

Contents lists available at [ScienceDirect](#)

Journal of Banking & Finance

journal homepage: www.elsevier.com/locate/jbf

Incentive and entrenchment effects in European ownership

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ARTICLE INFO

Article history:

Received 28 July 2009

Accepted 9 February 2010

Available online xxxxx

JEL classification:

G30

G32

G34

G38

Keywords:

Ownership structure

Dual class shares

Pyramids

EU company law

ABSTRACT

In a large sample of European firms we analyze the value discount associated with disproportional ownership structures first documented by Claessens et al. (2002). Consistent with a theoretical model of incentive and entrenchment effects, we find higher value discount in family firms, in firms with low cash flow concentration, and in industries with higher amenity value. Furthermore, the discount is higher in countries with good investor protection and higher for dual class shares than for pyramids. We find no impact on operating performance, likelihood of bankruptcy, dividend policy, or growth. Finally, we discuss policy implications of these findings.

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1. Introduction

Concentration of corporate ownership and control is the norm in most countries around the world (La Porta et al., 1999). In general, ownership concentration generates two counteracting effects on the governance of corporations: an incentive effect, which makes monitoring of management more efficient; and, an entrenchment effect, which makes it easier for opportunistic owners to expropriate minority owners (Morck et al., 1988). In support of the incentive and entrenchment story, a number of papers starting with Claessens et al. (2002) have established empirically a negative correlation between firm value and disproportional ownership structures.

Claessens et al. (2002) interpret the positive correlation between concentration of cash flow rights and firm value as the result of ownership concentration having provided better managerial incentives; they interpret the negative correlation between disproportional ownership structure and firm value as evidence of entrenched owners. The main contribution of the present paper is to establish a more direct link between the value discount of dis-

proportional ownership structures and the incentive and entrenchment effects. To do this we construct a simple model based on incentive and entrenchment effects that generates a number of testable predictions of the relationship between disproportional ownership structures and firm value. The model predicts that corporations with disproportional ownership structures have lower firm values, and that the discounts are larger (a) in family-controlled firms where the incentive problem is absent; (b) when large owners have small cash flow stakes, i.e., where disproportional ownership provides most added control for the largest owners; and, (c) in firms with higher amenity value, where the scope for entrenchment is larger.

We test these predictions in a sample of more than 4000 corporations from fourteen European countries. A novel contribution of our cross-country approach is that it allows us to use country fixed effects and, thereby, control for effects that are constant at the country level and likely to correlate with the variables of interest. One prominent example of such an effect is investor protection, which both affects ownership concentration and firm value (La Porta et al., 2000, 2002). Empirically, we find large and significant value discounts of disproportional ownership structures in Europe and confirm that this discount is higher in (a) family firms, (b) firms with low cash flow concentration, and (c) industries with high amenity values.

Our analysis also provides three additional insights into the consequences of disproportional ownership structures. First, we find that dual class shares are associated with a significantly larger

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value discount than pyramids and other separating mechanisms. In addition, we show that these differences are related to a lower takeover frequency, operating performance, payout ratio, and growth in assets of firms with dual class shares. Second, the value discount is positively correlated with the degree of investor protection, implying that the discount is higher in Northern Europe than in Southern Europe. Third, we investigate the overall effect of disproportionality on various alternative measures of corporate performance. We show that there are no differences in terms of operating performance, likelihood of going bankrupt, dividend policy, or firm growth. Thus, whereas our results are consistent with the theory that disproportional ownership structures reduce firm value, we find little evidence to suggest that corporate resources are used less efficiently. 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.

Although our results are consistent with incentive and entrenchment effects of concentrated ownership, the potential endogeneity of ownership in relation to firm performance makes it hard to give these results a causal interpretation. Prior literature records few attempts to instrument ownership concentration. Lins (2003) uses proxies for firm volatility (beta) and Gompers et al. (2009) use proxies for private benefits of control as instruments for ownership concentration in firms with dual class shares. The key concern with these instruments is that they are likely to affect firm value and, thereby, not meet the exclusion restriction (Adams and Ferreira, 2008).¹

In this paper, we therefore directly address the specific endogeneity problems that figure most prominently in the literature. Given, in prior literature, the importance of endogeneity of ownership and the lack of good instruments for ownership, this paper's evidence strengthens the causal interpretation of the uncovered value discount on disproportional ownership. In particular, we examine whether the value discount can be explained by omitted variable bias (missing takeover premia, or protection of private benefits); measurement bias (missing voting or block premia, or low liquidity); or reverse causality (firms with low 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 and establish empirically based contradictions for each story. To this end, our results support the causal interpretation of the observed negative correlation between disproportional ownership and firm value as evidence of incentive and entrenchment problems.

Overall, our results have important implications for the ongoing harmonization of EU company law. Regulations 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 efficiently, policymakers 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.

1.1. Related literature

A number of studies have analyzed the consequences of disproportional ownership structures. In a sample of 1301 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 eighteen emerging markets and finds that firm value is lower whenever votes are more concentrated than cash flow. Cronqvist and Nilsson (2003) analyze the impact of controlling minority shareholders on firm value and firm performance in a sample of 309 publicly traded Swedish firms. They show that the presence of controlling minority owners decreases firm value and performance, an effect that is most significant when these controlling minority shareholders are families. In a sample of 174 Finnish firms, Maury and Pajuste (2004) document that firm value is lower when large owners control firms through disproportional ownership structures. Gompers et al. (2009) 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 of firm value to voting concentration is negative and convex. In a recent and comprehensive survey of this literature, Adams and Ferreira (2008) conclude that disproportional ownership structures correlate negatively with firm value but that a universal causal link from control enhancing mechanisms to firm outcome has yet to be established.

Compared with the studies above, our contribution – in the context of Western European firms – is to: (a) provide evidence consistent with that the value discount is driven by incentive and entrenchment effects controlling for country fixed effects; (b) address the endogeneity concerns that figure prominent in the literature; and (c) disentangle the impact of dual class shares from pyramids.²

In the next section, we present our data on ownership concentration in Western Europe. In Section 3 we provide a simple model of incentive and entrenchment effects, derive a number of testable results, and take them to the data for empirical tests. Section 4 provides additional insight by analysing various disproportional mechanisms, the interaction with investor protection, and alternative measures of corporate performance. In Section 5, we address endogeneity issues. In the final section, we relate our findings to the ongoing policy debate about promoting proportional ownership structures for publicly traded European firms.

2. Data and sample selection

The sample of firm-level ownership, accounting, and market data from fourteen 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

¹ As an example, the dummy for whether the family name appears in the firm name used by Gompers et al. (2009) increases the frequency of family control and family ownership. Although family ownership does increase the use of disproportional ownership structures, it also affects firm value directly (see, e.g., the recent survey by Bertrand and Schoar (2006)). Thus, it is contestable whether this instrument satisfies the exclusion restriction. We believe that the same critique can be raised against other proposed instruments, although this can only be tested in cases where the instruments overidentify (i.e., exceed) the variables of interest. In fact, Gompers et al. (2009) provide an overidentification test to validate that their instruments can be considered exogenous in the second stage. In all cases the overidentification tests do not reject the exogeneity tests. However, as noted by Staiger and Stock (1997), overidentification tests are misleading if instruments are weak, and Gompers et al. (2009, p. 37) acknowledge that their "F-statistics are low enough to suggest a possible weak instrument problem".

² 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, therefore, are not able to disentangle which disproportional 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 (2008) have shown similar results using data on US corporations.

Table 1

Application of mechanisms of separating cash flow and control by country.

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

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.

their data set with firms in Denmark and Sweden.³ Therefore, we have ownership information on 5521 Western European firms. All ownership variables are defined according to Faccio and Lang (2002), where the ownership measures represent the ultimate ownership of voting and cash flow rights.⁴ We merge this data with accounting and market data 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.⁵ The total number of firms for which we have ownership, accounting, and market information is therefore reduced from 5521 to 4410. In the empirical analysis, 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 control variables are missing. Thus, the empirical analysis is carried out with 4096 observations. This sample is a representative subsample of Faccio and Lang's (2002) data with respect to the employment of disproportionality mechanisms. In Table 1, we classify firms with a disproportional ownership structure into groups based on the underlying mechanism: dual class shares, pyramidal ownership, cross-ownership and other mechanisms (including voting caps and golden shares, among others). A firm is classified as having a pyramidal ownership structure if it has an ultimate owner who controls the firm indirectly through another corporation that it does not fully control.⁶ 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. Table 1 shows that the share of firms with dual class shares, pyramidal ownership, cross-ownership and other mechanisms of separating votes from cash flow varies greatly across countries.

³ The ownership structures of Danish and Swedish firms are obtained from Greens and SIS Agarservice, respectively. Danish firms were not included in Faccio and Lang's (2002) study, whereas we were able to extend the number of Swedish firms from 245 to 335.

⁴ This includes the ultimate ownership of private firms' ownership of listed firms in our sample.

⁵ In particular, only 170 out of 604 listed Spanish firms are included.

⁶ For example, if a family owns 25% of Firm X, which in turn owns 20% of Firm Y, then Y is controlled through a pyramid. If Firm X holds 100% 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.

3. Incentive and entrenchment effects

3.1. Simple model of incentive and entrenchment effects

In this subsection we present a simple illustrative model based on incentive and entrenchment effects. The model provides us with refutable predictions that are investigated empirically in the following subsections.⁷ Consistent with our empirical strategy, we assume that ownership is exogenous to incentive and entrenchment effects.⁸

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 $\frac{1}{2}e_d^m{}^2$. At date 1, the controlling owner chooses two actions: first, she monitors the manager (to be specified below) and, second, she diverts corporate resources, e_d^o , at a private effort cost of $\frac{1}{2}e_d^o{}^2$. 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 large percentage 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 fewer 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 $n'' > 0$.

⁷ See Burkart and Lee (2008) for a recent survey of alternative theoretical explanations of the economic consequences of separating cash flow and votes.

⁸ The assumption of exogenous ownership structure simplifies our model significantly and allow us to focus on the incentive and entrenchment effects. However, it raises the possibility that we ignore the fact that firm actions and value may affect ownership structure. This highlights the importance of addressing reverse causality in our empirical analysis, which we do in Section 5 below. For a model of endogenous ownership structure, see Almeida and Wolfenzon (2005).

Thus, control through votes mitigates the owner's private cost of monitoring the manager. For simplicity, we assume that the likelihood of catching the manager in a verifiable way is $p = e_d^m$, 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 as a result of 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.⁹ 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:

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

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 solve 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, our model specification matches our empirical measure. 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:*

$$e_d^o = (1 + a)(1 - n) - c,$$

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

$$RFV_{sc} = v - ((1 + a)(1 - n) - c) - (1 - p) \left(\frac{(1 + a)(1 + n)}{1 + n + (1 + a)c} \right).$$

All proofs are in Appendix A. The amenity value measures the marginal benefit of diverted resources, thus diversion increases in a . When the owner has more control, she has to share fewer of the diverted resources with other owners. On the other hand, higher cash flow increases the owner's share of foregone cash flow. Hence, diversion also increases in the owner's share of votes and decreases with her share of cash flow. The interpretation of the

⁹ The amenity value, a , plays no role for our basic results about the relationship between disproportional ownership structures and firm value, since Proposition 1 through 4 hold for all $a > -1$. Hence, it does not follow that total surplus necessarily is maximized under private benefit consumption. However, to simplify the analysis, we will in Proposition 5 below assume that a is positive.

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, managerial diversion increases in the amenity value and decreases in the amount of control that the owner possesses. More control decreases the monitoring cost, which increases the likelihood that the manager is caught for a given level of diversion.

In the following subsections, we present Propositions 2 through 5 of our model. For each proposition, we provide empirical tests using both a univariate (Table 3) and a multivariate approach (Table 4). We measure residual 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 follow prior literature and 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 a 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 6 because it is inconsistent with the existing evidence on the value of control across countries. Concentration of ownership is measured as the amount of residual income rights and votes that the largest owner possesses.¹⁰

In all multivariate regression, we estimate a cross-sectional model of the average of the three yearly observations from 1996 to 1998.¹¹ This is done because Faccio and Lang's (2002) 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. Moreover, we control for size, leverage (ratio of book value of debt to book value of assets), asset tangibility, sales growth, return on assets and industry effects.¹² Table 2 reports descriptive statistics on the country level for all control variables. We also 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.

3.2. Value discount on disproportional ownership structures

The basic cost and benefit of a disproportional ownership structure is characterized by:

Proposition 2. *A more disproportional ownership structure*

- (a) decreases the incentive problem,
- (b) increases the entrenchment problem,
- (c) decreases residual firm value.

¹⁰ As a robustness check, we have run all regressions focusing on joint ownership held by large owners with an individual stake of 10% or more 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.

¹¹ In unreported regressions, 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. In short, our results are not affected in any meaningful way by taking the average over three years.

¹² We have included return on assets as a control variable in the valuation regressions although we proceed to evaluate the effect of disproportional ownership structures on operating performance. However, including return on assets has no effect on the correlation between disproportional ownership and firm value.

Table 2
Firm characteristics by country.

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	1712	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	862	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	215	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	2438	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	2591	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	864	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		0.900	0.05	1316	143	0.22	0.19	0.96	1.00	0.26	0.11	3.5	0.49	countries	4096
1.28															

This table shows summary statistics on country level for the dependent variable, *market-to-book ratio* (MB), as well as the control variables used throughout the empirical section. MB is the ratio of market value of assets to book value of assets. Market value is defined as the sum of the market value of common stocks and the book value of debt and preferred stocks. *RoA* is defined as operating profit over book value of assets. *Firm size* is measured by sales in millions of dollars. *Leverage* is book value of debt over book value of assets. *Asset tangibility* is defined as $(1 - \text{book value of intangible assets} / \text{book value of assets})$, while *sales growth* is the growth in sales for the previous year. *Anti-director rights index* is the revised index of the legal protection of minority investors from Djankov et al. (2008), where 0 is the lowest and 6 is the highest degree of legal investor protection. *Anti-self-dealing index*, which measures the legal protection of minority investors against expropriation by corporate insiders, is from Djankov et al. (2008), where 0 is the lowest and 1 is the highest degree of protection.

The benefit of disproportional ownership 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 fewer corporate resources, which *ceteris paribus* increases residual firm value.

The last part of the proposition shows that the effect of disproportional ownership on the entrenchment problem dominates the effect on the incentive problem implying that an increase in the degree of disproportional ownership structure decreases firm value. The intuition for this important result is the following: An increase in the degree of disproportional ownership structures affects the controlling owners incentive to divert resources directly because she keeps a higher fraction for herself. The effect on the incentive problem is more indirect: It lowers the controlling owners cost of monitoring which increases the managers likelihood of being discovered implying that the manager ends up diverting less resources. The direct impact on the entrenchment problem is, thus, stronger than the indirect impact on the incentive problem. It is worth emphasizing that this result does not depend on the specific shape of the n -function, since we only require that $n > 0$.

The cost of a disproportional ownership structure is that a self-interested controlling owner needs to distribute a smaller share of diluted corporate resources to other owners. Therefore, she has stronger incentives 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 in isolation from each other. Part (c), however, yields that the enlargement of the entrenchment problem dominates the improvement of the incentive problem implying that disproportional ownership reduces residual firm value. Thus, the model predicts a negative relation between disproportional ownership and residual firm value.

Panel A in Table 3 provides univariate evidence in support of Proposition 2. The average market-to-book (MB) ratio for firms with a proportional ownership structure is 1.36, whereas the MB ratio for firms with a disproportional ownership structure is 1.17. This difference of 0.19 in the MB ratios is economically large (14%) and statistically significant at the 1% level.

Models 1 and 2 of Table 4 show multivariate evidence confirming Proposition 2. In Model 1 we include a dummy variable for whether a given firm has a disproportional ownership structure such as dual class shares, pyramidal ownership structure, and cross-ownership. Firms with disproportional ownership structures have lower firm value. The effect is statistically significant at the 1% level and very large: the average firm with disproportional ownership structure has a 0.18 lower MB ratio than firms without. Given a sample mean of 1.28, this implies that the average discount on firm value is around 14%. This is consistent with the evidence for Asian firms provided by Claessens et al. (2002).

Model 2 analyzes the *degree of disproportional ownership*, defined as the largest owner's share of votes minus her share of residual cash flow. The degree of disproportional ownership is almost significant at the 5% level and the marginal effect is large: a 10% increase in the wedge between control and cash flow of the largest owner decreases firm value, with 4% on average around the sample mean of 1.28.

Collectively Models 1 and 2 provide evidence consistent with Proposition 2 of our theoretical model. At first glance, it may seem at odds, however, with the theory that the estimated effect appears to be stronger for the disproportional ownership dummy as compared to the degree of disproportional ownership. We believe this difference can be attributed to the observability of the two measures: Whereas the marginal investors can easily observe whether a firm has 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).

3.3. Value discount on disproportional ownership in owner-managed firms

Our next result focuses on the effect of disproportional ownership in owner-managed firms.

Proposition 3. *The negative effect of a disproportional ownership structure on residual firm value is larger in owner-managed firms.*

Table 3
Valuation of firms with mechanisms of separating cash flow and control in Western Europe (market-to-book ratio).

Description	Ownership structure			Difference		
	Proportional	Disproportional				
	(I)	All (II)	Dual class shares (III)	Pyramid (IV)	(II)–(I)	(III)–(IV)
<i>A. All firms</i>	1.360 [2439]	1.172 [1657]	1.099 [963]	1.278 [648]	–0.187*** (4.27)	–0.179*** (3.28)
<i>B. Family firms</i>						
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)
<i>C. Cash flow concentration in family-controlled firms</i>						
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)
<i>D. Cash flow concentration</i>						
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)
<i>E. Private benefit industries</i>						
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)
<i>F. Anti-director rights index</i>						
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)
<i>G. Anti-self-dealing index</i>						
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)

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 1996–1998. 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)–(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 et al. (2008), and (G) investor protection measured by the *anti-self-dealing index* from Djankov et al. (2008). *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 parentheses.

* Denote significance at the 10% level.

** Denote significance at the 5% level.

*** Denote significance at the 1% level.

In owner-managed firms, the controlling owner has no incentive to monitor her alter ego, the manager. In this case, disproportional ownership does not improve the efficiency of monitoring. Without the beneficial incentive effect, residual firm value is lower in owner-managed firms with disproportional ownership because of the persistence of the entrenchment problem. We therefore expect to see a larger value discount of disproportional ownership in owner-managed firms.

Family firms are prime examples of owner-managed firms.¹³ Panel B in Table 3 shows that the average value discount related

¹³ Family influence over management decisions in these firms can either be directly through a family CEO, or indirectly through family directors on the board as documented by Bennedsen et al. (2008).

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% level. To push the argument further, we look at family firms where the manager is a member of the controlling family and find the value discount to be almost five times larger than in non-family firms.¹⁴ The difference is significant at the 5% level.

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% higher firm value, but that the value

¹⁴ Family managed is defined as family firms where the CEO, honorary chairman, chairman, or vice-president is a member of the controlling family.

Table 4

The effect of disproportional ownership structures on firm value in Western Europe.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Firm size (log of sales)	−0.123*** (−9.63)	−0.128*** (−9.88)	−0.121*** (−9.59)	−0.124*** (−9.83)	−0.199*** (−4.21)	−0.206*** (−4.31)	−0.123*** (−9.47)	−0.128*** (−9.76)	−0.124*** (−9.60)	−0.128*** (−9.83)
Leverage	−0.222 (−1.45)	−0.222 (−1.44)	−0.216 (−1.41)	−0.221 (−1.44)	−1.034** (−2.30)	−1.065** (−2.38)	−0.218 (−1.43)	−0.220 (−1.43)	−0.220 (−1.44)	−0.242* (−1.64)
Asset tangibility	−1.830*** (−4.40)	−1.814*** (−4.36)	−1.810*** (−4.39)	−1.786*** (−4.33)	−2.311*** (−2.34)	−2.301*** (−2.31)	−1.817*** (−4.40)	−1.813*** (−4.38)	−1.882*** (−4.44)	−1.866*** (−4.50)
Sales growth	0.060* (1.94)	0.061** (1.97)	0.060* (1.94)	0.061** (1.97)	0.110* (1.55)	0.108 (1.52)	0.060* (1.94)	0.062** (1.97)	0.060* (1.93)	0.061** (1.97)
Return on assets	0.539 (1.52)	0.535 (1.50)	0.521 (1.47)	0.519 (1.46)	0.191 (0.35)	0.205 (0.37)	0.547 (1.55)	0.537 (1.52)	0.534 (1.51)	0.531 (1.49)
Cash flow stake	−0.127 (−1.38)	−0.084 (−0.94)	−0.152 (−1.64)	−0.108 (−1.19)					−0.129 (−1.40)	−0.086 (−0.96)
Disproportionality (DP)	−0.180*** (−4.35)		−0.131*** (−2.92)		−0.147 (−1.44)		−0.081 (−1.36)		−0.175*** (−4.13)	
Degree of disprop. (DDP)		−0.418** (−2.03)		−0.153 (−0.62)		−0.269 (−0.54)		−0.075 (−0.26)		−0.396* (−1.88)
Family controlled (FC)			0.154** (1.96)	0.128** (2.02)						
FC * DP			−0.199** (−2.09)							
FC * DDP				−0.857** (−2.13)						
Low cash flow (LCFC)					0.186 (0.99)	0.0120 (0.85)	0.132** (2.07)	0.071 (1.38)		
LCFC * DP					−0.313 (−1.50)		−0.170** (−2.11)			
LCFC * DDP						−1.456** (−2.03)		−0.622 (−1.59)		
Private benefit industry (PBI)									−0.114 (−0.82)	−0.140 (−1.19)
PBI * DP									−0.247 (−1.59)	
PBI * DDP										−0.931 (−1.38)
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	0.147	0.150	0.148	0.145	0.166	0.164	0.147	0.144	0.145	0.144
N	4096	4096	4096	4096	1090	1090	4096	4096	4096	4096

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 characterized 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 includes all firms, except Models (5) and (6), which focus on family firms. Country effects are treated as fixed effects. *t*-statistics based on robust standard errors are reported in parentheses.

* Denote significance at the 10% level.

** Denote significance at the 5% level.

*** Denote significance at the 1% level.

discount on disproportional ownership is significantly larger: the discount for all firms is 0.13 and the additional discount in family-owned firms is 0.20, 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%.¹⁵

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%). 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% lower firm value. These findings are consistent with King and Santor (2008), who show that family firms with dual class shares have lower firm value in Canada.

3.4. Value discount and low cash flow concentration

Proposition 4 relates the value discount of disproportional ownership to the level of cash flow concentration.

Proposition 4. *The negative effect of a disproportional ownership structure on residual firm value is larger in owner-managed firms with low cash flow concentration.*

A controlling owner that possesses a majority of the income and control rights has ultimate control even without any disproportionality. Thus, we expect to see that the value discounts of disproportional ownership structures are larger in firms where the controlling owner possesses little cash flow. **Proposition 4** yields

¹⁵ Note that family firms have an average MB ratio of 1.44; thus, a discount of 0.33 corresponds to 23%.

that this 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.

In Panel C of Table 3, we focus only on family firms and look at average value discount across the two subgroups with low and high cash flow concentration, respectively. In the latter group, the effect of disproportionality is small and insignificant, whereas for family firms with dispersed cash flow the value discount on disproportionality is four times larger than for all firms (Panel A). This difference is significant at a 1% level.

We posit that this result should not be limited to family firms. In Panel D of Table 3, we therefore split the total population of firms according to high or low cash flow concentration and find similar results. Again we find a larger discount in the group of firms with low cash flow concentration.

Models 5 and 6 in Table 4 provide multivariate evidence related to cash flow concentration. In Model 5 we add a dummy variable, *low cash flow concentration* (LCFC), which takes the value one if the controlling owner's cash flow stake is smaller than the median cash flow across all firms.¹⁶ 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 an *F*-test of the combined effect of disproportionality and disproportionality in firms with low cash flow concentration is significant at the 5% level. Consistently, in Model 6 the interaction term is significant at a 5% 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 Models 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 the average discount on firm value is around 14% for all firms, it is more than 17% (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. Although the interaction effect is negative, it is now statistically insignificant. In summary, Models 5 through 8 show that the value discount on disproportional ownership structures is larger when ownership of cash flow is less concentrated.

3.5. Value discount and private benefit extraction

Our model's final prediction relates to the value discount on disproportional ownership in industries characterized by high amenity value. To simplify the analysis we assume in the following that $\alpha \geq 0$:

Proposition 5. Higher amenity value

- (a) increases the mitigating effect of disproportional ownership on the incentive problem,

- (b) decreases the enhancing effect of disproportional ownership on the entrenchment problem,
- (c) increases the negative effect of a disproportional ownership structure on residual firm value.

The first part of the proposition yields that the positive effect of disproportionality is larger in industries with higher amenity values. Thus, for a given degree of disproportionality we shall observe a lower managerial diversion in industries with high scope for private benefit extraction. The second part of the proposition yields that the negative effect of disproportionality is larger in industries with higher amenity values. Thus, for a given degree of disproportionality we expect a larger owner diversion in industries with high amenity value. These two effects have opposite impacts 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.

To test empirically Proposition 5, we follow Demsetz and Lehn (1985) and classify media, sport and entertainment, and advertising as industries with high amenity value.¹⁷ In Panel E of Table 3, we split the sample according to whether the firms are operating in such private benefits industries or not. In keeping with Proposition 5, we find that the value discount of disproportionality is more than twice as large in these industries as compared to the rest of the sample.

Model 9 in Table 4 presents our cross-sectional test of Proposition 5. We add a dummy for the *private benefit industries* (PBI) and 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 0.25. 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.

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. Additional evidence on the value discount of disproportional ownership structure

4.1. The choice of mechanism: dual class shares vs. pyramids

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 et al. (2000) show that any desired separation of ownership and control can be achieved through the use of either dual class shares, or pyramids, or cross-ownership. However, these mechanisms may serve several goals and yield different implications on firm operation and, ultimately, on firm value. For instance, dual

¹⁶ Alternatively, we could have interacted the continuous measure of cash flow concentration with the disproportionality dummy. Consistently, 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.

¹⁷ Media includes SIC-codes: 2711, 2732, 2741, 7383, 7812, 7819, 7822, 7829 and 7832; sport and entertainment is: 7911, 7922, 7929, 7933, 7941, 7948, 7991-3, 7996-7 and 7999; and advertising is: 7311, 7312, 7313, 7319.

class shares are frequently implemented in firms through initial public offerings (IPOs) or during successions in family firms, whereas a pyramidal structure is often the result of acquisitions.

There are a number of theoretical contributions that analyze the consequences of dual class shares with a focus on takeover based arguments (Grossman and Hart, 1988; Harris and Raviv, 1988, among others) and on 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 of 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.

Our model does not allow for the possibility that the choice of control enhancing mechanisms affects firm value. However, in the last column of Table 3 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 1). Firms using any of these mechanisms have a 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% 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.

Table 5 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% level. The firm value of an average European firm with dual class shares is around 19% 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).

As is 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% 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.¹⁸ Finally, there are too few firms with other mechanisms to get any significant results for this group.

¹⁸ 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.

4.2. Interaction with investor protection

In the following analysis we are interested in how the value discount of disproportional ownership structure interacts with investor protection.¹⁹ From a theoretical point of view, the positive effect of disproportionality (reducing the incentive problem) is reduced in countries with higher investor protection, where managers generally divert fewer resources. Contrary to this, the negative effect of disproportionality (increasing the entrenchment problem) is small in countries with high investor protection, as owners also will divert less. These two effects have opposite implications for residual firm value. It is, therefore, an open empirical question whether the value discount on disproportional ownership should be higher or lower in countries with good investor protection.

Panels F and G of Table 3 show the interaction effects between investor protection and the value discount on disproportional ownership structures. We focus on the revised anti-director rights index (Panel F) and the aggregated anti-self-dealing index (Panel G) from Djankov et al. (2008). We split the sample into high and low investor protection countries according to the median score on the country level. In both panels we notice that the value discount associated with disproportional ownership structures is higher in countries with high investor protection. Moreover, the difference is significant at the 1% level in countries with high investor protection, whereas there is no discount in countries with low investor protection.

Table 6 provides multivariate evidence on the effect of investor protection.²⁰ To simplify the presentation of the results, we do not report the control variables, which are identical to the ones used throughout the analysis. We start by including the interaction of the anti-self-dealing index with the disproportionality dummy. The interaction effect is negative and highly significant, whereas disproportionality becomes positive and insignificant. Thus, the negative effect of disproportional ownership structures decreases (i.e., becomes stronger) with the level of investor protection, but is insignificant in countries with low levels of investor protection. A simple *F*-test of the net effect shows that the discount is significant for countries with an anti-self-dealing index above 0.45.²¹ In Model 5 of Table 6, we interact disproportionality with the revised anti-director rights index, and find similar results. The interaction effect is negative and highly significant, whereas disproportionality becomes positive and marginally insignificant. 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.²²

¹⁹ From an analytical point of view, Lins (2003) is the first paper to address empirically the issue of substitution or complementary effects between ownership structure and legal systems. Lins (2003) shows that the impact of managerial control and non-managerial block holding is larger in countries with lower investor protection.

²⁰ 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. In unreported regression, we have excluded the fixed country effects and have included alternatively the direct measure of investor protection. Our results are not affected in any meaningful way. All results in Table 6 are also 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.

²¹ The *F*-test of the net effect of disproportional ownership structures with an anti-self-dealing index of 0.45 yields a *F*-statistic of 3.37, which is significant at the 10% level, whereas the *F*-value when the score equals 0.5 is 6.04, which is significant at the 1% level.

²² 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% level.

Table 5
The effect of mechanisms of separating cash flow and votes on firm value in Western Europe.

	(1)	(2)	(3)	(4)
<i>A. Mechanisms</i>				
Dual class shares (DCS)	−0.251*** (−6.15)	−0.249** (−5.61)	−0.146** (−2.20)	0.003 (0.01)
Pyramid (PYR)	−0.105** (−2.32)	−0.085 (−1.70)	−0.043 (−0.55)	0.003 (0.02)
Cross-holding (CRO)	0.393* (1.74)	0.280 (1.31)	0.418 (0.84)	0.554 (1.30)
Other types of disproportionality (OTH)	−0.191 (−1.07)	−0.312** (−2.25)	−0.160 (−1.53)	0.362 (1.02)
<i>B. Interactions with family controlled (FC)</i>				
DCS * FC		0.004 (0.05)		
PYR * FC		−0.092 (−0.92)		
CRO * FC		2.522*** (9.56)		
OTH * FC		0.703 (0.92)		
<i>C. Interactions with low cash flow concentration (LCFC)</i>				
DCS * LCFC			−0.170*** (−2.10)	−0.395*** (−2.66)
PYR * LCFC			−0.104 (−1.10)	−0.149 (−0.89)
CRO * LCFC			−0.008 (−0.01)	−0.522 (−0.69)
OTH * LCFC			−0.059** (−0.18)	−0.939** (−2.25)
<i>D. Interactions with anti-self-dealing index (ASDI)</i>				
DCS * ASDI				
PYR * ASDI				
CRO * ASDI				
OTH * ASDI				
Control variables	YES	YES	YES	YES
Industry effects	YES	YES	YES	YES
Country effects	YES	YES	YES	YES
Adjusted R-squared	0.149	0.149	0.149	0.150
N	4096	4096	4096	4096

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 mechanisms of separating cash flow and votes other 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 et al. (2008). We include industry and country effects. Country effects are treated as fixed effects. *t*-statistics based on robust standard errors are reported in parentheses.

* Denote significance at the 10% level.

** Denote significance at the 5% level.

*** Denote significance at the 1% level.

Table 6 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.²³ The fourth

²³ 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. (2008) for details.

model uses the *public enforcement* measure from Djankov et al. (2008), which rates the level of punishment that potentially can be imposed on controlling owners and/or managers violating the legal barriers to self-dealing. Public enforcement and anti-self-dealing initiatives are, to a large extent, substitutes, implying that these measures are highly negatively correlated (correlation coefficient of −0.56). Not surprisingly, the interaction term in Model 4 is positive and significant.

Models 6 to 10 of Table 6 introduce interaction terms with the components of the revised anti-director rights.²⁴ *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.

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% of firm value. Our analysis thus indicates that disproportional ownership structures and investor protection are, to some extent, 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.

4.3. Disproportionality and alternative measures of corporate performance

The analysis has so far focused on the impact of disproportionality on firm value. As Adams and Ferreira (2008) 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 into whether the documented lower firm value coincides with poor operating performance, differences in payout policy, or low growth rates.

Table 7 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 a 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.²⁵ We find a negative correlation between disproportional ownership and the probability of going bankrupt, although the effect is 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. Differences in dividend policy might play a role because controlling owners who possess little cash flow have little incentive to redistribute earnings to shareholders, but, rather would prefer to retain earnings and spend them on negative NPV projects. Column 5 examines whether firms with disproportional ownership have a

²⁴ 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 fourteen countries mandate this by law.

²⁵ An alternative and perhaps better approach would be to evaluate the time to bankruptcy. Unfortunately, our status data do not include the date of the bankruptcy.

Table 6

The effect of investor protection and disproportional ownership structures on firm value in Western Europe.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Disproportionality (DP)	0.087 (0.82)	−0.036 (−0.49)	0.318** (2.12)	−0.300*** (−3.11)	0.284* (1.77)	−0.133** (−2.07)	−0.003 (−0.03)	−0.224*** (−5.08)	0.096 (0.87)	0.398*** (1.37)
<i>A. Anti-self-dealing, subindices, and public enforcement</i>										
Anti-self-dealing * DP	−0.405*** (−2.69)									
Ex ante self-dealing * DP		−0.231** (−2.28)								
Ex post self-dealing * DP			−0.667*** (−3.43)							
Public enforcement * DP				0.321*** (3.11)						
<i>B. Anti-director rights and subindices</i>										
Anti-director rights * DP					−0.114*** (−2.97)					
Vote by mail * DP						−0.159* (−1.71)				
Shares not deposited* DP							−0.306*** (−3.51)			
Cumulative voting * DP								0.248 (1.51)		
Oppressed minority * DP									−0.408*** (−2.98)	
Capital * DP										−0.629** (−2.15)
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	0.148	0.148	0.149	0.149	0.148	0.089	0.090	0.088	0.087	0.086
N	4096	4096	4096	4096	4096	4096	4096	4096	4096	4096

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 enforcement* are from Djankov et al. (2008). *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 wrongdoing. *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. (2008). *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; *cumulative 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% 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 parentheses.

* Denote significance at the 10% level.

** Denote significance at the 5% level.

*** Denote significance at the 1% level.

significantly different payout policy (see Chae et al. (2009) for a general analysis of corporate governance and dividend 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, Columns 7, 9, and 11 focus on firm growth measured by the five-year growth (from 1998 to 2002) in sales, assets, and number of employees. Thus, growth in, for instance, sales is calculated as the percentage growth in sales over the five-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. One potential explanation for this difference is that controlling owners might 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. Another possibility is that the results on firm value are biased. This possibility highlights

the importance of our empirical strategy. To this end, we address specific endogeneity stories related to omitted variable bias, measurement bias, and reverse causality in the following section.

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% 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 dividends and that this effect is significant at a 5% level.

Columns 8, 10, and 12 show again that most mechanisms have a negative sign with respect to 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 1% 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 means to finance growth activities.

Table 7
The effect of disproportional ownership structures on alternative performance measures.

Dependent variable	Return on assets		Bankruptcy (Logit model)		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 ^{***} (6.73)	0.012 ^{***} (6.83)	-0.134 [*] (-1.79)	-0.127 [*] (-1.68)	0.068 [*] (1.70)	0.067 [*] (1.67)	2.509 (0.63)	2.496 (0.63)	-0.252 ^{***} (-3.22)	-0.246 ^{***} (-3.12)	4.426 (0.85)	4.361 (0.84)
Leverage	-0.054 ^{***} (-2.62)	-0.053 ^{***} (-2.62)	0.095 (0.13)	0.134 (0.19)	-1.327 ^{***} (-6.14)	-1.326 ^{***} (-6.02)	-18.79 (-0.94)	-18.75 (-0.94)	0.057 (0.09)	0.078 (0.12)	-14.92 (-0.75)	-14.86 (-0.75)
Asset tangibility	0.164 ^{**} (2.08)	0.164 ^{**} (2.09)	3.350 (1.03)	3.413 (1.04)	2.627 ^{***} (4.94)	2.613 ^{***} (4.90)	20.43 (0.78)	20.48 (0.78)	-2.750 [*] (-1.92)	-2.720 [*] (-1.90)	29.23 (0.90)	29.02 (0.89)
Sales growth	0.003 (0.73)	0.003 (0.73)	-0.175 (0.70)	-0.163 (-0.65)	-0.031 (-1.12)	-0.031 (-1.10)						
Return on assets			-1.406 ^{**} (-2.21)	-1.427 ^{**} (-2.24)	2.055 ^{***} (4.61)	2.049 ^{***} (4.61)						
Cash flow stake	0.023 ^{**} (2.59)	0.020 ^{**} (2.46)	0.126 (0.19)	0.0965 (0.14)	0.674 ^{**} (2.09)	0.694 ^{**} (2.06)	57.41 (0.94)	57.96 (0.94)	-1.734 [*] (-1.78)	-1.694 [*] (-1.75)	75.04 (1.00)	76.26 (1.00)
Disproportionality	0.003 (0.68)		-0.544 (-1.45)		0.222 (1.50)		-0.975 (-0.69)		-0.642 ^{**} (-2.27)		0.222 (0.11)	
Dual class shares		-0.006 (-1.24)		-0.631 (-1.27)		0.181 (1.03)		-0.733 (-0.49)		-0.757 ^{***} (-3.54)		1.296 (0.53)
Pyramid		0.010 ^{**} (2.18)		-0.392 (-0.86)		0.334 ^{**} (2.41)		-0.518 (-0.31)		-0.282 (-0.98)		2.104 (0.84)
Cross-holding		-0.039 ^{***} (-2.78)		-13.76 (-0.01)		-0.402 (-1.14)		16.59 (0.97)		0.367 (0.24)		18.55 (0.92)
Other types of disproportionality		-0.013 (-1.38)		0.851 (0.80)		-0.023 (-0.09)		-2.886 (-0.43)		-0.758 (-1.57)		-1.792 (-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	4096	4096	2984	2984	3683	3683	2409	2409	2424	2424	2200	2200

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 Columns (5) and (6) is the dividend yield. Dividend yield is defined as dividend per share divided with price per share. The dependent variable in Columns (7) and (8) is the five-year growth in sales. The dependent variable in Columns (9) and (10) is the five-year growth in book value of assets. The dependent variable in Columns (11) and (12) is the 5-year growth in the number of employees. Columns 1, 2, and 5–12 are linear regression models, whereas Columns 3 and 4 are Logit models. *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 mechanisms of separating cash flow and votes other 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 parentheses.

^{*} Denote significance at the 10% level.

^{**} Denote significance at the 5% level.

^{***} Denote significance at the 1% level.

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 provides part of the explanation for why these mechanisms are valued differently. We have shown that dual class share firms are less frequently traded, have worse operating performance, pay out fewer dividends, 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.

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 et al. (2009) use seven proxies for private benefits of control: family name, state laws, three measures of local market share, active founders proxied by sales, and profit rank, measured at the time of the IPO to instrument ownership concentration. This approach is clever, as the specification benefit forms the time separation in the measurement of instruments and outcomes.

A good instrument must, in our case, (a) be correlated with ownership concentration, and (b) uncorrelated with firm performance. We question whether these conditions are satisfied. CAPM provides a direct link from beta to firm performance measured by the expected return. Thus, beta cannot be excluded in the performance regression. 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 seven instruments used in Gompers et al. (2009) qualify as good instruments. A major problem with the identification in Gompers et al. (2009) is that few of their instruments are significantly correlated with ownership concentration in the first stage regression. IV estimates are therefore likely to be biased toward the OLS estimates (Angrist and Kruger, 2001). Moreover, as noted by Staiger and Stock (1997), the weak instrument problem makes the overidentification tests, provided by the authors to bolster the exogeneity of the instruments in the second state, misleading.

In summary, we ascribe to the conclusion 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. Given a lack of qualified instruments for IV-analysis, we instead turn to the alternative, which is to address three specific types of endogeneity problems: omitted variables; measurement errors; and, reverse causality. As each of these specific stories potentially can explain the correlation with firm value, this section will provide a novel insight to bolster the interpretation of the value discount being related to incentive and entrenchment effects.

5.1. Omitted variables

5.1.1. Protection against uninvited takeovers

In our regressions we do not explicitly take into account the fact 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 which is unaffected by the ownership structure. Moreover, in the event of an uninvited takeover, any premium is paid out based on the distribution of cash flow. Finally, we 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 acknowl-

edge 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 is less powerful empirically than the agency explanation. The takeover argument implies that the value discount should be higher in industries or countries with active takeover markets. In Columns 1 and 2 of Table 8, 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% 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% level, whereas the takeover effect is insignificant at any conventional level. Column 4 yields similar results

Table 8

Test of alternative explanations of the value discount on disproportional ownership structures in Western Europe.

Dependent variable	Market to book ratio					Merged or acquired (Logit model)		Acquired (Logit model)	
	(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	YES
Industry effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.146	0.145	0.147	0.147	0.147	0.146	0.086	0.088	0.086
N	4096	4096	4096	4096	4096	4096	4096	4096	4096

The dependent variable in Columns (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 Columns (6) and (7) is an indicator variable taking the value one if the firm merged or where acquired before 2005. The dependent variable in Columns (8) and (9) is an indicator variable taking the value one if the firm was acquired before 2005. Columns 1–5 are linear regression models, whereas Columns 6–9 are Logit models. *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 from 1997 to 2005 in each industry and country, respectively. The revised *anti-director rights index* is from Djankov et al. (2008). *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 parentheses.

* Denote significance at the 10% level.

** Denote significance at the 5% level.

*** Denote significance at the 1% level.

when we include both industry and country level takeover activity and investor protection.²⁶ 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 show empirically in Tables 3 and 4. The takeover argument predicts the opposite. To see this, we compare a family-controlled with a non-family-controlled firm for a given takeover pressure and ownership structure. Everything else being 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 Tables 3 and 4, where we show 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.

Column 5 of Table 8 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).²⁷ 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 in question 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 (see Martynova and Renneboog (2008) for a general overview of the level takeover activity). We run a logit regression with an indicator variable for status as merged or acquired as the endogenous variable. In total, 27% of the firms either merged or were acquired before 2005. Interestingly, the likelihood of being merged or acquired is higher for firms with disproportional ownership. The coefficient corresponds to a marginal effect of 3.75% in the probability of merging or being acquired. Moreover, the effect is significant at a 1% 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 points relative to a baseline probability of being acquired of 22.2%. 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

of 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. This difference corresponds to that the likelihood of a merger or takeover is 13.3 percentage points higher for pyramids as compared to dual class shares. This is confirmed in Column 9, where we focus on only acquired firms. Thus, 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 of why the value discount is higher for dual class shares than for pyramidal ownership structures.

5.2. 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 benefit that can be diverted is fixed, but that the distribution of private benefit among the owners is determined by the ownership structure. Disproportionality implies that non-controlling owners expect to receive a smaller share of the private benefit and, therefore, will pay less for the stock. In a similar vein, Bebchuk (1999) and Gompers et al. (2009) show that disproportional instruments are more frequently used when- ever 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 will 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 8 conflicts strongly with this prediction. Hence, we conclude that our results are not driven by unobserved private benefits of control.

5.3. Measurement bias

5.3.1. 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% 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

²⁶ 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.

²⁷ This takes care of the situation where most family firms are located in countries with low takeover activity.

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 disproportional ownership.

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 disproportional dummy,²⁸ the interaction effect is positive and significant at a 5% level. This means that the disproportional 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 a potential explanation of the value discount on disproportional ownership structures.

5.3.2. 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 vary widely, from 30% in Italy to 0% in Denmark. If superior voting shares are not listed, we cannot observe this premium. Hence, disproportional ownership would lower firm value if voting premia were significant.

Similar to the block premium argument above, the voting premium is negatively correlated with the value discount of dual class shares. For example, we find the strongest negative effect of dual class shares in Scandinavia, where the average voting premium is zero. If the valuation bias were driving this result, a positive correlation would exist between value discounts and voting premia. Nenova (2003) shows that the average voting premium on the 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.²⁹

5.3.3. 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 disproportional ownership ($v - c$), 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 of 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.

5.4. Reverse causality

In our regressions result we show that firm value and disproportional ownership structures are negatively correlated. In theory this correlation can be caused by firms with low value choosing 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 that is inconsistent with the most convincing version of a reverse causality argument suggested by Adams and Ferreira (2008).

Assume that firms differ in 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 trade-off 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 disproportional ownership dummies and firm value presented in Table 4, it is inconsistent with two 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, chooses 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 Table 4.

Second, firms in southern Europe have lower firm value on average. Consequently, according to the reverse causality story above, we should observe a higher frequency of firms with disproportional ownership structure. Table 1 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 reaches the opposite conclusion, i.e., that the scope for private benefit extraction is lower in Northern Europe.

6. Policy implications

During the last decade there has been a strong urge to harmonize the company laws within the European Union with a focus on implementing the principle of proportional ownership, which states that it is desirable to have proportional distributions of cash flow and control rights among the investors in pub-

²⁸ Notice that the block premia index is not available for Belgium and Ireland. Thus, the number of observations reduces subsequently.

²⁹ We only have voting premia for eight countries in our sample; hence, we do not report the exact effects.

licly listed corporations.³⁰ Our results above 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:

First, policymakers have to believe that increasing firm value – as measured by market-to-book – is a valid goal, since we cannot prove any impact on the efficiency of corporate operations.³¹

Second, a social planner would be interested in both the total corporate value and the private benefits that owners (and others) attain 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.

Third, 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 be 23% of firm value, whereas the average voting and block premia in Northern Europe are 2% and 1%, respectively.

Fourth, 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. We show that this difference can be attributed to differences in earnings performance and the probability of being taken over.

Finally, the significant regional differences in the effect on value correlate with investor protection and anti-self-dealing measures. Thus, whereas it is possible that implementation of the proportionality principle may increase firm value in Northern Europe, this outcome might not be obtained in other countries. Taking the existing variation in the legal protection of outside investors as given, it is expected that there 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.

³⁰ 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% 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 EU 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 (Adams and Ferreira, 2008; Burkart and Lee, 2008, among others; 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 would not enforce one-share-one-vote in Europe but would, rather, pursue other ways to promote the principle of proportional ownership.

³¹ 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 numbers of initial public offerings, higher numbers of initial public offerings, and, ultimately, positive effects on capital investment and economic growth (see survey by La Porta et al., 2000).

Acknowledgements

We would like to thank an anonymous referee, Raffi Amit, Renee Adams, Ron Anderson, Laurence Booth, Daniel Ferreira, Rudi Fahlenbrach, Mark Georgen, Denis Gromb, Ulrich Hege, Peter Högfeldt, Randall Morch, David Reeb, Jörg Rocholl, Thomas Rønde, Matti Suominen, Dogan Tirtiroglu, Annette Vissing-Jørgensen, Belen Villalonga, Daniel Wolfenzon and participants at the Workshop on Corporate Governance in Firms with Concentrated Ownership at Copenhagen Business School, Politics and Corporate Governance Conference at Copenhagen Business School, EFM Symposium on European Corporate Governance at Leeds University Business School, FMA European Meetings 2005, Conference on Financial System Modernisation and Economic Growth in Europe in Berlin, Workshop on Latest Development in Corporate Governance at London Business School, FMA Meeting 2007, ECGI Corporate Governance Conference at Oxford University, as well as seminar participants at Copenhagen Business School, Melbourne Business School, University of Aarhus, University of Alberta, and University of Copenhagen for helpful comments and suggestions. We would further like to thank Jonas Herby, Rune Midjord, and David Tønners for excellent research assistance. This project has been supported by the Center for Economic and Business Research, the Danish Social Science Research Foundation, and the Economic Policy Research Network. An earlier version of this paper was titled “Principle of Proportional Ownership, Investor Protection and Firm Value in Western Europe.”

Appendix A. Proofs of Propositions 1 through 6

A.1. Proof of Proposition 1

We are looking for a subgame perfect Nash equilibrium given the distribution of cash flow, c , and the degree of disproportional ownership, d . First order condition for 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:

$$e_d^o = (1 + a)(1 - n) - c,$$

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

Substituting:

$$e_m^o = \frac{(1 + a)c}{1 + n + (1 + a)c},$$

$$e_d^m = \frac{(1 + a)(1 + n)}{1 + n + (1 + a)c}.$$

Residual firm value is:

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

A.2. Proof of Proposition 2

Part (a): Differentiate the optimal managerial diversion with respect to the degree of disproportional ownership:

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

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 $1-p = 1 - e_m^o = \frac{(1+n)}{1+n+(1+a)c}$.

$$(1-p)e_d^m = -n'(1+a) \left(\frac{2(1-p)p}{(1+n+(1+a)c)} \right).$$

Implying that:

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

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

A.3. Proof of Proposition 3

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

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

where we use the superscript *om* to denote owner manager. Obviously, the owner-manager 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:

$$\begin{aligned} e_d^o &= (1+a)(1-n) - c, \\ e_d^m &= 1+a-c, \\ RFV^{om} &= v - (1+a)(2-n) + 2c, \end{aligned}$$

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

A.4. Proof of Proposition 4

From above we have:

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

Implying that:

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

A.5. Proof of Proposition 5

The proofs of part (a) and part (b) follow from:

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

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

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

Part (c): From above we know that:

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

Differentiating yields:

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

We prove this is true by showing that:

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

Notice:

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

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