TWO PROXIES FOR SHAREHOLDER INFLUENCE: A CASE OF PAYOUT POLICY

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Abstract

This paper investigates the relative importance of two proxies for shareholder influence over the board: the size of equity ownership and Banzhaf index voting power. Our empirical findings indicate that consideration of voting power in models may result in conclusions different from those that consider the size of equity ownership, on payout policy if firms are either paying dividends or repurchasing shares, or both. Comparing to the size of equity ownership, empirical results by the proxy of voting power are more consistent with theoretical predictions.

Keywords: Shareholders, Payout Policy, Partial Adjustment Model

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1 Introduction

A firm's payout policy refers to the financial decisions the firm makes about whether to pay shareholders dividends, how large these dividends should be, and how frequently and in what form dividends should be distributed. Large shareholders, as Shleifer and Vishny (1986) point out, may potentially accumulate sufficient controlling rights to influence dividend payout decisions by influencing the composition of the firm's board of directors who, according to Brealey and Myers (2003), are basically responsible for such decisions. For this reason, the interests of such large shareholders may steer a firm's dividend policy.

This paper extends the analysis of the impact made by large shareholders on dividend payout policy. In particular, responding to the problem of measuring shareholder influence by the size of ownership in prior research, we advocate the use of a shareholder voting power index derived from the theory of cooperative games to analyze this corporate policy choice. The Banzhaf index was introduced for the purpose of analyzing block voting systems: the probability that a citizen's vote will change the block's "decision", and the probability that the block's votes will change the outcome of the election. This index has been popularly adopted in recent empirical studies to examine the shareholder voting power system in the U.K., Spain, and France (Renneboog and Trojanowski, 2005; Leech, 2001; Leech and Manjon, 2003; Bloch and Kremp, 1999). To the best of our knowledge, this is the first study to apply the game theory-based index to corporate payout policies in the U.S.

In addition, we adopt a "cleaned" dataset of large shareholders in publicly traded corporations in the U.S (1996-2001). As documented in Dlugosz, Fahlenbrach, Gompers and Metrick (2006), despite the common use of large shareholder data in financial studies, there is no clean off-the-shelf database available to facilitate research. Dlugosz et al (2006) reveal that even the currently and most widely used ownership database, the Compact Disclosure (CD) of Standard & Poor's, has mistakes and biases such as overlaps and erroneous consideration of preferred stocks. Therefore, Dlugosz et al (2006) review original proxy statements for the largest 1,500 U.S. companies, propose a consistent set of solutions to fix these problems and finally provide a "clean" database freely accessible to all researchers.[1]

We find that there are about 2 to 3 blockholders per firm (2.71) in the U.S. Some firms have more blockholders than others (e.g., 11 blockholders of General Semiconductor Corporation in year 1998). And some companies have only one blockholder, like Oracle 1996-1999, and Microsoft 2000-2001. Apparently, when firms get bigger, it is harder to accumulate more than 5% of total shares and to be a blockholder. While in UK, as reported by Renneboog

[1] http://finance.wharton.upenn.edu/~metrick/data.htm

and Trojanowski, (2005), the blockholders possess 37.01% of the total shares outstanding. For our sample, the blockholders hold 27.44% of the total shares outstanding in sum. But, in some firms, about 10% of our sample, the blockholders' equity ownership is as high as 50%. The voting powers distributed among the top three shareholders in the U.S. are 0.74, 0.11, and 0.10. These values are comparable with the Banzhaf indices of the largest three shareholders for British firms (1992-1998), 0.65, 0.14, and 0.13[2].

To prove that the shareholder power index is a more significant measure for the shareholder influence over the board, we reclassify the blockholders of Dlugosz et al (2006) and focus on two groups: managerial shareholders and tax-exempt shareholders. According to dividend clientele theory, shareholders select their holdings of stocks according to their tax preferences for dividends. Investors in high income tax brackets are likely to invest in low-dividend stocks and investors with low tax rates in high-dividend stocks. Therefore, firms may pay cash dividends to attract less-taxed institutions and may adopt other forms of value distributions like stock repurchase to compensate high-taxed individuals.[3]

While the issue of shareholder preference between stocks repurchase and dividend payouts have been previously investigated, most researchers (Hsieh and Wang, 2008; Shleifer and Vishny, 1986; Jiraporn, 2006; and Moser, 2007) have only considered the size of equity ownership as a proxy for shareholder influence and their empirical tests provided mixed findings. This paper adopts both proxies, voting power and size of ownership, and tests the influence of managerial shareholders and tax-exempt institutional shareholders to corporate payout policy.

Our empirical findings include that for firms that pay dividends but do not repurchase shares, if the officers are the largest shareholders, they prefer to distribute more dividends. When both choices of paying dividends and repurchasing shares become available, officer shareholders prefer share repurchases to dividends. The model with Banzhaf index voting power provides evidence aligned with theoretical directions more significantly than the model with equity ownership. Secondly, if the largest shareholder is tax-exempt institutions, they prefer distribute more dividends when Banzhaf index voting power is used, whereas the results would be different when equity ownership is used to measure shareholder influence.

The rest of the paper is divided into a discussion of the literature (Section 2), the methodology (Section 3), data (section 4), empirical results (section 5) and the conclusion (Section 6).

2 Literature Review

In a world without market imperfections, dividend policy is irrelevant as far as the value of a firm is concerned. It does not make any difference how the firm's profit is distributed, either paid to the owners or retained in the business for reinvestment (Miller and Modigliani, 1961). Various theories have proposed some factors for the fact that many firms pay dividends. Agency theory of dividend policy claims that dividend payments act to reduce agency costs between managers and shareholders by forcing the firm to pay excess profit. By doing this, managers are prevented from consuming the excess profits as perquisites or wasting them on unwise projects (Jensen, 1986). For future additional funding, managers are forced to access external capital markets and thereby allow it to closely monitor the firm's management and agency issues (Rozeff, 1982; Easterbrook, 1984). Alternatively signaling theory of dividend policy, suggests that managers use dividend payments to convey information to investors about the firm's expected earnings (Bhattacharya, 1979, 1980; Miller and Rock, 1985). Due to information asymmetry, shareholders do not have access to a complete set of information about a firm's expected cash flows. Therefore, the firm's managers, as insiders, would like to establish credible signals conveying their firm's prospects to the shareholders. Dividend payout becomes one of the most efficient signals, as it is costly and poor performers cannot simply follow.

If firms choose to pay out to shareholders, firms have the choice between dividends and share repurchase as medium of compensating shareholders. In perfect market conditions without taxes and transaction costs, the choice between dividends and share repurchase may be irrelevant. However, if dividends and capital gains are taxed at different rates, as is the case in the United States, the choice becomes important, and shareholders and firms may prefer one form of compensation to another. Dividend clientele theory suggests that shareholders select their holdings of stocks according to their tax preferences for dividends. Investors in high income tax brackets would like to purchase stocks with low dividends, while investors with low tax rates would like to choose high-dividend stocks. Therefore, firms pay dividends to attract less-taxed institutions and may adopt other forms of value distributions like stock repurchase to attract high-taxed individuals. This view has been the basis of several research articles, some of which are hereby discussed.

[2] See Renneboog and Trojanowski (2005) for more details.

[3] Since 2003, the U.S. has implemented the new law of dividend tax, under which qualified dividends are taxed at the same rate as long-term capital gains, which is 15 percent for most individual investors. In May 2003, the dividend tax rate for retail investors fell dramatically. The top statutory tax rate on dividend income dropped from more than 38% to 15% and the top rate on capital gains declined from 20% to 15%.

2.1 Managerial shareholders and payout policy

Jensen, Solberg, and Zorn (1992), and Zeckhauser and Pound (1990) find managerial stock ownership has a negative impact on dividend levels. As Easterbrook (1984) and Rozeff (1982) suggested, managerial shareholders provide direct incentive alignment, and thus higher managerial ownership reduces the need to pay costly dividends as a control of agency problems. However, Hsieh and Wang (2008) argue that tax considerations may be the more significant reason for this negative relation between managerial shareholders and dividend levels, as the managerial shareholders have high marginal tax rates. Hsieh and Wang (2008), while investigating the payout policy of US firms for the period between 1991 and 2001, finds that firms with a higher level of managerial ownership prefer share repurchase as the method of compensating shareholders. They find this to be especially true during years when repurchase has a tax advantage, when compared to dividends. Moser (2007) also concludes that due to the increase in managerial ownership and the addition of dividend tax penalty, firms are more likely to compensate shareholders through share repurchases than dividends. Providing international evidence, Farinha (2002) does a cross-sectional investigation of about 600 UK firms and finds that ownership affects dividend policy especially if managerial entrenchment is taken into perspective.

2.2 Institutional shareholders and payout policy

Existing evidence is mixed about the influences the institutional shareholder has over payout policies. In the US, dividends are traditionally taxed as ordinary income for individual investors, while institutions receive certain tax deduction for dividend income to avoid double taxation. Moh'd, Perry, and Rimbey (1995) find that firms with larger institutional stakes have higher cash dividend payouts, while firms with larger managerial ownership translate into lower dividend payouts. Similarly, Short, Zhang and Keasey (2002) investigate the issue and find a positive relationship between dividend payout and institutional holding in UK firms. If dividends are important to institutional holders, institutional holding should increase if firms initiate dividend payments. Dhaliwal, Erickson and Trezevant (1999) find that after dividend initiation, firms experience an increase of institutional shareholdings. However, a recent study of Grinstein and Michaely (2005) reports that institutional ownership does not lead to an increase in dividends as previously thought. Alternatively, they find that institutions prefer firms that pay dividends to those that do not, but between firms that pay dividends, the preference is for firms paying fewer dividends.

In spite of the higher tax rate, dividends continue to be a substantial source of income distributed to shareholders. For example, according to Allen and Michaely (1995) the dividend earnings, between 1973 and 1983, for the 1000 largest firms in US averaged about forty four percent of earnings, while share repurchase averaged only six percent. Although firms used repurchases to compensate shareholders, the importance of dividends has not decreased (Bagwell and Shoven, 1989). For the period between 1984 and 1988, share repurchases increased from six percent to forty four percent of earnings, dividends increase to fifty-one percent (Allen, Bernardo, and Welch, 2000).

Allen, Bernardo and Welch (2000) argue that (a) if investors are taxed differently or they have different incentives to become informed about corporate affairs, and (b) dividends are used to attract institutions, dividends may be preferred over repurchases as a way to compensate shareholders. Their argument has credence as Allen and Santomero (1998) document that in the United States the proportion of stocks held by tax exempt institutions, like public and corporate pension funds, colleges and universities, labor unions, foundations, etc., have increased substantially since 1980. Allen, Bernardo and Welch (2000) also argue that because of their scale, tax exempt institutions are more likely to conduct due diligence exercises, and be involved in corporate governance.

Our motivation for considering voting power as a proxy for shareholder influence regarding dividends and repurchase comes from Leech (2001) who studies the issues related to corporate governance and shareholder voting powers in British corporations. His results indicate that a 20% voting power, in most cases though not all, may potentially allow shareholders to be a controlling block. Thus, minority ownership may sometimes result in effective voting power (Leech and Manjón, 2003). Renneboog and Trojanowski (2005), and Bloch and Kemp (1999) apply the role of voting power in corporate decision making. While Renneboog and Trojanowski (2005) investigate payout polices for British firms, Bloch and Kemp (1999) investigate ownership and voting power in French firms.

3 Methodology

Although shareholder influence is crucial to the analysis of such financial decisions, the actual level and measurement of shareholder influence over board decisions is barely available publicly. In prior literature, the size of stocks controlled by shareholders is often included in empirical models for the analysis of shareholder control. However, the size of stock holdings is only a crude proxy. The main problem is that it ignores how stocks are distributed among other shareholders. For instance, a block representing 10% of shares in a firm which has a widely dispersed ownership structure might obtain dominant control, while a block of 15% in a firm which has less dispersed ownership distribution may not give its holder significant power. A block of even 5%

ownership may become important to the system of corporate governance in countries without large concentrations of share ownership as is the case with most corporations in the U.S.

As we know, shareholders make collective decisions by voting. Normally, votes are granted to shareholders based upon the size of their shareholdings, and one share represents one vote. It is necessary to make a strong distinction between a shareholder's voting weight, which represents the size of their shareholding, and voting power, which represents their ability to change or the probability of changing the outcome of a decision with their vote. Assuming a firm follows a simple majority-vote rule, that is, any proposal will be approved if the votes cast by shareholders are over 50 percent, and, for simplicity, assuming there are only three shareholders in this firm and they hold 48, 48, and 4 votes, the voting weights of these shareholders are 48, 48 and 4 percent respectively. Each shareholder has an equal chance to change the voting outcome because each shareholder wins the voting only if at least one of the other two shareholders casts votes in the same way. Thus, the normalized voting powers, or the probability of swings, for each of these shareholders are equally 1/3[4]. This demonstrates that it is the relative rather than the absolute influence power of a given shareholder that determines his/her ability to influence the firm's policies (Crespi and Renneboog, 2003). Therefore, we use the Banzhaf index derived from the co-operative game theory to represent the ability of large shareholders to influence the voting outcome of payout policy.

3.1 Measuring Shareholder Power

The Banzhaf Power Index was introduced for the purpose of analyzing block voting systems: the probability that a citizen's vote will change the block's "decision," and the probability that the block's votes will change the outcome of the election (Banzhaf, 1965). To understand Banzhaf index consider a joint-stock company with n shareholders[5]. Let $w_1, w_2, \ldots w_n$, such that $0 < w_i < 0.5$, denote individual voting weights. The weights are in decreasing order of size, such that $w_i \geq w_{i+1}$. The largest shareholder, whose size is w_1, assumes that all the other shareholders vote arbitrarily, apathetically, and autonomously, and with a probability of 0.5. The total vote cast for shareholder 1 is

$$y = \sum_{i=2}^{n} x_i \tag{1}$$

Where x_i is a random variable with a distribution of $\Pr(x_i = w_i) = \Pr(x_i = 0) = 0.5$, and independent for all $i \geq 2$. If degree of control, α, measures the voting power of the largest single voting block, then the probability of majority support is

$$\alpha = \Pr(w_1 + y + q) \tag{2}$$

Here y is normally distributed with mean = $0.5(1 - w_1)$, and variance = $0.25(H - w_1^2)$, where $H = \sum_{i=2}^{n} w_1^2$. A unique decision is made if $q \geq 0.5$ in case of a simple majority. α ranges from 0.5 and 1, while its cumulative normal probability is the degree of control.

By considering coalitions of shareholders, power indices are estimated such that the total combined voting weight of all the players in a coalition T is w(T) where

$$w(T) = \sum_{i \in T} x_i \tag{3}$$

Where $w(T) \geq q$ for a winning coalition, while for the losing coalition it is $w(T) < q$. Swings i.e., losing coalitions becoming wining coalitions if a shareholder i joins the coalition thus defining the power indices, such that a swing is a losing coalition T if $q - w_i < w(T) < q$.

The Banzhaf index is based on the idea of counting swings and the swings are counted with each coalition given the same weight regardless of its size. In this situation, the probability of random coalition formation is 2^{1-n}, while the probability of a swing shareholder is

$$\beta'_i = 2^{1-n} \sum_{T} 1, \qquad i = 1,2,\ldots,n \tag{4}$$

Equation (4) represents the non-normalized form of Banzhaf index. Normalizing it produces an index that gives the distribution of power among shareholders. The normalized Banzhaf index is represented as

$$\beta_i = \frac{\beta'_i}{\sum_i \beta'_i}, \qquad i = 1,2,\ldots,n \tag{5}$$

[4] Although this is a rather simplistic example, Leech (2001) provides a similar example in addition to a detailed discussion. In fact Leech (2001) shows that although a 20% shareholding can provide effective working control, the top six shareholders can form a large enough voting power bloc to control a firm, even if they did not have the majority of shares.

[5] Leech and Manjón (2003) also provide a discussion on the Banzhaf index. They also investigate the appropriateness of the power index approach to estimate voting power and find the Banzhaf index, which we use in this power to be a suitable approach in inferring control. They also show that if voting power is considered, minority ownership can be effective and also common. This is perhaps another reason to consider the relative importance of size of ownership and voting power in influencing payout decisions.

The Banzhaf index was introduced for the purpose of analyzing block voting systems: the probability that a citizen's vote will change the block's "decision", and the probability that the block's votes will change the outcome of the election. Renneboog and Trojanowski (2005) point out that this mechanism captures the power to influence policy and it would be the appropriate instrument for measuring shareholder voting power, since payout choices, by their nature, are policy issues. This index has been popularly adopted in recent empirical studies to examine the shareholder voting power system in the U.K., Spain, and France (Leech, 2001; Leech and Manjon, 2003; Bloch and Kremp, 1999). To the best of our knowledge, this is the first study to apply the game theory-based index to corporate payout policies in the U.S.

3.2 Dividend Model Specification

We investigate the relationship between shareholder influence and payout policy by the Partial Adjustment Model (Lintner, 1956). The Partial Adjustment Model (PAM) assumes that the target dividend D^* of a firm, for any given year t, is related to the earnings at t, through a desired payout ratio (r), then

$$D^*_{i,t} = r\, E_{i,t} \tag{6}$$

Considering that the firm, in year t, aims to adjust its dividend ($D_{i,t-1}$) to its target dividend level ($D^*_{i,t}$). The actual adjustment ($D_{i,t} - D_{i,t-1}$) is a function of ($D^*_{i,t}$ - $D_{i,t-1}$):

$$D_{i,t} - D_{i,t-1} = a + c(D^*_{i,t} - D_{i,t-1}) \tag{7}$$

The resistance of managers to change dividends is represented by the constant a, while the coefficient c represents the speed of adjustment to the new target. Substituting (6) to (7) yields the partial adjustment model (PAM):

$$D_{i,t} - D_{i,t-1} = a + c(r\, E_{i,t} - D_{i,t-1}) \qquad \text{(PAM)} \tag{8}$$

In order to investigate the link between shareholder power and dividend policy, these models are modified by including interactions of the shareholder variables (e.g., Banzhaf index and size of equity for the largest shareholder).

Now assuming that payouts of firms would be influenced by large shareholders, and then adjusting the models above for such influences results in the following models:

$$D_{i,t} - D_{i,t-1} = \alpha + cr\, E_{i,t} + cro\, E_{i,t} * Ownership - c\, D_{i,t-1} \tag{9}$$

$$D_{i,t} - D_{i,t-1} = \alpha + cr\, E_{i,t} + crv\, E_{i,t} * VotingPowe - c\, D_{i,t-1} \tag{10}$$

In these equations, D is payouts either through cash dividend or stock repurchases. If large shareholders prefer payouts (either cash or stock repurchase), the coefficient of $E_{i,t}$*$Ownership$ or $E_{i,t}$*$VotingPower$, will be significantly positive.

Apart from these variables we also consider dummy variables to control for industry, calendar, and investigate the influence of firm size, leverage and Tobin's Q. Adding variables for firm size (S), leverage (Lev), Tobin's Q (TQ), and the dummy variables for industry and calendar effects, and representing equations 9 and 10 in regression framework results in the following equations:

$$D_{i,t} \quad D_{i,t\ 1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t} * Ownership + \beta_6 D_{i,t\ 1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \tag{11}$$

$$D_{i,t} \quad D_{i,t\ 1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t} * VotingPower + \beta_6 D_{i,t\ 1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \tag{12}$$

These models are applied to firms that may be only dividend paying, only repurchasing shares, or doing both, where the largest shareholder is firm officer or tax-exempt institution.

4 Data

We start with a sample from Dlugosz et al. (2006) who collected data from original proxy statements for the largest 1,500 U.S. companies from 1996 to 2001. The SEC requires that proxy statements list all investors owning more than 5% of a company's common stock. The data in the sample includes company name, large shareholders, industry, size of ownership, and shareholder identity (officer, director, or outsider). After merging the initial sample with COMPUSTAT to extract variables such as total assets, sales, liabilities, dividends and stock repurchase, we obtain 5,495 firm-years for 1,494 unique firms, and 4,792 firm-years with positive earnings, covering 1,326 unique firms[6].

Table 1 summarizes the sample characteristics. The average book value (total assets) is $ 7.57 billion. The average earnings, basically the earnings before interest and taxes (EBIT), are $ 467.88 million. Shareholders (common and preferred shareholders) are paid $ 66.65 million in dividends and $ 94.70 million in repurchases on average from 1996 to 2001. The average Tobin's Q and the average leverage of the

[6] Earnings are defined as the earnings before interest and taxes in a particular year.

sample firms are 2.14 and 46% respectively. For firm-years with positive earnings, as also shown in Table 1, more cash dividends ($71.71 million) and stock repurchase ($101.67 million) are distributed.

Table 1. Sample characteristics

Variable	All Firms			Positive Earnings		
	Mean	Median	Std	Mean	Median	Std
Amount spent on dividends to Common and Pref. Stocks	66.65	7.64	240.61	71.71	9.38	250.39
Amount spent on repurchase of Common and Pref. Stock	94.70	4.65	356.39	101.67	6.40	370.58
Earnings	467.88	127.41	1515.27	524.10	147.84	1563.49
Market value of the firm	7145.92	1893.79	22525.83	7565.49	2047.66	23488.21
Book value of the firm	7565.70	1361.43	29817.56	8028.26	1465.97	30987.98
Leverage	0.46	0.46	0.26	0.46	0.46	0.19
Tobin's Q	2.14	1.49	2.11	2.13	1.50	2.04
Firm-years	5495 (1494)			4792 (1326)		

All numbers except Tobin's Q and Leverage ratio are expressed in $ millions. The summary statistics are computed for the full sample of 5,495 firm-years for 1,494 unique firms. Dividends are equal to the sum of dividends to common shares and preferred shares. Earnings are defined as the earnings before interest and taxes in a particular year. The market value of the firm is computed as the sum of the market value of equity and the book value of total debt at the end of a given year. Book value of the firm is defined as the book value of the total assets. Leverage is defined as the ratio of total debt to the book value of the total assets. Tobin's Q is defined as the ratio of the market value of the firm to the book value of the total assets.

Table 2. Average earnings payout

Year	Panel A: Dividends Only		Panel B: Repurchases Only		Panel C: Both Dividends and Repurchase			
	N	Payout	N	Payout	N	Dividend Payout	Repurchase Payout	Total payout
1996	207	34.21%	44	37.85%	255	24.19%	25.52%	49.71%
1997	181	20.64%	61	45.11%	263	18.21%	28.27%	46.48%
1998	179	24.83%	159	61.74%	344	19.63%	39.01%	58.64%
1999	180	30.88%	170	83.41%	357	19.62%	32.90%	52.52%
2000	171	20.54%	181	116.56%	368	23.95%	34.37%	58.32%
2001	210	21.61%	150	68.24%	293	60.70%	42.27%	102.97%
Total	1128	25.59%	765	78.10%	1880	27.30%	34.12%	61.41%

The table provides the average earnings payout for the sample period. N is the number of firms and the payout is a fraction with respect to Earnings Before Interest and Tax (EBIT) for the six year sample period. Panel A contain firms that have dividend payments only, while Panel B firms are only involved in repurchase. Panel C firms pay dividends and also repurchase shares. In our sample, we consider only firms that have with positive EBIT. In this study, firms consider separately firms that pay dividends only, do repurchase only from firms that pay dividends and repurchase shares as well.

Table 2 shows the payout ratios across years and the number of firms paying dividends, repurchasing shares or doing both. The number of firms paying cash dividends decreased from 207 in 1996 to 171 in 2000, before increasing to 210 in 2001. The average dividend payout ratios have also decreased over the sample period, from approximately 34.21% in 1996 to 21.61% in 2001. The number of firms repurchasing shares increased steadily from 44 firms in 1996 to 181 firms in 2000, but dropped to 150 in 2001. Correspondingly the average payout ratio through share repurchases increased from 37.85% in the year 1996 to 116.56% in the year 2000, but dropped to 68.24% in the year 2001. From Table 2, it is clear that over the years, repurchase of shares rather than dividends are preferred by firms as a mode of compensating shareholders. The preference is witnessed in both the number of firms as well as the payout ratios, with the exception of the year 2001, as there are more firms paying dividends than firms engaged in share repurchase.

Looking at the total number of firms involved in both dividends and repurchase, it steadily increases from 255 in 1996, to 368 in 2000 only to decrease to 293 in 2001. The total payout increases as well from 49.71% in 1996 to 102.97% in 2001. The average

payout through share repurchases also witnesses an increase over the sample period.

Table 3. Ownership and voting power distribution

Variable			Pool	1996	1997	1998	1999	2000	2001
Panel A. Distribution of blockholders									
# of blockholders per firm			2.71	2.46	2.45	2.70	2.74	2.79	2.78
	Firm Size	Small	3.07	2.77	2.83	3.09	3.12	3.15	3.32
		Medium	2.65	2.36	2.46	2.63	2.70	2.83	2.78
		Big	2.30	2.19	2.11	2.28	2.33	2.44	2.33
Total Block ownership			27.44	25.19	24.95	27.60	27.93	28.25	27.98
	Firm Size	Small	31.04	27.56	28.77	30.98	32.25	31.91	33.22
		Medium	27.88	24.86	26.12	27.60	28.92	29.61	28.42
		Big	22.23	21.33	20.02	22.32	22.18	23.60	22.87
Panel B. Distribution of the largest three blockholders									
Largest block									
	Institutions		4148	570	544	779	758	753	744
		Tax-exempt	348	62	54	58	58	56	60
	Individuals		1149	146	138	225	215	224	201
		Officers	582	74	70	121	112	108	97
	% Held		14.58	14.43	14.14	14.73	14.71	14.74	14.55
	Voting power		0.74	0.79	0.78	0.73	0.73	0.72	0.72
2nd largest block									
	% Held		6.57	5.94	5.93	6.75	6.71	6.89	6.83
	Voting power		0.11	0.09	0.10	0.12	0.11	0.12	0.12
3rd largest block									
	% Held		3.41	2.84	2.90	3.51	3.48	3.72	3.72
	Voting power		0.10	0.08	0.09	0.10	0.10	0.11	0.11

This table summarizes the distribution of stock ownership and voting power, for the different classes of shareholders. The data is averaged over the sample period as well as for each of the years. While Panel A provides the stock ownership distribution for the large shareholders, Panel B provides the distribution of ownership and voting power across the three largest shareholders. The voting is measured by the normalized Banzhaf index: $\beta_i = \frac{\beta'_i}{\sum_i \beta'_i}$.

Table 3 provides the distribution of blockholders, the size of their equity ownership, and their Banzhaf index voting power computed by the methods described in section 3.1. On average, there are about 2 to 3 blockholders per firm (2.71). As shown in Panel A of Table 3, the firm size is negatively associated with the number of blocks and blockholder ownership. On average, the blockholders of a firm hold 27.44% of the total shares outstanding in sum. But, in some firms, about 10% of our sample, the blockholders' equity ownership is as high as 50%.

Panel B presents the size of stock holdings and the Banzhaf voting power of the top 3 largest shareholders, as well as their identity. In Dlugosz et al. (2006), block shareholders are classified into five categories, which are (1) officer blockholders; (2) non-officer director blockholders; (3) affiliated blockholders, either individuals or trusts, who are likely influenced by another officer or director; (4) ESOPs (Employee Share Ownership Plans) related blockholders; and (5) outside blockholders. We reclassify the blockholders into institutions and individuals, with two further subgroups in each category, officer blockholders and tax-exempt institutions.

As shown in Panel B of Table 3, the largest, 2nd largest, and 3rd largest shareholders hold 14.58%, 6.57%, and 3.41% of the outstanding stock. In Panel B, we also report the identities of the largest shareholder. As shown, most of the largest shareholders are institutions (4,148) within which 348 are tax-exempt institutions. These institutions include pension funds, college endowment funds and non-profit organizations. There are 1,149 individual investors who are the largest shareholders in a firm. Among them, 582 are officers of the same firm. These officers may accumulate large shareholdings through employee compensation stock option plans.

As suggested by Renneboog and Trojanowski (2005), we consider a one-stage voting game, where each large shareholder is treated as a separate player and we compute the corresponding Banzhaf index.

The empirical results in Renneboog and Trojanowski (2005) reject the hypothesis that large shareholders form a coalition and that the coalition's votes will change the outcome. They suggest that, rather than forming type-based coalitions and participating in the voting game, large shareholders may achieve their payout policy goals in their own interest. As shown in Panel B, the voting powers distributed among the top three shareholders are 0.74, 0.11, and 0.10. For an international comparison, these values are comparable with the Banzhaf indices of the largest three shareholders for British firms (1992-1998), 0.65, 0.14, and 0.13. Considering the dominant power controlled by the largest shareholder in our sample (Banzhaf index=0.74), we focus our remaining analysis on the impact of a firm's largest shareholder on its payout policy.

5 Empirical results

5.1 Managerial shareholders and payout policy

Table 4 provides the regression results for our equations 11 and 12, specifically examining the influences of officer shareholders on cash dividend and share repurchase dynamics. The influences of officer shareholders over the board are measured by interactive variables, $E_{i,t}$*Ownership* and $E_{i,t}$*VotingPower*. Recall that both *agency theory* and *dividend clientele theory* predict a negative relation between officer shareholder and cash dividends but a positive relation between officer shareholder and stock purchase. The firms included – while carrying out the regressions in Table 4 – are paying dividends or repurchasing shares, but not both.

Table 4. Influence of large officer shareholder on payout policy

	Impact on Dividends (Firms pay only dividends)		**Impact on Repurchase (Firms repurchase only)**	
	Equity Ownership	**Voting Power**	**Equity Ownership**	**Voting Power**
Dependent Variable	D_t–D_{t-1}	D_t–D_{t-1}	R_t–R_{t-1}	R_t–R_{t-1}
Intercept	**24.64**	**30.17**	-272.06	-438.34
$S_{i,t}$	-1.31	-2.59[a]	-48.17	-32.56
$Lev_{i,t}$	-0.31	1.89	669.83[a]	666.91[a]
$TQ_{i,t}$	0.36	0.22	**79.09**	**100.58**
$E_{i,t}$	-0.01	-0.02[b]	**0.29**	0.12
$D_{i,t-1}$*(dividends)*	0.13[a]	0.10[a]		
$D_{i,t-1}$*(repurchase)*			**-0.77**	**-0.71**
$E_{i,t}$**Ownership*	0		0.01	
$E_{i,t}$**Voting Power*		**0.05**		0.28
Industry effects significant?	No	No	No	No
Year effects significant?	No	No	No	No
Adjusted R^2	75%	84%	46%	45%
N	61	61	89	89

$$D_{i,t} - D_{i,t-1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t}{}^{*Ownership} + \beta_6 D_{i,t-1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \quad (11)$$

$$D_{i,t} - D_{i,t-1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t}{}^{*VotingPower} + \beta_6 D_{i,t-1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \quad (12)$$

This table summarizes the regression results for Equations 11 and 12 for firms either paying dividends or repurchasing shares only. This table considers the size of equity ownership or the voting power of only the large officer shareholders. The dependent variable (D_t–D_{t-1}) or (R_t-R_{t-1}) is the difference in dividend or repurchase payout. Highlighted coefficients are significant a 1%, while superscripts a and b represents significance at 5% and 10% respectively. The voting (Voting Power) is measured by the normalized Banzhaf index: $\beta_i = \frac{\beta'_i}{\sum_i \beta'_i}$. Ownership is the size of equity ownership. $S_{i,t}$=log(Assets). $Lev_{i,t}$=Total Debt/ Assets. $TQ_{i,t}$ = (Market Value of Equity + Book Value of Debt) / (Assets). Di,t-1=Dividend or repurchase payout in year t-1. Ei,t= Earnings Before Interest and Taxes in year t-1.

First, several findings about control factors are consistent when using proxies of equity ownership and voting power. Shown in Table 4, leverage ($Lev_{i,t}$) and Tobin's Q ($TQ_{i,t}$) play a significant role in repurchase dynamics irrespective of whether equity ownership or voting power is placed in the model. The positive coefficients indicate that larger firms and firms with more growth opportunities are more likely to buy back

their shares. Firm size ($S_{i,t}$) plays an insignificant role in repurchase dynamics but plays a significant role in influencing dividend dynamics.

From Table 4, we can also see that an increase in earnings ($E_{i,t}$) leads to an increase in repurchase of shares but a decrease in dividend payments. Lagged dividends ($D_{i,t-1}$,dividend) have positive coefficients and lagged share repurchase ($D_{i,t-1}$,repurchase) has negative coefficients. As we know, cash dividend payments provide a more stable financial compensation to shareholders and usually follow regular patterns, while repurchase, as a relatively unstable compensation form, would not be undertaken continuously. Thus a large repurchase in a previous year does not lead to an increase in repurchase for the following year. Instead, skipping dividends or dividend cancellation usually generates great shock to investors, which are typically viewed as a bad signal of poor firm performance. Therefore if cash dividends were paid out previously, another had better follow with a greater amount.

Next, the variable of voting power interacted with earnings (E_{it}*Voting power*) measures the influence of the largest shareholder, who also works for the invested firm, Table 4 reports that the coefficient of E_{it}*Voting power* is significantly positive for dividend payouts. That is, an increase in the voting power leads to an increase in dividend payout. The impact of size of equity ownership on dividend payments (E_{it}*Ownership*), however, is insignificant. Both the impact of size of equity ownership and voting power on repurchase dynamics, is also insignificant. Industry and year effects are not significant for dividend and repurchase, irrespective of equity ownership or voting power as a measure of shareholder influence.

Table 5. Influence of large officer shareholder on payout policy in firms paying dividends and repurchasing share

	Impact on Dividends		**Impact on Repurchase**	
	Equity Ownership	**Voting Power**	**Equity Ownership**	**Voting Power**
Dependent Variable	D_t–D_{t-1}	D_t–D_{t-1}	R_t–R_{t-1}	R_t–R_{t-1}
Intercept	-9.09	-6.75	-56.5	-292.6
$S_{i,t}$	**2.87**	**2.33**	8.4	53.91[b]
$Lev_{i,t}$	-4.33	-5.02	103.64	61.11
$TQ_{i,t}$	0.47	0.83[a]	**-80.98**	**-38.61**
$E_{i,t}$	**-0.005**	0.02[a]	0.16[a]	-0.37
$D_{i,t-1}$*(dividends)*	**-0.14**	**-0.14**		
$D_{i,t-1}$*(repurchase)*			**-1.29**	**-0.9**
$E_{i,t}$**Ownership*	0		**0.03**	
$E_{i,t}$**Voting Power*		**-0.02**		**0.75**
Industry effects significant?	No	No	No	No
Year effects significant?	No	No	No	No
Adjusted R^2	27%	31%	62%	55%
N	113	113	113	113

$$D_{i,t} - D_{i,t-1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t}{}^{*Ownership} + \beta_6 D_{i,t-1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \quad (11)$$

$$D_{i,t} - D_{i,t-1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t}{}^{*VotingPower} + \beta_6 D_{i,t-1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \quad (12)$$

This table summarizes the regression results for Equations 11 and 12 for firms they both pay dividends and repurchase shares. This table considers the size of equity ownership or the voting power of only the large officer shareholders. The dependent variable (D_t–D_{t-1}) or (R_t-R_{t-1}) is the difference in dividend or repurchase payout. Highlighted coefficients are significant a 1%, while superscripts a and b represents significance at 5% and 10% respectively.

While carrying out the regressions of Table 5, only those firms that engage in both dividend payouts and repurchase shares are included. For such firms, leverage does not have a significant impact on payout policy. Both firm size has some influence over dividend dynamics, and Tobin's Q has some influence over repurchase dynamics. Larger firms are likely to increase cash dividends but are less likely to increase share repurchase activity if Tobin's Q increases.

As far as the impact of shareholder control on *dividend dynamics* ($E_{i,t}$*Ownership* and $E_{i,t}$*VotingPower*) is concerned, equity ownership has an insignificant coefficient, while voting power is significant (coefficient= -0.02) in the model. As far as the impact of shareholder control on *repurchase*

dynamics ($E_{i,t}$**Ownership* and $E_{i,t}$**VotingPower*) is concerned, both equity ownership (coefficient= 0.03) and voting power (coefficient= 0.75) have positive significant coefficients.

Combined with the results of Tables 4 and 5, our findings conclude that for firms that pay dividends but do not repurchase shares, if the officers are the largest shareholders, they prefer to distribute more dividends. When both choices of paying dividends and repurchasing shares become available, officer shareholders prefer share repurchases to dividends. The model (equation 12) with Banzhaf index voting power provides evidence more aligned with theoretical directions than the model (equation 11) with equity ownership.

Table 6. Influence of large tax-exempt shareholder on payout policy

	Impact on Dividends (Firms pay only dividends)		**Impact on Repurchase (Firms repurchase only)**	
	Equity Ownership	**Voting Power**	**Equity Ownership**	**Voting Power**
Dependent Variable	D_t–D_{t-1}	D_t–D_{t-1}	R_t–R_{t-1}	R_t–R_{t-1}
Intercept	218.32	255.49	**-117.27**	**-112.2**
$S_{i,t}$	**-38.65**	**-42.26**	**15.01**	14.12[a]
$Lev_{i,t}$	53.39	65.4	-27.03	-30.65
$TQ_{i,t}$	-7.9	-11.3	4.39[b]	4.56[b]
$E_{i,t}$	**0.41**	**0.14**	**0.27**	**0.26**
$D_{i,t-1}$*(dividends)*	**-0.79**	**-0.8**		
$D_{i,t-1}$*(repurchase)*			**-0.66**	**-0.66**
$E_{i,t}$**Ownership*	**-0.01**		0	
$E_{i,t}$**Voting Power*		**0.22**		-0.03
Industry effects significant?	No	No	No	No
Year effects significant?	No	No	Yes	Yes
Adjusted R^2	37%	38%	43%	43%
N	453	453	509	509

$$D_{i,t} - D_{i,t-1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t}{}^{*Ownership} + \beta_6 D_{i,t-1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \quad (11)$$

$$D_{i,t} - D_{i,t-1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t}{}^{*VotingPower} + \beta_6 D_{i,t-1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \quad (12)$$

This table summarizes the regression results for Equations 11 and 12 for firms either paying dividends or repurchasing shares only. This table considers the size of equity ownership or the voting power of only the large tax-exempt shareholders. The dependent variable (D_t–D_{t-1}) or (R_t-R_{t-1}) is the difference in dividend or repurchase payout. Highlighted coefficients are significant a 1%, while superscripts a and b represents significance at 5% and 10% respectively.

5.2 Institutional shareholders and payout policy

Tables 6 and 7 provide the results of the regression that studies the impact of *tax-exempt* institutional shareholders. While Table 6 considers firms that pay dividends or repurchase shares, Table 7 considers only those firms that compensate shareholders through both dividends and repurchase of shares.

As in the U.S. the tax treatment of dividends varies widely depending upon the identity of the institutions, there is no consistent answer in current literature to conclude the influences of institutional shareholder over payout policy. Instead of grouping the institutions all together, we focus on the tax-exempt institutions. Our purpose is to evaluate the power of two proxies for shareholder influence, Banzhaf index and equity ownership. To be a good proxy, the interactive variables, $E_{i,t}$**Ownership* or $E_{i,t}$**VotingPower*, should be significantly positive for cash dividends and significantly negative for stock repurchase.

From Table 6, we observe once the impact of tax-exempt shareholder ($E_{i,t}$**Ownership, or* $E_{i,t}$**VotingPower)* is introduced to dividend dynamics and repurchase dynamics, size becomes a significant determinant. Tobin'Q is significant and positive to repurchase dynamics. Earnings have positive coefficients, and lagged dividends or lagged repurchase have negative coefficients. Thus, as earnings increase, cash dividends and stock repurchase increase, but a large cash dividends and stock repurchase in previous year may lead to a decrease in the current year.

For firms with cash dividends only, $E_{i,t}$**Ownership* is significant and negative, while $E_{i,t}$**VotingPower* is significant and positive. For firms

with stock repurchase only, both $E_{i,t}$*Ownership* and $E_{i,t}$*VotingPower* are insignificant. Thus, the influence of tax-exempt institutional shareholder over payout policy, measured by $E_{i,t}$*Ownership*, is contradict to the predications, whereas $E_{i,t}$*VotingPower* provide the evidence that tax-exempt institutions prefer distributing cash dividends.

Table 7. Influence of large tax-exempt shareholder on payout policy in firms paying dividends and repurchasing share

	Impact on Dividends		**Impact on Repurchase**	
	Equity Ownership	**Voting Power**	**Equity Ownership**	**Voting Power**
Dependent Variable	$D_t - D_{t-1}$	$D_t - D_{t-1}$	$R_t - R_{t-1}$	$R_t - R_{t-1}$
Intercept	31.79	42.27	-216.16[a]	-204.70[a]
$S_{i,t}$	-4.45[a]	**-6.04**	**24.27**	**23.02**
$Lev_{i,t}$	-12.14	-8.5	-49.14	-45.85
$TQ_{i,t}$	2.35[b]	0.85	7.26	4.85
$E_{i,t}$	**0.02**	**-0.01**	**0.04**	0
$D_{i,t-1}$*(dividends)*	**0.1**	**0.05**		
$D_{i,t-1}$*(repurchase)*			**-0.28**	**-0.3**
$E_{i,t}$*Ownership	**-0.001**		0	
$E_{i,t}$*Voting Power		**0.04**		**0.07**
Industry effects significant?	No	No	No	No
Year effects significant?	No	No	Yes	Yes
Adjusted R^2	15%	19%	14%	15%
N	1071	1071	1071	1071

$$D_{i,t} - D_{i,t-1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t}*Ownership + \beta_6 D_{i,t-1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \quad (11)$$

$$D_{i,t} - D_{i,t-1} = \alpha + \beta_1 S_{i,t} + \beta_2 Lev_{i,t} + \beta_3 TQ_{i,t} + \beta_4 E_{i,t} + \beta_5 E_{i,t}*VotingPower + \beta_6 D_{i,t-1} + \beta_7 Ind_{i,t} + \beta_8 Cal_{i,t} + \mu_{i,t} \quad (12)$$

This table summarizes the regression results for Equations 11 and 12 for firms they both pay dividends and repurchase shares. This table considers the size of equity ownership or the voting power of only the large tax-exempt shareholders. The dependent variable ($D_t - D_{t-1}$) or (R_t-R_{t-1}) is the difference in dividend or repurchase payout. Highlighted coefficients are significant a 1%, while superscripts a and b represents significance at 5% and 10% respectively.

For firms with both cash dividends and stock repurchase, shown in Table 7, for dividend dynamics, $E_{i,t}$*Ownership* is significantly negative and $E_{i,t}$*VotingPower* is significantly positive. For stock repurchase dynamics, $E_{i,t}$*Ownership* is insignificant but $E_{i,t}$*VotingPower* is positively significant.

The results of Tables 6 and 7 indicate that for firms that pay dividends but don't repurchase shares, if the largest shareholder is tax-exempt institutions, they prefer distribute more dividends when Banzhaf index voting power is used, whereas when equity ownership is used to measure shareholder influence, the results would be different.

Thus, the model (equation 12) with Banzhaf index voting power provides the evidence more aligned with theoretical directions than the model (equation 11) with equity ownership.

In Table 7, while lagged dividends are significantly positive in the dividend dynamics, lagged repurchase is significantly negative in the repurchase dynamics. The industry and the year to year dummies do not have an impact on the dividend dynamics of firms that compensate shareholders through both dividends and share repurchase. But, the year to year dummies are significant variables to the repurchase dynamics, indicating that repurchase activities are timed to market and may be driven by changes in business cycles.

6 Conclusions

Although a plethora of articles have investigated issues related to dividend policy, ranging from its irrelevance (Miller and Modigliani, 1961) to the choice between the method of compensation (Allen, Bernardo and Welch, 2000), relatively few papers have investigated the impact of shareholder structure in determining the choices of payout policy (e.g., Zeckhauser and Pound, 1990; Gugler and Yurtoglu, 2003; Goergen, Renneboog, and Silva ,2005; Eckbo and Verma, 1994; Short, Zhang, and Keasey, 2002). Among the very few, the size of equity ownership is commonly used to measure the influence of shareholders with different identities. For example, Hsieh and Wang (2008) find the level of insider ownership to influence share repurchase decisions. So

does Jiraporn (2006), and Moser (2007). Strickland (1996) finds ownership of tax-exempt institutions exhibiting no preferences for either high dividend yield or low yield stocks.

As the equity ownership represents a shareholder's voting weight, the size of their shareholding, it ignores how stocks are distributed among other shareholders. This current paper thus contributes to finance literature by evaluating an alternative proxy for shareholder influence, Banzhaf index voting power, and investigating whether large shareholders affect payout policy through their influence over the board.

Leech (2001) lays down the foundation for considering Banzhaf index voting power as factor affecting working control of as a corporation. Renneboog and Trojanowski (2005) incorporated the voting power index to investigate preferences for compensation method in UK. The Banzhaf index was introduced for the purpose of analyzing block voting systems: the probability that a citizen's vote will change the block's "decision," and the probability that the block's votes will change the outcome of the election. Following Renneboog and Trojanowski (2005), we use a one-stage voting game, where each large shareholder is treated as a separate player and compute the corresponding Banzhaf index, the probability that a player's vote will change the board's decisions about payout policy.

In the U.S. the tax treatment of dividends varies widely depending upon the identity of shareholders; there is no consistent answer in current literature to conclude the influences of shareholders over payout policy. We classify large shareholders into individuals and institutions, as dividends are traditionally taxed as ordinary income for individual investors, while institutions receive certain tax deduction for dividend income to avoid double taxation. For example, dividends received by corporations have a minimum 70% exclusion from taxable income, and tax-exempt institutions are not taxed at all. Such a differential tax treatment of dividends has led to our hypothesis that managerial shareholders prefer stock repurchase to cash dividend, and tax-exempt shareholders may prefer cash dividends over repurchase.

Thus, the questions arises whether the size of the equity ownership or Banzhaf index voting power are good proxies for shareholders influence? Besides is there any distinct preference for share repurchase or dividends, for firms that pay dividends or stock repurchase only, or both. This paper contributes to the literature by investigating these issues.

Our findings indicate that the size of equity ownership of large officer shareholder do not influence the dividend payouts or repurchase activity, if firms are compensating shareholders through either dividends or repurchase. Voting power of such shareholders, however, influences dividend decisions but does not influence repurchase activities. For firms that compensate shareholders through both repurchase and dividends, the variables of Banzhaf index voting power are significant (negative for dividends and positive for stock repurchase), implying that officer shareholders prefer share repurchases to dividends. Large tax-exempt shareholders, however, prefer to use their voting power to increase both dividend payments and stock repurchase. Thus, by summarizing the results, it can be stated that the size of ownership or voting power influences payout decisions differently, and their impact may depends upon whether firms pay only dividends, does only repurchase, or does both.

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