}(1-e_m^o) = \frac{(1+a)c}{1+n} - \frac{(1+a)c}{1+n}e_m^o, \\ &\Leftrightarrow\ e_m^o(1+\frac{(1+a)c}{1+n}) = \frac{(1+a)c}{1+n}, \\ &\Leftrightarrow\ e_m^o = \frac{(1+a)c}{1+n+(1+a)c}, \\ e_d^m &= (1+a)(1-\frac{(1+a)c}{1+n+(1+a)c}) = \frac{(1+a)(1+n)}{1+n+(1+a)c}. \end{aligned}$$

Residual firm value is:

$$RFV = v - e_d^o - (1-p)\,e_d^m = v - ((1+a)(1-n)-c) - (1-p)\frac{(1+a)(1+n)}{1+n+(1+a)c}.$$

□

Proof of Proposition 2:

Part a): Differentiate the optimal managerial diversion with respect to the degree of disproportionality:

$$\frac{\partial e_d^m}{\partial d} = \frac{\partial \frac{(1+a)(1+n)}{1+n+(1+a)c}}{\partial d} = \frac{-(1+a)n'(1+n+(1+a)c)+n'(1+a)(1+n)}{(1+n+(1+a)c)^2} = \frac{-n'(1+a)^2c}{(1+n+(1+a)c)^2} < 0.$$

Part b): Differentiate the optimal owner diversion level with respect to the degree of disproportionality:

$$\frac{\partial e_d^o}{\partial d} = (1+a)n' > 0.$$

Part c): We show that residual firm value is decreasing in the degree of disproportionality:

$$\frac{\partial RFV}{\partial d} = -\frac{\partial e_d^o}{\partial d} - \frac{\partial (1-p)e_d^m}{\partial d}.$$

From above, we notice that $p = e_m^o = \frac{(1+a)c}{1+n+(1+a)c}$ implying that $1-p = 1-e_m^o = 1-\frac{(1+a)c}{1+n+(1+a)c} = \frac{(1+n)}{1+n+(1+a)c}$.

$$(1-p)e_d^m = \frac{1+n}{(1+n+(1+a)c)}\frac{(1+a)(1+n)}{(1+n+(1+a)c)} = \frac{(1+a)(1+n)^2}{(1+n+(1+a)c)^2},$$

$$\begin{aligned}\frac{\partial(1-p)e_d^m}{\partial d} &= \frac{-2(1+a)(1+n)n'(1+n+(1+a)c)^2 - 2(1+n+(1+a)c)n'(-1)(1+a)(1+n)^2}{(1+n+(1+a)c)^4} \\ &= -n'(1+a)(\frac{2(1-p)p}{(1+n+(1+a)c)}).\end{aligned}$$

Implying that:

$$\frac{\partial RFV}{\partial d} = (1+a)n'(-1+\frac{2(1-p)p}{(1+n+(1+a)c)}) < 0,$$

where we use that $0 \leq p \leq 1$.

□

Proof of Proposition 3:

When the controlling owner and the manager is the same person, the payoff is:

$$\pi^{om} = (1+a)(1-n)e_d^o + c(v - e_d^o - (1-p)e_d^m) - \frac{1}{2}(1+n)e_m^{o\ 2} - \frac{1}{2}e_d^{o2} + (1+a)(1-p)e_d^m - \frac{1}{2}e_d^{m2},$$

where we use the superscript om to denote owner manager. Obviously, the owner-manger will not spent effort monitoring, i.e. $e_m^o = 0$, and the payoff reduces to

$$\pi^{om} = (1+a)(1-n)e_d^o + c(v - e_d^o - e_d^m) - \frac{1}{2}e_d^{o2} + (1+a)e_d^m - \frac{1}{2}e_d^{m2}.$$

Solutions are:

$$\begin{aligned} e_d^o &= (1+a)(1-n) - c, \\ e_d^m &= 1+a-c, \\ RFV^{om} &= v - (1+a)(2-n) + 2c, \\ \frac{\partial RFV^{om}}{\partial d} &= -(1+a)n' < -(1+a)n'(1 - \frac{(1-p)(1+a)c + p(1+n)}{(1+n+(1+a)c)^2}) = \frac{\partial RFV}{\partial d}. \end{aligned}$$

□

Proof of Proposition 4:

From above we have:

$$\frac{\partial RFV^{om}}{\partial d} = -(1+a)n'.$$

Implying that:

$$\frac{\partial^2 RFV^{om}}{\partial d \partial c} = (1+a)n'' > 0.$$

□

Proof of Proposition 5:

The proofs of part a) and part b) follows from:

$$\begin{aligned}
\frac{\partial e_d^m}{\partial d} &= \frac{-n'(1+a)^2c}{(1+n+(1+a)c)^2}, \\
\frac{\partial^2 e_d^m}{\partial d \partial a} &= \frac{-2n'c(1+a)(1+n+(1+a)c)^2 + 2(1+n+(1+a)c)cn'(1+a)^2c}{(1+n+(1+a)c)^4}, \\
&= \frac{-2n'c(1+a)(1+n)}{(1+n+(1+a)c)^3} < 0.
\end{aligned}$$

$$\frac{\partial^2 e_d^o}{\partial d \partial a} = n' > 0.$$

Part c): From above we know that:

$$\frac{\partial RFV}{\partial d} = (1+a)n'(-1 + \frac{2(1-p)p}{(1+n+(1+a)c)}) < 0$$

Differentiating yields,

$$\begin{aligned}
\frac{\partial^2 RFV}{\partial d \partial a} &= -n' + \frac{4(1+n)c(1+a)n'(1+n+(1+a)c)^3 - 2(1+n)c(1+a)^2n'3(1+n+(1+a)c)^2c}{(1+n+(1+a)c)^6} \\
&= n'(-1 + 2(1+n)c(1+a)\frac{2(1+n+(1+a)c) - 3(1+a)c}{(1+n+(1+a)c)^4}) < 0 \\
&\Leftrightarrow \quad 2(1+n)c(1+a)(2(1+n+(1+a)c) - 3(1+a)c) < (1+n+(1+a)c)^4.
\end{aligned}$$

We prove this is true by showing that

$$(1+n+(1+a)c)^3 > 4c(1+n)(1+a).$$

Notice:

$$\begin{aligned}
(1+n+(1+a)c)^3 &= ((1+n)^2 + (1+a)^2c^2 + 2(1+n)(1+a)c)(1+n+(1+a)c) \\
&> 3(1+n)(1+a)c + (1+n)^3 + (1+a)^2c^2(1+n) > 4c(1+n)(1+a).
\end{aligned}$$

□

Introducing investor protection.

Assume that increased investor protection makes it harder to divert resources. Let the marginal cost of diversion be $1+i$, where i is a measure of investor protection. To save notation we assume that $a = 0$. Thus, the manager's and the controlling owner's payoff functions are:

$$\pi^m = (1-p)e_d^m - \frac{1}{2}(1+i)e_d^{m2},$$

$$\pi^o = (1-n)e_d^o + c(v - e_d^o - (1-p)e_d^m) - \frac{1}{2}(1+n){e_m^o}^2 - \frac{1}{2}(1+i)e_d^{o2}.$$

Again we look for a subgame perfect Nash equilibrium given the distribution of cash flow, c, and the degree of disproportionality, d.

First order condition for the the manager's optimal level of diversion yields:

$$e_d^m = \frac{(1 - e_m^o)}{(1 + i)}.$$

First order conditions for the controlling owner's diversion and monitoring choices yield:

$$e_d^o = \frac{1 - n - c}{(1 + i)},$$

and

$$e_m^o = \frac{c}{1 + n} e_d^m.$$

Substituting:

$$\begin{aligned} e_m^o &= \frac{c}{1+n}\frac{(1 - e_m^o)}{(1 + i)}, \\ &\Leftrightarrow \quad e_m^o = \frac{c}{(1 + n)(1 + i) + c}, \\ e_d^m &= \frac{(1 - \frac{c}{(1+n)(1+i)+c})}{(1 + i)} = \frac{(1 + n)}{(1 + n)(1 + i) + c}. \end{aligned}$$

Residual firm value is:

$$RFV = v - e_d^o - (1 - p)\, e_d^m = v - \frac{1 - n - c}{(1 + i)} - (1 - p)\frac{(1 + n)}{(1 + n)(1 + i) + c}.$$

Proof of Proposition 6:

Part a): Rewriting the expression for residual firm value yields:

$$RFV = v - \frac{1 - n - c}{(1 + i)} - \frac{(1 + n)^2(1 + i)}{((1 + n)(1 + i) + c)^2}.$$

Differentiate with respect to investor protection yields:

$$\begin{aligned} \frac{\partial RFV}{\partial i} &= -\frac{\partial \frac{1-n-c}{(1+i)}}{\partial i} - \frac{\partial \frac{(1+n)^2(1+i)}{((1+n)(1+i)+c)^2}}{\partial i} \\ &= \frac{1 - n - c}{(1 + i)^2} + (1 + n)^2 \frac{(1 + n)(1 + i) - c}{((1 + n)(1 + i) + c)^3} > 0. \end{aligned}$$

Part b): Differentiate managerial diversion with respect to disproportionality:

$$\frac{\partial e_d^m}{\partial d} = \frac{\partial (\frac{(1+n)}{(1+n)(1+i)+c})}{\partial d} = \frac{-n'c}{((1 + n)(1 + i) + c)^2} < 0.$$

Now differentiate with respect to investor protection:

$$\frac{\partial e_d^m}{\partial d \partial i} = \frac{2n'c(1 + n)}{((1 + n)(1 + i) + c)^3} > 0.$$

Part c): Differentiate the controlling owners optimal diversion with respect to disproportionality:

$$\frac{\partial e_d^o}{\partial d} = \frac{\partial(\frac{1-n-c}{1+i})}{\partial d} = \frac{n'}{1+i} > 0.$$

Differentiate again with respect to investor protection:

$$\frac{\partial^2 e_d^o}{\partial d \partial i} = -\frac{n'}{(1+i)^2} < 0.$$

□

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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 – book value of intangible assets / 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 inde*x, 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) *family firms* and *non-family firms*, C) *cash flow concentration in family firms*, D) *cash flow concentration*, E) *private benefit industries*, F) investor protection measured by the revised *anti-director rights index* from Djankov, La Porta, Lopez-de-Silanes and Shleifer (2005) and G) investor protection measured by the *anti-self-dealing index* from Djankov *et al.* (2005). *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. 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. 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	**Disproportional**				
		All	Dual class shares	Pyramid		
	(I)	(II)	(III)	(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. 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)
C. Cash flow concentration in family controlled firms						
High	1.481 [398]	1.261 [157]	1.104 [112]	1.322 [42]	-0.220 (1.43)	-0.282 (1.05)
Low	1.856 [279]	1.261 [256]	1.182 [199]	1.411 [51]	-0.625*** (3.85)	-0.409 (1.46)
D. 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)
E. 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)
F. 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)
G. 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 4, The Effect of Disproportional Ownership Structures 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 averages of the yearly values in the period 1996-1998. *Firm size* is measured as log of sales. *Leverage* is book value of debt over book value of assets. *Asset tangibility* is percentage of assets that are tangible. *Sales growth* is the growth in sales in the year prior to the observation. *Cash flow stake* is the largest owner's share of the cash flow. *Disproportionality* (DP) is an indicator variable taking the value one if the firm has mechanisms of separating cash flow and control. *Degree of disproportionality* (DDP) is the largest owner's votes minus cash flow stake. *Family controlled* (FC) is an indicator variable equal to one if the largest owner is a family. *Low cash flow* (LCFC) is an indicator variable equal to one if the largest owner's cash flow stake is below the median on firm level. *Private benefit industry* (PBI) is an indicator variable equal to one if the industry is characterised by high amenity value. Following Demsetz and Lehn (1985), we classify sport clubs and media firms as having high amenity value (see Section 4.1 for details). We include industry and country effects. Regression include all firms, excpet Model (5) and (6) which focuses on family firms. 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)	(5)	(6)	(7)	(8)	(9)	(10)
Firm size (log of sales)	-0.115***	-0.120***	-0.112***	-0.116***	-0.191***	-0.197***	-0.115***	-0.120***	-0.116***	-0.121***
	(-8.25)	(-8.50)	(-8.10)	(-8.32)	(-3.67)	(-3.76)	(-8.12)	(-8.40)	(-8.24)	(-8.48)
Leverage	-0.247*	-0.246*	-0.239	-0.242	-1.059**	-1.091**	-0.244*	-0.245*	-0.245*	-0.242*
	(-1.68)	(-1.66)	(-1.62)	(-1.63)	(-2.59)	(-2.59)	(-1.66)	(-1.65)	(-1.66)	(-1.64)
Asset tangiblity	-1.757***	-1.743***	-1.738***	-1.716***	-2.272***	-2.260**	-1.743***	-1.741***	-1.815***	-1.800***
	(-4.23)	(-4.20)	(-4.21)	(-4.16)	(-2.25)	(-2.22)	(-4.23)	(-4.21)	(-4.28)	(-4.24)
Sales growth	0.061**	0.063**	0.057*	0.058**	0.113	0.111	0.062**	0.063**	0.061**	0.063**
	(2.01)	(2.05)	(1.94)	(1.97)	(1.60)	(1.57)	(2.01)	(2.05)	(2.00)	(2.04)
Cash flow stake	-0.115	-0.072	-0.143	-0.097					-0.117	-0.073
	(-1.26)	(-0.79)	(-1.54)	(-1.07)					(-1.28)	(-0.81)
Disproportionality (DP)	-0.183***		-0.136***		-0.141		-0.092		-0.179***	
	(-4.44)		(-3.04)		(-1.38)		(-1.56)		(-4.24)	
Degree of disprop. (DDP)		-0.401*		-0.142		-0.252		-0.077		-0.381*
		(-1.94)		(-0.57)		(-0.50)		(-0.27)		(-1.81)
Family controlled (FC)			0.158**	0.134**						
			(2.05)	(2.18)						
FC * DP			-0.189**							
			(-2.00)							
FC * DDP				-0.847**						
				(-2.11)						
Low cash flow (LCFC)					0.175	0.0111	0.113*	0.056		
					(0.93)	(0.77)	(1.75)	(1.07)		
LCFC * DP					-0.304		-0.156*			
					(-1.46)		(-1.93)			
LCFC * DDP						-1.414**		-0.590		
						(-1.96)		(-1.48)		
Private benefit industry (PBI)									-0.127	-0.151
									(-0.93)	(-1.31)
PBI * DP									-0.238	
									(-1.54)	
PBI * DDP										-0.857
										(-1.27)
Industry effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.144	0.141	0.145	0.142	0.187	0.185	0.145	0.141	0.145	0.141
N	4096	4096	4096	4096	1090	1090	4096	4096	4096	4096

Table 5, The Effect of Investor Protection and Disproportional Ownership Structures 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. *Disproportionality* (DP) is an indicator variable taking the value one if the firm has mechanisms of separating cash flow and control. *Anti-self-dealing index*, which measures the legal protection of minority investors against expropriation by corporate insiders, *subindices* and *public enforcenment* are from Djankov *et al.* (2005). *Ex ante private control of self-dealing* measures the regulation by law of the approval process for corporate transactions, *ex post private control of self-dealing* measures the ease with which shareholders can prove wrong doing. *Public enforcement* measures the criminal sanctions that apply to those who have approved a transaction that misuses corporate assets. The revised *anti-director rights index* and *subindices* are from Djankov *et al.* (2005). *Vote by mail* is an indicator variable equal to one if the law explicitly mandates shareholders to vote by proxy, *shares not deposited* is an indicator variable equal to one if the law does not require shareholders to deposit their shares prior to a general shareholders meeting, *cummulative voting* is an indicator equal to one if the law mandates proportional representation on the board, *oppressed minority* is an indicator equal to one if shareholders are able to legally challenge a company resolution and *capital* is an indicator equal to one if the minimum percentage of capital to call a shareholders' meeting is 10 percent or less. 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)	(5)	(6)	(7)	(8)	(9)	(10)
Disproportionality (DP)	0.102	-0.027	0.339**	-0.311***	0.295*	-0.128**	-0.008	-0.230***	0.093	-0.224***
	(0.97)	(-0.37)	(2.28)	(-5.60)	(1.84)	(-2.02)	(-0.11)	(-5.21)	(0.85)	(-5.17)
A. Anti-self-dealing, subindices and public enforcement										
Anti-self dealing * DP	-0.433***									
	(-2.89)									
Ex ante self-dealing * DP		-0.251**								
		(-2.50)								
Ex post self-dealing * DP			-0.700***							
			(-3.61)							
Public enforcement * DP				0.344***						
				(3.36)						
B. Anti-director rights and subindices										
Anti-director rights * DP					-0.118***					
					(-3.06)					
Vote by mail * DP						-0.167*				
						(1.93)				
Shares not deposited* DP							-0.305***			
							(-3.46)			
Cummulative voting * DP								0.263		
								(1.58)		
Oppressed minority * DP									-0.411***	
									(-3.02)	
Capital * DP										-0.646**
										(-2.22)
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.146	0.145	0.147	0.147	0.146	0.086	0.088	0.086	0.087	0.086
N	4096	4096	4096	4096	4096	4096	4096	4096	4096	4096

Table 6, The Effect of Mechanisms of Separarting 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. *Family controlled* (FC) is an indicator variable equal to one if the largest owner is a family. *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. *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***	-0.152**	-0.257***	0.015
	(-6.30)	(-2.31)	(-5.80)	(0.14)
Pyramid (PYR)	-0.105**	-0.054	-0.088*	0.015
	(-2.32)	(-0.70)	(-1.76)	(0.139
Cross-holding (CRO)	0.377	0.398	0.263	0.511
	(1.63)	0.78	(1.21)	(1.18)
Other types of disproportionality (OTH)	-0.209	-0.174*	-0.328***	0.368
	(-1.20)	(-1.64)	(-2.41)	(1.04)
B. 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)		
C. 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)	
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

Table 7, Test of Alternative Explanations of the Value Discount on Disproportional Ownership Structures in Western Europe

The dependent variable in column (1) through (5) is the market to book ratio 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. The dependent variable in column (6) and (7) is an indicator variable taking the value one if the firm merged or where acquired before 2005. The dependent variable in column (8) and (9) is an indicator variable taking the value one if the firm was acquired before 2005. *Disproportionality* (DP) is an indicator variable taking the value one if the firm has mechanisms of separating cash flow and control. *Industry M&A volume* and *Country M&A volume* measure the volume of mergers and acquisitions activity by the percentage of traded firms that are targets of successful mergers or acquisitions from1997 to 2005 in each industry and country, respectively. 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 column (4) we restrict the sample to countries with high takeover activity (defined as above-median M&A volume on country level). We include firm size, leverage, asset tangibility, sales growth and the largest owner's cash flow stake as control variables. All variables are the average of the yearly values in the period 1996-1998. 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.

Dependent variable	Market to book ratio					Merged or acquird		Acquired	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Disproportionality (DP)	-0.139*	0.129	0.434**	0.503**	-0.229***	0.222***		0.240***	
	(-1.87)	(0.85)	(2.17)	(2.28)	(-4.14)	(2.64)		(2.68)	
Industry M&A volume * DP	-0.124			-0.186					
	(-0.65)			(-0.96)					
Country M&A volume * DP		-0.870**	-0.406	-0.420					
		(-2.15)	(-1.04)	(-1.07)					
Anti-director rights index * DP			-0.116***	-0.116***					
			(-3.16)	(-3.19)					
Family controlled					0.077				
					(0.86)				
Family controlled * DP					-0.210*				
					(-1.89)				
Dual class shares							-0.274***		-0.161
							(-2.62)		(-1.47)
Pyramid							0.504***		0.466***
							(5.36)		(4.66)
Cross-holding							0.775*		0.462
							(1.80)		(0.87)
Other types of disproportionality							0.074		-0.241
							(0.18)		(-0.47)
Control variables	YES	YES	YES		YES	YES	YES	YES	YES
Industry effects	YES	YES	YES		YES	YES	YES	YES	YES
Country effects	YES	YES	YES		YES	YES	YES	YES	YES
Adjusted R-squared	0.146	0.145	0.147		0.147	0.146	0.086	0.088	0.086
N	4096	4096	4096		4096	4096	4096	4096	4096

Table 8, The Effect of Disproportional Ownership Structures on Alternative Performance Measures

The dependent variable in column (1) and (2) is return on assets. Return on assets is defined as operating profit over book value of assets. The dependent variable in column (3) and (4) is an indicator variable taking the value one if the firm went bankrupt before 2005. The dependent variable in column (5) to (6) is the dividend yield. Dividend yield is defined as dividend per share divided with price per share. The dependent variable in column (7) and (8) is the 5-year growth in sales. The dependent variable in column (9) and (10) is the 5-year growth in book value of assets. The dependent variable in column (11) and (12) is the 5-year growth in the number of employees. *Disproportionality* is an indicator variable taking the value one if the firm has mechanisms of separating cash flow and control. *Dual class shares* is an indicator equal to one if the firm has dual class shares. *Pyramid* is an indicator equal to one if control is held through a pyramidal structure. *Cross-holding* is an indicator variable equal to one if the firm has cross-ownership with another firm. *Other types of disproportionality* 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. 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.

Dependent variable	Return on Assets		Bankruptcy		Dividend yield		Growth in Sales		Growth in Assets		Growth in Employees	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Firm size	0.012***	0.012***	-0.134*	-0.127*	0.068*	0.067*	2.509	2.496	-0.252***	-0.246***	4.426	4.361
	(6.73)	(6.83)	(-1.79)	(-1.68)	(1.70)	(1.67)	(0.63)	(0.63)	(-3.22)	(-3.12)	(0.85)	(0.84)
Leverage	-0.054***	-0.053***	0.095	0.134	-1.327***	-1.326***	-18.79	-18.75	0.057	0.078	-14.92	-14.86
	(-2.62)	(-2.62)	(0.13)	(0.19)	(-6.14)	(-6.02)	(-0.94)	(-0.94)	(0.09)	(0.12)	(-0.75)	(-0.75)
Asset tangiblity	0.164**	0.164**	3.350	3.413	2.627***	2.613***	20.43	20.48	-2.750*	-2.720*	29.23	29.02
	(2.08)	(2.09)	(1.03)	(1.04)	(4.94)	(4.90)	(0.78)	(0.78)	(-1.92)	(-1.90)	(0.90)	(0.89)
Sales growth	0.003	0.003	-0.175	-0.163	-0.031	-0.031						
	(0.73)	(0.73)	(0.70)	(-0.65)	(-1.12)	(-1.10)						
Return on assets			-1.406**	-1.427**	2.055***	2.049***						
			(-2.21)	(-2.24)	(4.61)	(4.61)						
Cash flow stake	0.023**	0.020**	0.126	0.0965	0.674**	0.694**	57.41	57.96	-1.734*	-1.694*	75.04	76.26
	(2.59)	(2.46)	(0.19)	(0.14)	(2.09)	(2.06)	(0.94)	(0.94)	(-1.78)	(-1.75)	(1.00)	(1.00)
Disproportionality	0.003		-0.544		0.222		-0.975		-0.642**		0.222	
	(0.68)		(-1.45)		(1.50)		(-0.69)		(-2.27)		(0.11)	
Dual class shares		-0.006		-0.631		0.181		-0.733		-0.757***		1.296
		(-1.24)		(-1.27)		(1.03)		(-0.49)		(-3.54)		(0.53)
Pyramid		0.010**		-0.392		0.334**		-0.518		-0.282		2.104
		(2.18)		(-0.86)		(2.41)		(-0.31)		(-0.98)		(0.84)
Cross-holding		-0.039***		-13.76		-0.402		16.59		0.367		18.55
		(-2.78)		(-0.01)		(-1.14)		(0.97)		(0.24)		(0.92)
Other types of disproportionality		-0.013		0.851		-0.023		-2.886		-0.758		-1.792
		(-1.38)		(0.80)		(-0.09)		(-0.43)		(-1.57)		(-0.20)
Industry effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.037	0.037			0.023	0.024	0.012	0.012	0.022	0.023	0.013	0.013
N	4050	4050	2984	2984	3683	3683	2409	2409	2424	2424	2200	2200