

Institutional and individual investor preferences for dividends and share repurchases[☆]

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Abstract

This study shows that individual investors prefer to invest in high dividend yield stocks and in dividend-paying firms whereas relatively lower-taxed institutional investors tend to prefer low dividend yield stocks and non-paying firms. Consistent with Brennan and Thakor's [Brennan, M. J., & A. V. Thakor. (1990). Shareholder preferences and dividend policy. *Journal of Finance*, 45, 993–1018] adverse selection model, informationally superior institutional investors are shown to prefer firms that engage in larger share repurchases whereas individual investors do not prefer share repurchases. These results are contrary to the widely held beliefs (a) regarding tax-based and non-tax-based dividend clienteles, (b) that firms pay dividends to encourage monitoring by institutional investors, and (c) that the personal tax rate on equity is low (or zero). © 2007 Elsevier Inc. All rights reserved.

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1. Introduction

Many prior studies assume or predict that (high) dividend-paying firms attract institutional investors because institutions generally face lower tax rates than individuals (see, e.g., Allen, Bernardo, & Welch, 2000; Redding, 1997; Shleifer & Vishny, 1986).¹ Traditionally, therefore,

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¹ Shleifer and Vishny (1986) assumes that "small shareholders are likely to prefer capital gains, large shareholders probably favor dividends." Similarly, Redding (1997) predicts that "an institutional investor will choose dividend-paying stocks, and an individual investor will choose stocks which do not pay dividends." Finally, Allen et al. (2000) claims that because institutions are relatively low-taxed, "when a firm pays higher dividends, it attracts a disproportionately larger ownership by institutions, and these institutions in turn are more likely to play a larger role in overseeing management than dispersed retail investors."

researchers have largely accepted the assumption that high dividend yields attract institutional investors without question, and without empirical examination. In this study, I examine this assumption directly.

In addition, many institutions are widely believed to face a variety of non-tax incentives to invest in dividend-paying stocks. Under both common law and the Employee Retirement Security Act of 1974 (ERISA), institutional managers, in their fiduciary capacity, are expected to behave in the manner of a prudent person. Indeed, some institutions stopped holding stocks that omitted dividends in the post-ERISA period and purchased stocks that reinstated dividends (see [Brav & Heaton, 1998](#)). Also, some institutional investors have restrictions in their charter prohibiting them from investing in non-paying stocks. Finally, a preference for dividends could also exist for some fiduciaries and non-profit organizations which are required to spend only “income” and not “principal” (see [Feldstein & Green, 1983](#)). All of these non-tax factors may induce institutions to invest in dividend-paying stocks. So I also examine if tax and non-tax factors lead institutions (individuals) to have higher (lower) holdings in dividend-paying firms.

Relative to lower-taxed institutional investors, individual investors have traditionally had a tax incentive for share repurchases as opposed to taxable dividends. However, [Brennan and Thakor \(1990\)](#) contends that the non-proportional aspect of repurchases renders less well-informed individual investors vulnerable to expropriation by better informed institutional investors, so relative to individuals, institutions should prefer to invest in firms that engage in share repurchases. I also test these contradictory hypotheses related to institutional and individual investor preferences for share repurchases.

It is generally assumed that larger cash payouts help to reduce agency costs (see, e.g., [Easterbrook, 1984](#); [Jensen, 1986](#)), and asymmetric information (see, e.g., [Bhattacharya, 1979](#); [Miller & Rock, 1985](#)). Also, it is commonly believed that institutional investors have better information gathering abilities and are also better monitors (see [Allen et al., 2000](#)). If institutional investors are better informed than individual investors, and/or if institutional investors are better able to limit agency costs through their monitoring capabilities, then individual investors may have a stronger preference for cash payouts (both dividends and share repurchases).

Using data for the 1989–1996 period, I find that institutional investors have a preference for low dividend yield stocks relative to high dividend yield stocks whereas non-institutional and non-insider, “individual” investors have a preference for high dividend yield stocks relative to low dividend yield stocks. I also find that individuals prefer dividend-paying firms whereas institutions prefer non-dividend-paying firms. Consistent with [Brennan and Thakor \(1990\)](#), the results show that institutional investors prefer firms that engage in larger share repurchases whereas individual investors do not prefer share repurchases. Taken together, these results are inconsistent with (a) the predictions of the tax-based dividend clientele hypothesis and (b) the hypothesized preference of institutions for dividend-paying firms for non-tax reasons.

Previous research on investor preferences for cash payouts and on the identity of the marginal investor in (high) dividend-paying stocks has followed widely different approaches and provides conflicting results. [Elton and Gruber \(1970\)](#) finds that the ex-dividend day tax effect per dollar of dividends is lower for high dividend stocks than for low dividend stocks, which is consistent with the expected clientele effect because high-dividend stocks should attract low-tax investors. Subsequently, several studies have used non-tax explanations for abnormal ex-dividend day returns, while others have shown evidence consistent with a tax-based explanation. In a review of the evidence related to the ex-day phenomenon, [Graham \(2003\)](#) concludes that it is “not possible to unambiguously interpret the ex-day evidence in terms of personal taxes.” [Dhaliwal, Erickson, and Trezevant \(1999\)](#) finds that dividend initiators typically experience an increase in both the

number of institutional shareholders and the percentage of shares held by institutions, and [Brav and Heaton \(1998\)](#) finds that dividend omitting firms usually experience a reduction in the number of institutional shareholders.²

[Blume, Crockett, and Friend \(1974\)](#) and [Pettit \(1977\)](#) find some evidence consistent with tax-based dividend clienteles by relating the tax bracket of individual investors and the dividend yield of the stocks held by them. [Lewellen, Stanley, Lease, and Schlarbaum \(1978\)](#) uses the same data set as in [Pettit \(1977\)](#) but adopts a slightly different approach. Instead of analyzing investor portfolios as in prior work, it analyses individual securities to detect whether or not the stockholders in a particular firm display any significant concentration by personal tax circumstances. The results provide only weak support for the tax related dividend clientele hypothesis. [Strickland \(1997\)](#) provides evidence that relative to taxable institutions, tax-exempt institutions do have a slight preference for comparatively higher dividend yields. Finally, [Graham and Kumar \(2006\)](#) examines the actual stock holdings and trades of the clients of a discount brokerage house and finds mixed evidence in support of the tax-based dividend clientele hypothesis.

A few studies have examined the relation between aggregate institutional ownership or some subset thereof (such as insurance companies) and various firm characteristics, including dividend yield (see, e.g., [Badrinath, Gay, & Kale, 1989](#); [Badrinath, Kale, & Ryan, 1996](#); [Del Guercio, 1996](#); [Gompers & Metrick, 2001](#)). These studies find either no relation between institutional holdings and dividend yield or a significant negative relation. However, none of these papers focus specifically on the relation between institutional ownership and dividend yield. More importantly, all of these papers ignore any tax-based motivations or implications and include the dividend yield variable as an independent variable in regressions of aggregate institutional ownership simply to test for “prudent” behavior or the “safety-net” hypothesis. Thus, the intent of these papers is very different from that of this paper, which focuses on the tax implications.

Unlike prior studies that examine differences in yield preferences either among individual investors who face different marginal tax rates or among institutional investors who face different tax rates, this study examines differences in the preferences of higher taxed individual investors and lower-taxed institutional investors for dividends and share repurchases, and, more generally, for dividend-paying firms. As such, this approach allows us to test the widely believed but largely unproven claims that firms which pay (high) dividends tend to attract greater institutional investment and that higher taxed individual investors are not the marginal investors in (high) dividend-paying stocks. Using aggregate institutional and individual ownership data also allows for a better test of the differences in the preferences of the two groups of investors due to (a) non-tax fiduciary considerations, (b) the hypothesized monitoring role of institutions, and (c) adverse selection reasons as suggested in [Brennan and Thakor \(1990\)](#). These issues cannot be addressed adequately by examining the preferences of a subset of investors as is done in most prior studies.

In addition, relative to previous work, this study makes several original contributions. In addition to analyzing the relation between aggregate institutional ownership and dividend yield using a sample of all firms, I also conduct a similar analysis for the sample of only dividend-paying firms. By using such an approach, I can test with greater precision whether or not institutions

² Although these findings are consistent with the tax-based dividend clientele hypothesis, they may also be explained by institutional investor preference for prudence and by charter restrictions that limit some institutions to investing in only dividend paying stocks. Second, the announcement of dividend omissions and initiations are important events that may convey a lot of additional information about the firm so it is not clear if institutions adjust their holdings in response to any potential tax impact or for other reasons.

prefer high-dividend firms to low dividend firms because I am able to eliminate the confounding effects of various non-tax incentives (such as fiduciary considerations or charter restrictions) that may induce institutions to invest in dividend-paying firms. Another contribution of this study is that it analyses not only institutional preferences for high dividend yields but also for dividend-paying firms relative to non-paying firms. This allows for a test of the implications of the tax as well as the non-tax incentives, both of which suggest that institutions should have larger holdings in dividend-paying firms. Finally, this is the first comprehensive empirical examination of both institutional and individual investor preferences for share repurchases.

The rest of this paper is organized as follows. In the next section, I describe the data used in this study. In Section 3, I present the results of the main empirical tests that examine the preferences of institutional and individual investors for (high) dividend-paying firms and share repurchases. In Section 4, I discuss some additional empirical results and check for the robustness of the findings. Section 5 concludes.

2. Data

2.1. Ownership data

SEC regulations require all institutional investors (such as mutual funds, life insurance companies, banks, trusts, government funds, corporate pension funds, union funds, endowment and foundation funds, investment managers, etc.) with investment discretion over portfolios exceeding \$100 million in equity securities to report their holdings in 13(f) filings at the end of each quarter. Institutions may choose to omit their holdings of a firm's securities from a 13(f) filing if they hold fewer than 10,000 shares or less than \$200,000 in aggregate fair market value. The data on aggregate percentage institutional ownership (INST) and percentage insider ownership (INSIDER) of all NYSE, AMEX, NASDAQ National Market, and Over the Counter firms, as of the end of each year during the 1989–1996 period are hand collected from Compact Disclosure/CDA Spectrum CD-ROMs, which compiles information from these 13(f) filings by institutions and aggregates them for each firm. The percentage ownership of non-institutional and non-insider investors, referred to here as individual investors (INDIV), was implied from the values of INST and INSIDER. The value of INDIV is truncated at 0% for the rare situations in which the CDA Spectrum reported holdings of insiders and institutions sum to a number greater than 100%.

2.2. Dividend yield and repurchase yield data

For each firm for which ownership data are available, the dividend yield (YIELD) is calculated as 100 times the ratio of the gross annual cash dividends per share (in \$) during the year (Compustat Data Item 26) and the share price (in \$) at the end of each year (Compustat Data Item 199). To mitigate the influence of outliers, firms with YIELD greater than 25% are excluded from the sample.

CRSP data are used to estimate a firm's share repurchases each year. Broadly speaking, a firm can repurchase its shares either through an open-market repurchase or through a fixed-price or Dutch auction tender offer. Tender offers are typically used for fairly large-sized repurchases (e.g., 15 or 20% of shares outstanding). Open-market repurchases are typically used for smaller-sized repurchases and are usually part of a previously announced ongoing program of share repurchases (e.g., up to 5% of shares outstanding over a 1-year period). Open-market repurchases provide managers with considerable flexibility over the timing of the purchases, and such repurchases are

usually made anonymously through a broker in the secondary market where the firm's shares are traded. The CRSP dataset updates a firm's outstanding shares on the day of any extraordinary firm distribution that affects the outstanding shares of a firm (such as a stock dividend, stock split, a repurchase through a tender offer, etc.). CRSP also provides a corresponding distribution code to explain the firm's distribution event, e.g., distribution codes 6261 and 6561 reflect share repurchases through tender offers. This provided a partial source for share repurchase information for the firms in the sample. However, periodic and small open-market repurchases, which constitute the bulk of all repurchases, are not immediately reflected in CRSP. Information for such activity is inferred by examining any decreases in monthly or quarterly updated shares outstanding information for each firm and making adjustments for non-repurchase activities that could cause changes in shares outstanding. In other words, in addition to CRSP coded major share repurchases (distribution codes 6261 and 6561), an uncoded reduction in shares outstanding was assumed to be due to an open-market repurchase, and was also included in the aggregate share repurchase measure used.³

RYIELD is the measure of the cumulative share repurchases by a firm during the year, where each share repurchase is calculated as 100 times the ratio of the shares repurchased to the shares outstanding prior to the repurchase. This calculation of RYIELD can be directly compared with YIELD in the following sense. Consider a firm with share price normalized to \$1 and 100 shares. Its RYIELD will be equal to 20% if it repurchases 20 shares at the equilibrium price of \$1 per share. Similarly, its YIELD will be equal to 20% if it pays out \$20 in the form of a cash dividend.

2.3. Other data

Data for other firm characteristics that have been theoretically or empirically shown to explain institutional and individual ownership of a firm were collected from CRSP and Compustat for the 1989–1996 period. The firm size (SIZE) is calculated as the market value (in \$000s) of common equity at the end of each year (source: CRSP). LEV, a measure of leverage, is the ratio of total long-term debt (in \$ millions) to total assets (in \$ millions) (source: Compustat). STD, a measure of the total risk of a firm's stock, which is the standard deviation of weekly returns (where a week is defined as five trading days) during the first 250 trading days of each year (source: CRSP). Compustat is used to obtain Standard & Poors' (S&P) ranks to test for the effect of a firm's quality on institutional investor behavior. I classify firms with S&P ranks of A+, A, A–, and B+ as high quality, and firms with S&P ranks of B, B–, C, and D as low quality. For various reasons, many firms do not meet S&P's ranking criteria. These firms are classified as non-rated. Finally, Compustat is used to obtain SIC codes for these firms to control for the effect of a firm's industry on institutional investor preference for dividends. Utilities are firms with two-digit SIC codes of 48 and 49; financials are firms with two-digit SIC codes of 60, 61, 62, 63, and 64; and non-utilities and non-financials are all of the remaining firms.

A sample of 31,431 observations for all firms over the 1989–1986 period is obtained at the end of the data collection process. Of this sample, 13,956 observations (or 44.4% of the total) are for

³ According to Stephens and Weisbach (1998) and Jagannathan, Stephens, and Weisbach (2000), the CRSP measure of repurchases used here may sometimes *understate* the true amount of actual stock repurchases. However, an alternative measure, using Compustat data on the amount of common and preferred stock bought by a firm adjusted for any reduction in the value of preferred stock, may sometimes *overstate* actual share repurchases. Also, using the Compustat measure would result in a sizable reduction in the sample size as this measure is not available for banks and utilities, both of which are sectors whose firms have a relatively greater propensity to pay dividends.

Table 1
Sample firms by industry

Industry	SIC codes	All firms		Dividend-paying firms only	
		No. of firms	% of firms	No. of firms	% of firms
Agriculture, forestry, and fishing	100–999	109	0.35	51	0.37
Mining and construction	1000–1999	1,336	4.25	503	3.60
Manufacturing	2000–3999	13,448	42.79	5211	37.34
Transportation	4000–4799	668	2.13	295	2.11
Wholesale and retail trade	5000–5999	3,089	9.83	1034	7.41
Real estate and holding cos.	6500–6999	393	1.25	100	0.72
Services	7000–8999	3,999	12.72	777	5.57
Public administration	9000–9999	119	0.38	59	0.42
Non-utilities and non-financials (subtotal)		23,161	73.69	8030	57.54
Utilities	4800–4999	2,246	7.15	1509	10.81
Financials	6000–6499	6,024	19.17	4417	31.65
Total		31,431	100.00	13956	100.00

This table reports the distribution of all sample firms and all dividend-paying sample firms on the basis of Standard Industrial Classification (SIC) codes. The sample consists of all qualifying NYSE, AMEX, NASDAQ National Market, and Over-the-Counter firms in the 1989–1996 period.

dividend-paying firms. Table 1 lists the distribution of the sample firms in broad industry groups. Almost three-fourths of the firms are in the non-utility, non-financial sector and the manufacturing sector accounts for more than 40% of the sample. However, utility and financial firms tend to pay dividends with greater propensity and these firms constitute almost 42.5% of dividend-paying firms.

3. Empirical results

3.1. Univariate and bivariate tests of investor preferences for dividends

In this subsection, I examine the average dividend yields for groups of firms formed on the basis of their institutional and individual holdings. First, I use a sample of only dividend-paying firms. This approach is used to focus more on tax related effects, and to reduce noise due to potential non-tax factors such as fiduciary reasons or charter restrictions that may lead institutional investors to invest in dividend-paying firms.

All dividend-paying firms are first grouped into three approximately equal categories (low, medium, and high) on the basis of their institutional ownership (INST) for each year in the 1989–1996 period. Then I calculate the average dividend yield (YIELD) of the firms in each INST group (the results are similar when the comparison is done on the basis of the median dividend yield). The results are shown in Fig. 1. In each of the 8 years, firms with the lowest (highest) institutional ownership are associated with the highest (lowest) dividend yields. On average, firms that belonged to the lowest institutional ownership group had 11.16% of their equity held by institutional investors, and a dividend yield of 3.44%. In contrast, firms that belonged to the highest institutional ownership group had 63.60% of their equity held by institutional investors, and a dividend yield of only 2.54%. This result is inconsistent with the tax-based dividend clientele hypothesis.

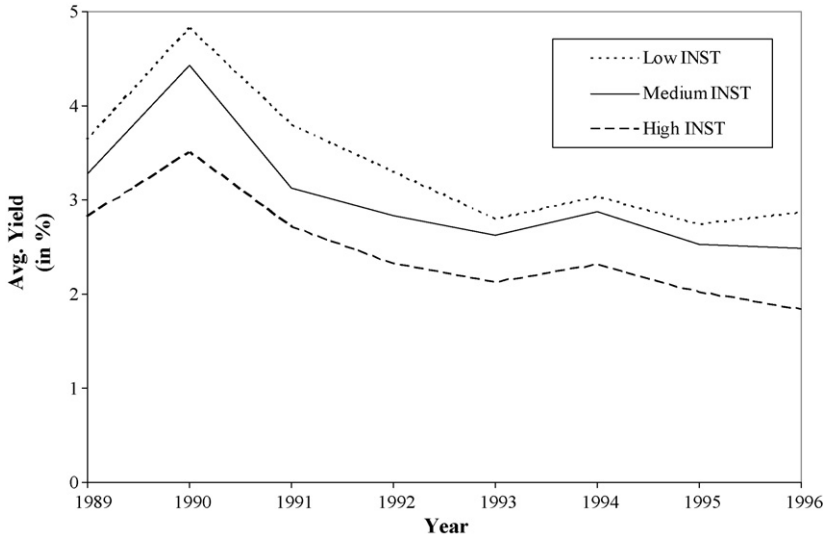


Fig. 1. Average dividend yield of dividend-paying firms in various institutional ownership groups. This figure illustrates the average dividend yield (in %) of dividend-paying NYSE, AMEX, NASDAQ National Market, and Over-the-Counter firms for groups formed on the basis of their institutional ownership for each year in the 1989–1996 period. In each year, a firm is included in the sample only if it paid a cash dividend. Then the firms are grouped into three approximately equally sized categories (low, medium, and high) on the basis of their institutional ownership. The dividend yield (YIELD) of a firm is calculated as 100 times the ratio of the gross annual cash dividends per share (in \$) during the year and the share price (in \$) at the end of the year (*source*: Compustat). INST is the institutional ownership (in %) of a firm at the end of the year (*source*: CDA Spectrum). The number of observations each year range from 1648 to 1877.

A potential criticism of the approach used above is that it does not adequately control for other factors that could influence the institutional ownership of a firm. The size of the firm is one important characteristic that institutional investors seem to pay a lot of attention to. Blume (1976) suggests that there should be a positive relation between institutional ownership and firm size because large firms are generally associated with higher trading liquidity. This is particularly desirable for institutional investors because their investment in a given stock can be substantial and this could lead to significant price pressure if the stock's trading liquidity is low. Institutional investors may also prefer investing in large firms because otherwise they would either have to acquire controlling interests in smaller firms or substantially increase the number of stocks in their portfolios and, as a consequence, face increased research, transactions, and other costs (Reilly, 1975).

So the tests above are repeated after controlling for firm size. First, all dividend-paying firms are grouped into three approximately equal categories (small, medium, and large) on the basis of their SIZE at the end of each year. Then firms within each SIZE category are divided into three approximately equal subgroups (low, medium, and high) on the basis of their institutional ownership, INST. The average dividend yield, YIELD, of the firms in each SIZE-INST subgroup is then calculated for each year in the 1989–1996 period.

The results are shown in panel A of Table 2. Consistent with Blume (1976) and Reilly (1975), institutional ownership is observed to be higher, on average, for larger firms. In each year, for the medium and large size groups, firms with the lowest (highest) institutional ownership are generally associated with the highest (lowest) dividend yields. The negative relation between institutional

Table 2
Mean dividend yield for size-institutional ownership and size-individual ownership groups of all dividend-paying firms

Year	SMALL SIZE (\$50.55 million) ^a				MEDIUM SIZE (\$338.47 million) ^a				LARGE SIZE (\$5408.03 million) ^a			
	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INST yields	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INST yields	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INST yields
	LOW INST (4.03%) ^b	MEDIUM INST (16.30%) ^b	HIGH INST (38.33%) ^b		LOW INST (15.86%) ^b	MEDIUM INST (38.07%) ^b	HIGH INST (62.30%) ^b		LOW INST (30.73%) ^b	MEDIUM INST (54.65%) ^b	HIGH INST (71.77%) ^b	
Panel A: mean dividend yield for size-institutional ownership subgroups of all dividend-paying firms												
1996	2.76	3.06	2.33	-2.05**	2.67	2.18	1.75	-6.08 ***	2.98	2.12	1.67	-8.08 ***
1995	2.43	2.85	2.22	-1.32	2.79	2.19	1.94	-4.97 ***	3.31	2.23	1.89	-8.74 ***
1994	2.51	2.89	2.29	-1.41	3.42	2.39	2.17	-6.21 ***	3.96	2.77	2.21	-8.65 ***
1993	2.53	2.73	2.24	-1.81*	2.85	2.13	2.04	-4.77 ***	3.66	2.44	2.03	-9.02 ***
1992	3.47	3.00	2.47	-4.34***	3.17	2.55	2.14	-5.53 ***	3.71	2.52	2.31	-7.57 ***
1991	3.82	3.69	3.26	-2.49**	3.83	2.59	2.60	-5.88 ***	3.74	2.85	2.53	-6.00 ***
1990	4.44	5.35	4.37	-0.20	4.98	4.14	3.58	-4.37 ***	4.45	3.67	3.30	-4.34 ***
1989	3.36	3.82	3.16	-0.81	3.72	2.85	2.63	-5.12 ***	3.83	2.94	2.93	-3.74 ***
Average	3.17	3.42	2.79		3.43	2.63	2.36		3.70	2.69	2.36	
Year	SMALL SIZE				MEDIUM SIZE				LARGE SIZE			
	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INDIV yields	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INDIV yields	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INDIV yields
	LOW INDIV (35.94%) ^c	MEDIUM INDIV (65.80%) ^c	HIGH INDIV (84.62%) ^c		LOW INDIV (21.95%) ^c	MEDIUM INDIV (46.03%) ^c	HIGH INDIV (74.18%) ^c		LOW INDIV (20.98%) ^c	MEDIUM INDIV (37.83%) ^c	HIGH INDIV (61.79%) ^c	
Panel B: mean dividend yield for size-individual ownership subgroups of all dividend-paying firms												
1996	2.41	2.82	3.00	2.82***	1.60	2.23	3.00	8.67***	1.59	2.11	3.22	10.05***
1995	2.33	2.51	2.64	1.81*	1.63	2.33	3.12	8.82***	1.70	2.38	3.49	10.68 ***
1994	2.33	2.67	2.88	3.01***	1.99	2.33	3.72	8.76***	2.22	2.70	4.17	9.41***
1993	2.27	2.54	2.77	2.94***	1.82	2.26	3.10	7.49***	2.09	2.32	3.85	9.35***
1992	2.77	2.96	3.29	2.15**	2.27	2.27	3.42	5.76***	2.20	2.46	3.96	9.44***
1991	2.82	3.56	4.32	6.06***	2.38	2.51	4.23	9.11***	2.37	2.86	4.01	8.28***
1990	3.71	5.13	5.39	4.81***	3.21	3.99	5.73	8.00***	2.90	3.72	4.92	7.60***
1989	2.84	3.52	4.01	4.28***	2.55	2.89	3.79	5.95***	2.82	2.92	3.93	4.56***
Average	2.69	3.22	3.54		2.18	2.60	3.76		2.24	2.68	3.94	

Mean dividend yield of dividend-paying NYSE, AMEX, NASDAQ National Market, and Over-the-Counter firms for subgroups formed on the basis of firm size and institutional (panel A) or individual (panel B) ownership for each year in the 1989–1996 period. The dividend-paying firms are first grouped into three approximately equally sized categories (small, medium, and large) on the basis of their size, and then firms within each size category are further divided into three approximately equally sized subgroups (low, medium, and high) on the basis of their institutional/individual ownership. A firm's size (SIZE) is calculated as the market value of its common equity at the end of the year (*source*: CRSP). The dividend yield (YIELD) of a firm is calculated as 100 times the ratio of the gross annual cash dividends per share (in \$) during the year and the share price (in \$) at the end of the year (*source*: Compustat). INST and INDIV are the ownership (in %) of institutions and individuals in a firm, respectively (*source*: CDA Spectrum). The number of observations in each year ranges from 1648 to 1877 (panel A) and 1576 to 1791 (panel B). *, **, and *** denote 10, 5, and 1% level of significance, respectively.

^a Avg. SIZE.

^b Avg. INST (year).

^c Avg. INDIV (year).

ownership of a firm and its dividend yield is slightly less pronounced for small firms. Once again, the evidence is inconsistent with the tax-based dividend clientele hypothesis.

For comparison purposes, the above analysis is repeated by dividing firms within each size category into three approximately equal subgroups (low, medium, and high) on the basis of their individual ownership, INDIV (see panel B of Table 2). As expected, the results for individuals are generally the opposite of those found for institutions. Across all size groups, firms with the lowest (highest) individual ownership are associated with the lowest (highest) dividend yields. For each year, and within each size group, the difference in average yields associated with the lowest INDIV subgroup and the highest INDIV subgroup is statistically significant. These results suggest that individuals prefer high dividend yields to low dividend yields.

In Table 3, I replicate the approach used in Table 2 for the sample of all (dividend paying as well as non-paying) firms. Table 3 lists the mean dividend yield of firms for subgroups formed on the basis of their size and institutional ownership (see panel A), and their size and individual ownership (see panel B). A majority of firms in the small and medium size groups do not pay dividends so the median dividend yield, which is not shown, is zero for the corresponding subgroups. Among large and medium sized firms, the mean dividend yields indicate that firms with the lowest (highest) institutional ownership are generally associated with the highest (lowest) dividend yields. Among small firms, this pattern is reversed. Overall, the results for the sample of all firms are slightly weaker relative to the results for the sample of dividend-paying firms only (shown in Table 2). This is not surprising, as non-tax factors may have induced some institutional investors to invest in dividend-paying stocks. For example, fiduciary and prudence considerations may partially explain why institutional investors prefer to invest in small firms that pay high dividends as opposed to small firms that pay low (or no) dividends.

The results in Table 3, panel B are similar to those in Table 2, panel B, and show that individual investors have a strong preference for high dividend yields relative to low dividend yields. Once again, these results are generally inconsistent with the tax-based dividend clientele hypothesis.

Table 4 documents the preferences of institutional and individual investors for dividend-paying and non-paying firms. In each year, firms are sorted into three size groups and then firms within each size group are sorted on the basis of whether or not they pay dividends. For each year, the table reports the percentage of dividend-paying and non-paying firms and the corresponding mean institutional and individual ownership in these firms.

The results show that among large and medium sized firms the percentage of firms that pay dividends has steadily decreased over the 1989–1996 period. Also, dividend payment is most prevalent among large firms and least prevalent among small firms.⁴ Among large and medium sized firms, and especially in the more recent period, institutional ownership is generally higher in non-paying firms than in dividend-paying firms. The results are reversed for the sample of small sized firms. On the other hand, individual ownership is significantly higher in dividend-paying firms relative to non-paying firms, across all size groups, and in all years. Although the results for individuals are generally expected to be the opposite of the results for institutions, there are some exceptions. For example, for the subsample of small firms, which are typically associated with high insider ownership, we observe that both institutional and individual investors generally prefer dividend-paying firms over non-dividend-paying firms. This result also highlights

⁴ These results are broadly consistent with the results in Fama and French (2001), which reports that the proportion of industrial firms that pay cash dividends has dropped considerably over the 1978–1999 period, and also with the results in DeAngelo, DeAngelo, and Skinner (2004), which documents dividends and earnings concentration in a small number of (large) industrial firms.

Table 3

Mean dividend yield for size-institutional ownership and size-individual ownership subgroups of all dividend-paying and non-paying firms

Year	SMALL SIZE (\$17.82 million) ^a				MEDIUM SIZE (\$11.60 million) ^a				LARGE SIZE (\$2841.23 million) ^a			
	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INST yields	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INST yields	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INST yields
	LOW INST (1.03%) ^b	MEDIUM INST (7.56%) ^b	HIGH INST (24.95%) ^b		LOW INST (10.33%) ^b	MEDIUM INST (27.53%) ^b	HIGH INST (51.57%) ^b		LOW INST (25.44%) ^b	MEDIUM INST (51.21%) ^b	HIGH INST (71.74%) ^b	
Panel A: mean dividend yield for size-institutional ownership subgroups of all firms												
1996	0.58	0.83	0.55	−0.35	1.14	0.80	0.63	−5.38***	1.93	1.30	0.90	−9.55***
1995	0.47	0.67	0.62	1.77*	1.14	0.86	0.79	−3.50***	2.07	1.52	1.10	−8.36***
1994	0.39	0.60	0.64	2.87***	1.37	0.95	0.76	−5.32***	2.61	1.85	1.28	−9.63***
1993	0.38	0.52	0.68	3.54***	1.22	0.96	0.80	−3.95***	2.35	1.80	1.39	−7.33***
1992	0.39	0.76	0.87	4.73***	1.41	1.03	0.95	−3.57***	2.73	1.86	1.55	−8.30***
1991	0.64	0.66	1.05	3.03***	1.75	1.44	1.27	−3.05***	2.76	2.16	1.82	−6.07***
1990	0.47	0.74	1.43	5.05***	1.96	2.30	1.99	0.15	3.64	3.17	2.45	−5.71***
1989	0.29	0.58	0.86	4.80***	1.63	1.65	1.28	−2.21**	2.84	2.48	2.33	−2.98***
Average	0.45	0.67	0.84		1.45	1.25	1.06		2.62	2.02	1.60	
Year	SMALL SIZE				MEDIUM SIZE				LARGE SIZE			
	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INDIV yields	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INDIV yields	Average yield (in %)			<i>t</i> -Test for difference in HIGH and LOW INDIV yields
	LOW INDIV (35.04%) ^c	MEDIUM INDIV (65.00%) ^c	HIGH INDIV (86.11%) ^c		LOW INDIV (24.05%) ^c	MEDIUM INDIV (50.19%) ^c	HIGH INDIV (75.90%) ^c		LOW INDIV (17.67%) ^c	MEDIUM INDIV (36.64%) ^c	HIGH INDIV (63.44%) ^c	
Panel B: mean dividend yield for size-individual ownership subgroups of all firms												
1996	0.34	0.64	1.04	5.82***	0.40	0.83	1.41	9.56***	0.67	1.35	2.40	15.88***
1995	0.31	0.56	0.89	6.77***	0.52	0.87	1.46	9.67***	0.78	1.54	2.53	15.14***
1994	0.35	0.66	0.64	3.50***	0.65	0.85	1.64	8.11***	1.01	1.86	3.13	15.10***
1993	0.40	0.55	0.65	2.80***	0.66	0.85	1.52	7.42***	1.18	1.73	2.81	12.33***
1992	0.60	0.71	0.74	1.01	0.75	1.08	1.61	6.83***	1.31	1.87	3.07	12.44***
1991	0.41	0.80	1.18	5.54***	0.96	1.28	2.40	8.92***	1.50	2.18	3.23	11.17***
1990	0.45	0.83	1.41	5.17***	1.22	1.99	3.18	8.82***	2.02	2.97	4.45	11.12***
1989	0.45	0.58	0.75	2.34**	0.97	1.38	2.25	6.95***	2.06	2.39	3.21	6.72***
Average	0.42	0.66	0.91		0.77	1.14	1.93		1.32	1.99	3.10	

Mean dividend yield of all qualifying NYSE, AMEX, NASDAQ National Market, and Over-the-Counter firms for subgroups formed on the basis of firm size and institutional (panel A) or individual (panel B) ownership for each year in the 1989–1996 period. The firms are first grouped into three approximately equally sized categories (small, medium, and large) on the basis of their size, and then firms within each size category are further divided into three approximately equally sized subgroups (low, medium, and high) on the basis of their institutional/individual ownership. A firm's size (SIZE) is calculated as the market value of its common equity at the end of the year (*source*: CRSP). The dividend yield (YIELD) of a firm is calculated as 100 times the ratio of the gross annual cash dividends per share (in \$) during the year and the share price (in \$) at the end of the year (*source*: Compustat). INST and INDIV are the ownership (in %) of institutions and individuals in a firm, respectively (*source*: CDA Spectrum). The number of observations in each year ranges from 3452 to 4654 (panel A) and 3287 to 4296 (panel B). *, **, and *** denote 10, 5, and 1% level of significance, respectively.

^a Avg. SIZE.

^b Avg. INST (year).

^c Avg. INDIV (year).

Table 4
 Percentage of dividend-paying/non-paying firms, and mean institutional and individual ownership in dividend-paying/non-paying firms within each size group

Year		SMALL SIZE			MEDIUM SIZE			LARGE SIZE		
		Dividend-paying firms	Non-dividend-paying firms	t-Test for difference in mean ownership	Dividend-paying firms	Non-dividend-paying firms	t-Test for difference in mean ownership	Dividend-paying firms	Non-dividend-paying firms	t-Test for difference in mean ownership
1996	Dividend-paying/non-paying firms (in %)	22.82	77.18		36.02	63.98		62.02	37.98	
	Mean institutional ownership (in %)	13.90	14.32	−0.49	30.77	36.28	−4.99***	51.43	56.82	−4.22***
	Mean individual ownership (in %)	68.22	56.59	9.23***	54.71	42.99	9.31***	41.31	28.68	11.10***
1995	Dividend-paying/non-paying firms (in %)	22.22	77.78			39.40	60.60	65.51	34.49	
	Mean institutional ownership (in %)	13.26	13.64	−0.47	30.21	34.58	−4.06***	50.32	53.03	−2.22**
	Mean individual ownership (in %)	66.76	56.17	7.93***	53.60	41.80	9.43***	40.07	29.76	9.20***
1994	Dividend-paying/non-paying firms (in %)	20.36	79.64		39.57	60.43		67.47	32.53	
	Mean institutional ownership (in %)	13.01	13.32	−0.37	29.90	33.85	−3.81***	50.53	56.14	−4.63***
	Mean individual ownership (in %)	64.88	58.77	4.39***	53.21	43.97	7.26***	40.35	29.35	9.09***
1993	Dividend-paying/non-paying firms (in %)	20.20	79.80		41.10	58.90		72.40	27.60	
	Mean institutional ownership (in %)	13.92	12.21	1.96*	30.29	31.97	−1.59	50.08	52.81	−2.04**
	Mean individual ownership (in %)	65.14	59.89	3.38***	53.32	45.33	6.13***	39.79	31.32	6.50***
1992	Dividend-paying/non-paying firms (in %)	21.02	78.98		41.30	58.70		74.47	25.53	
	Mean institutional ownership (in %)	14.38	10.38	4.68***	29.84	30.71	−0.83	48.30	52.44	−3.02***
	Mean individual ownership (in %)	63.91	61.37	1.65*	53.52	46.96	4.98***	41.36	29.88	8.81***

Table 4 (Continued)

Year		SMALL SIZE			MEDIUM SIZE			LARGE SIZE		
		Dividend-paying firms	Non-dividend-paying firms	<i>t</i> -Test for difference in mean ownership	Dividend-paying firms	Non-dividend-paying firms	<i>t</i> -Test for difference in mean ownership	Dividend-paying firms	Non-dividend-paying firms	<i>t</i> -Test for difference in mean ownership
1991	Dividend-paying/non-paying firms (in %)	19.88	80.12		45.30	54.70		75.48	24.52	
	Mean institutional ownership (in %)	10.90	8.10	3.71***	27.99	28.07	−0.08	47.97	48.99	−0.70
	Mean individual ownership (in %)	70.14	61.51	5.64***	53.02	45.43	5.54***	41.69	32.99	6.37***
1990	Dividend-paying/non-paying firms (in %)	17.29	82.71		46.83	53.17		78.20	21.80	
	Mean institutional ownership (in %)	10.18	7.36	3.76***	24.78	23.90	0.92	45.55	46.76	−0.88
	Mean individual ownership (in %)	70.61	62.48	4.96***	58.24	49.83	6.49***	44.35	35.30	6.25***
1989	Dividend-paying/non-paying firms (in %)	16.07	83.93		46.57	53.43		80.61	19.39	
	Mean institutional ownership (in %)	10.77	7.58	3.74***	25.16	25.01	0.15	44.56	43.80	0.50
	Mean individual ownership (in %)	72.24	67.89	2.24**	61.77	54.39	5.37***	46.27	42.48	2.21**

Percentage of dividend-paying/non-paying firms, and mean institutional and individual ownership in dividend-paying/non-paying firms within each SIZE group for all NYSE, AMEX, NASDAQ National Market, and Over-the-Counter firms, for each year in the 1989–1996 period. The firms are grouped into three approximately equally sized categories (small, medium, and large) on the basis of their size and then firms within each size group are classified as dividend paying or non-paying. A firm's size (SIZE) is calculated as the market value of its common equity at the end of the year (*source*: CRSP). Firms are characterized as dividend paying if the dividend yield (YIELD) is greater than 0%. YIELD is calculated as 100 times the ratio of the gross annual cash dividends per share (in \$) during the year and the share price (in \$) at the end of the year (*source*: Compustat). INST and INDIV are the ownership (in %) of institutions and individuals in a firm, respectively (*source*: CDA Spectrum). The number of firms in each year ranges from 3452 to 4654. *, **, and *** denote 10, 5, and 1% level of significance, respectively.

the importance of separately examining the preferences of individual investors for dividend-paying firms. Overall, these results indicate that, contrary to conventional wisdom, relatively higher taxed individual investors are the marginal investors in dividend-paying firms.

3.2. Regression analyses of investor preferences for dividends and share repurchases

In this section, I use regressions to examine the relation between investor holdings (either institutional or individual) and measures of payout policy (dividend yield, a dummy for dividend-paying firms, and repurchase yield). The regressions control for the effect of firm size. Because SIZE is a highly skewed variable, the log of SIZE, LSIZE is used as an explanatory variable. The regressions also include other important firm characteristics such as the firm's leverage (LEV), total security risk (STD), industry, and Standard and Poors quality ranking.⁵

Following Demsetz and Lehn (1985), a logistic transformation is applied to all percentage ownership dependent variables due to the possibility that regressions using a percentage ownership dependent variable could be misspecified because the dependent variable is bounded from below at zero and bounded from above at one. The logistic transformation, LX, of a dependent variable X (in %) is calculated as follows:

$$LX = \log \left[\frac{X}{100 - X} \right]$$

LX is now an unbounded variable. The logistic transformation cannot be used if the dependent variable is equal to 0 or 100%, so these observations are omitted for the regression analysis.⁶

LINST and LINDIV, the logistic transformations of INST and INDIV, respectively, are separately used as dependent variables in the regressions. However, for the sake of brevity, the discussion below focuses primarily on the regressions of LINST. The explanatory variable of chief interest is YIELD. Consistent with the tax-based dividend clientele hypothesis, a positive coefficient on YIELD is hypothesized because institutional investors are relatively less taxed than individual investors so they are expected to be attracted to firms associated with high dividend yields. Similarly, because of both tax and non-tax factors, one would expect a positive coefficient for DUMDIV, which is a dummy variable that is equal to 1 if YIELD is greater than zero (signifying a dividend-paying firm), and equal to 0 otherwise.

The coefficient on repurchase yield (RYIELD) in regressions of LINST can either be negative (if the tax effect dominates) or positive (if the Brennan & Thakor, 1990, adverse selection effect dominates). The evidence shown in the previous subsection (that relatively higher taxed individual investors have a preference for high dividend yields) is consistent with the view that the existence of agency costs and/or asymmetric information is of a sufficiently worrisome nature that individual investors willingly incur extra costs, in terms of higher taxes, by investing in (high) dividend-paying firms. If this is true, then individual investors should also prefer to invest in firms that tend

⁵ In unreported results, some other variables that have been hypothesized to impact institutional ownership were also considered. The results using these variables are not shown here as the main results of this study are unaffected by the inclusion of these variables. These variables include beta, trading volume, the market to book ratio, and the research and development expenditure of a company relative to its sales.

⁶ An examination of a random sample of such firms revealed potential problems with the CDA Spectrum data and indicated that some of the zero institutional ownership cases reflected coding errors. So it is probably appropriate to omit firms with no institutional holdings for this reason alone. To check for robustness, all regressions were rerun using the untransformed ownership variables. The results are very similar and are not reported here.

to distribute cash by way of share repurchases. After all, by repurchasing its shares, a firm may be able to reduce agency costs and/or asymmetric information as effectively as by paying dividends. Moreover, if the share repurchase is not prorated and is not undertaken too often, individual investors will not face any tax liability as they would with cash dividend payments, so individual investors should prefer share repurchases relative to cash dividends whereas institutional investors should prefer cash dividends to share repurchases. As such, we should expect a negative coefficient on repurchase yield (RYIELD) in regressions of LINST. On the other hand, Brennan and Thakor (1990) contends that share repurchases are likely to be associated with a redistribution of wealth between informed and uninformed shareholders as the non-proportional aspect of repurchases renders less well-informed shareholders vulnerable to expropriation by the better informed. So if a firm's share repurchase activity is part of an ongoing share repurchase program, as is generally the case, then individual investors may be disinclined to hold the firm's shares, especially if we view individual investors as being smaller and less well-informed relative to institutional investors. This suggests that we should expect a positive coefficient on repurchase yield (RYIELD) in regressions of LINST.

I also examine if institutional and individual investors' preferences for dividends are sensitive to the nature of the industry of the firm. A firm's industry is represented by dummy variables, DUMFINL, DUMNUNF, and DUMUTIL, which are equal to 1 if the firm is in the financial, non-utility non-financial or utility sector, respectively; and zero otherwise. Three interaction terms – YLDFINL, YLDNUNF, and YLDUTIL – are used as alternatives to YIELD. YLDFINL, YLDNUNF, and YLDUTIL take on the value of YIELD if a firm belongs to the financial sector, the non-utilities non-financial sector, and the utilities sector, respectively; otherwise they are equal to zero.

Finally, I analyze if institutional and individual investors' preferences for dividends are sensitive to the quality of the firm. Badrinath et al. (1989) shows that institutional investors are likely to own more shares of higher ranked firms, which the authors interpret as being consistent with the safety-net hypothesis. A firm's external quality ranking is represented by dummy variables, DUMHIGHR, DUMLOWR, and DUMNR, which are equal to 1 if the firm is classified by Standard and Poors as being high quality, low quality, or non-rated, respectively; and zero otherwise. Three interaction terms – YLDHIGHR, YLDLOWR, and YLDNR – are used as alternatives to YIELD. YLDHIGHR, YLDLOWR, and YLDNR take on the value of YIELD if a firm is high ranked, low ranked, and not rated, respectively; otherwise they are equal to zero.

Firms for which any of the necessary information is missing are omitted from the sample. In the case of regressions of LINST, a sample of 30,171 observations for all firms over the 1989–1996 period is obtained at the end of the data collection process. Of this sample, 13,668 observations (or 45.3% of the total) are for dividend-paying firms. In the case of regressions of LINDIV, the sample size is 29,626 firm-years for the sample of all firms and 13,328 firm-years (or 44.99% of the total) for the sample of dividend-paying firms.

Table 5 reports the intercorrelations of the important variables for the sample of all firms (panel A) and for the sample of dividend-paying firms (panel B). In both panels we observe that firm size (LSIZE) is highly positively correlated with institutional ownership (LINST). Also, as shown in panel A, DUMDIV and YIELD are very highly correlated with a correlation coefficient of 0.72.

As the data for each firm is available for as many as 8 years, I use panel data regressions. To account for both a firm effect and a time effect, each firm is treated as a cluster and time dummies are used for each year as recommended in Petersen (2005). The resultant Rogers clustered standard errors are robust to heteroscedasity and within cluster (firm) correlation. Ignoring firm and time subscripts, the regression analysis is conducted for the dependent variable LINST (and similarly

Table 5
Intercorrelations of important variables

	LINST	LINDIV	LEV	LSIZE	STD	YIELD	DUMDIV	RYIELD
Panel A: all firms ($N = 30,171$)								
LINST	1.000							
LINDIV	-0.572	1.000						
LEV	-0.047	0.065	1.000					
LSIZE	0.660	-0.367	-0.037	1.000				
STD	-0.212	0.072	0.045	-0.274	1.000			
YIELD	0.140	0.093	0.076	0.317	-0.240	1.000		
DUMDIV	0.274	-0.027	0.022	0.468	-0.303	0.719	1.000	
RYIELD	0.006	0.002	-0.003	-0.021	-0.024	0.006	0.034	1.000
	LINST	LINDIV	LEV	LSIZE	STD	YIELD	RYIELD	
Panel B: dividend-paying firms only ($N = 13,668$)								
LINST	1.000							
LINDIV	-0.666	1.000						
LEV	-0.098	0.117	1.000					
LSIZE	0.602	-0.365	-0.092	1.000				
STD	-0.067	-0.076	0.067	-0.239	1.000			
YIELD	-0.147	0.265	0.138	-0.042	-0.130	1.000		
RYIELD	-0.022	0.010	-0.008	-0.077	-0.003	-0.040	1.000	

This table reports the intercorrelations of important variables for the sample of all firms (panel A) and for the sample of only dividend-paying firms (panel B). The intercorrelations are calculated for each year in the 1989–1996 period and the average values are reported below. The variables include LINST, a logistic transformation of the firm's institutional ownership (INST); LINDIV, a logistic transformation of the firm's individual ownership (INDIV); LEV, the firm's leverage; LSIZE, the natural logarithm of the firm's SIZE; STD, the standard deviation of the firm's weekly returns during the first 250 trading days of the year; YIELD, the firm's dividend yield; DUMDIV, a dummy variable which is equal to 1 if YIELD is greater than zero, and equal to 0 otherwise; and RYIELD, which is the firm's repurchase yield.

for LINDIV) using combinations of the following explanatory variables:

$$\text{LINST} = f(\text{LEV}, \text{LSIZE}, \text{STD}, \text{YIELD}, \text{DUMDIV}, \text{DUMFINL}, \text{DUMNUNF}, \\ \text{YLDFINL}, \text{YLDNUNF}, \text{YLDUTIL}, \text{DUMHIGHR}, \text{DUMLOWR}, \\ \text{YLDHIGHR}, \text{YLDLOWR}, \text{YLDNR}, \text{RYIELD})$$

The results of the regressions of LINST are presented separately for the sample of dividend-paying firms (see Table 6) and for the sample of all firms (see Table 7). For comparison purposes, the results of regressions of LINDIV are shown in Table 8 for the sample of all firms.

In specifications (1) and (4) of Table 6, the slope coefficient of YIELD is negative and statistically significant at the 1% level indicating that institutional investors have a preference for low dividend yield stocks as opposed to high dividend yield stocks. Among industry groups, this effect seems to be strongest for utility firms as shown in the results for YLDUTIL. Similarly, the coefficients for YLDHIGHR, YLDLOWR, and YLDNR are all negative and statistically significant indicating that institutional investors prefer to invest in low dividend yield stocks in all quality categories—high ranked, low ranked, and non-rated. In specification (4), the coefficient of RYIELD is positive and statistically significant at the 5% level indicating that institutions prefer firms that engage in share repurchases. In unreported results I obtain generally opposite results to the ones above in panel regressions of individual ownership for the sample of dividend-paying

Table 6

Effect of dividends and repurchases on institutional ownership for sample of dividend-paying firms only

	(1)	(2)	(3)	(4)
Dependent variable is LINST				
INTERCEPT	-2.571 -(37.04)***	-2.625 -(26.66)***	-2.619 -(37.09)***	-2.584 -(37.05)***
LEV	-0.105 -(3.01)***	-0.044 -(1.30)	-0.032 -(0.92)	-0.104 -(3.01)***
LSIZE	0.427 (37.06)***	0.418 (34.45)***	0.405 (32.89)***	0.428 (37.11)***
STD	0.007 (0.64)	-0.002 -(0.11)	0.000 (0.05)	0.006 (0.56)
YIELD	-0.032 -(9.52)***			-0.031 -(9.47)***
DUMFINL		-0.145 -(2.16)**		
DUMNUNF		0.181 (2.84)***		
YLDFINL		0.002 (0.38)		
YLDNUNF		-0.008 -(1.52)		
YLDUTIL		-0.039 -(4.15)***		
DUMHIGHR			0.222 (7.04)***	
DUMLOWR			0.279 (9.03)***	
YLDHIGHR			-0.050 -(10.29)***	
YLDLOWR			-0.020 -(4.21)***	
YLDNR			-0.028 -(4.99)***	
RYIELD				0.003 (2.37)**
R-square	0.36	0.42	0.40	0.36

Results of panel data regressions of LINST, a logistic transformation of the firm's institutional ownership (INST) on the following explanatory variables: LEV, the firm's leverage; LSIZE, the natural logarithm of the firm's SIZE; STD, the standard deviation of the firm's weekly returns during the first 250 trading days of the year; YIELD, the firm's dividend yield; DUMFINL and DUMNUNF, which are dummy variables that are equal to 1 if the firm is in the financial sector and the non-utilities non-financial sector, respectively; YLDFINL, YLDNUNF, and YLDUTIL, which are equal to YIELD if the firm is in the financial sector, the non-utilities non-financial sector, and the utilities sector, respectively, and are equal to zero otherwise; DUMHIGHR and DUMLOWR, which are dummy variables that are equal to 1 if the firm's S&P rank is high and low, respectively; YLDHIGHR, YLDLOWR, and YLDNR, which are equal to YIELD if the firm is high ranked, low ranked, and non-ranked, respectively, and are equal to zero otherwise; and RYIELD, which is the firm's repurchase yield. The data includes only dividend-paying sample firms for the 1989–1996 period and the number of observations is 13,668. To account for both a firm effect and a time effect, the panel regression is run after clustering by firm and by including time dummies for each year (the corresponding results are not reported below). The *t*-statistics shown in parentheses are based on clustered (Rogers) standard errors that account for heteroscedasticity and within cluster correlation. *, **, and *** denote 10, 5, and 1% level of significance, respectively.

firms. In particular, individual investors exhibit a strong preference for high dividend yield firms relative to low dividend yield firms for all years, and across all sectors and quality types.⁷ Overall, these findings are inconsistent with the tax-based dividend clientele hypothesis.

As expected, the coefficient of LSIZE is positive and highly statistically significant suggesting that institutional ownership is positively related to firm size. Firth (1995) suggests that there should be a positive relation between LINST and LEV because institutional investors hold diversified portfolios and can, therefore, tolerate higher debt ratios. However, if monitoring by debtholders and monitoring by institutions are viewed as substitutes, then LINST may be negatively related to LEV. The results show that the coefficient of LEV is negative in all four specifications (and

⁷ Cready (1994) uses transactions data to examine the determinants of investor demand for a common stock and makes inferences that are consistent with this study's results. Cready applies arbitrary ranges to classify transactions and attributes very large transactions to institutions, moderately large transactions to high-wealth individuals, and small transactions to less wealthy individuals. The results indicate that relative to individuals, institutions prefer the stocks of firms paying low dividend yields.

Table 7
Effect of dividends and repurchases on institutional ownership for sample of all firms

	(1)	(2)	(3)	(4)	(5)
Dependent variable is LINST					
INTERCEPT	-3.355 -(70.38)***	-3.359 -(67.73)***	-3.468 -(54.04)***	-3.439 -(69.59)***	-3.362 -(70.50)***
LEV	-0.034 -(1.45)	-0.049 -(2.10)**	0.026 (1.12)	-0.016 -(0.71)	-0.034 -(1.45)
LSIZE	0.571 (64.11)***	0.574 (59.97)***	0.570 (62.93)***	0.572 (60.91)***	0.571 (64.17)***
STD	-0.051 -(2.32)**	-0.050 -(2.29)**	-0.060 -(2.44)**	-0.052 -(2.51)**	-0.051 -(2.36)**
YIELD	-0.029 -(10.05)***				-0.029 -(10.10)***
DUMDIV		-0.091 -(6.57)***			
DUMFINL			-0.077 -(1.80)*		
DUMNUNF			0.138 (3.53)***		
YLDFINL			-0.003 -(0.57)		
YLDNUNF			0.004 (1.02)		
YLDUTIL			-0.048 -(7.02)***		
DUMHIGHR				0.094 (4.11)***	
DUMLOWR				0.185 (13.67)***	
YLDHIGHR				-0.052 -(9.82)***	
YLDLOWR				-0.012 -(2.66)***	
YLDNR				-0.022 -(5.02)***	
RYIELD					0.003 (4.07)***
R-square	0.43	0.43	0.45	0.45	0.43

Results of panel data regressions of LINST, a logistic transformation of the firm's institutional ownership (INST) on the following explanatory variables: LEV, the firm's leverage; LSIZE, the natural logarithm of the firm's SIZE; STD, the standard deviation of the firm's weekly returns during the first 250 trading days of the year; YIELD, the firm's dividend yield; DUMDIV, a dummy variable which is equal to 1 if YIELD is greater than zero, and equal to 0 otherwise; DUMFINL and DUMNUNF, which are dummy variables that are equal to 1 if the firm is in the financial sector and the non-utilities non-financial sector, respectively; YLDFINL, YLDNUNF, and YLDUTIL, which are equal to YIELD if the firm is in the financial sector, the non-utilities non-financial sector, and the utilities sector, respectively, and are equal to zero otherwise; DUMHIGHR and DUMLOWR, which are dummy variables that are equal to 1 if the firm's S&P rank is high and low, respectively; YLDHIGHR, YLDLOWR, and YLDNR, which are equal to YIELD if the firm is high ranked, low ranked, and non-ranked, respectively, and are equal to zero otherwise; and RYIELD, which is the firm's repurchase yield. The data includes all sample firms for the 1989–1996 period and the number of observations is 30,171. To account for both a firm effect and a time effect, the panel regression is run after clustering by firm and by including time dummies for each year (the corresponding results are not reported below). The *t*-statistics shown in parentheses are based on clustered (Rogers) standard errors that account for heteroscedasticity and within cluster correlation. *, **, and *** denote 10, 5, and 1% level of significance, respectively.

Table 8
Effect of dividends and repurchases on individual ownership for sample of all firms

	(1)	(2)	(3)	(4)	(5)
Dependent variable is LINDIV					
INTERCEPT	1.325 (33.23)***	1.354 (32.94)***	1.323 (23.43)***	1.355 (32.40)***	1.328 (33.30)***
LEV	0.110 (4.96)***	0.139 (6.29)***	0.045 (2.12)**	0.109 (4.81)***	0.110 (4.96)***
LSIZE	−0.278 −(37.23)***	−0.290 −(36.60)***	−0.274 −(36.12)***	−0.288 −(36.34)***	−0.279 −(37.26)***
STD	−0.002 −(0.13)	−0.003 −(0.23)	0.009 (0.57)	0.002 (0.11)	−0.002 −(0.12)
YIELD	0.062 (20.91)***				0.062 (20.94)***
DUMDIV		0.222 (17.79)***			
DUMFINL			0.225 (5.39)***		
DUMNUNF			−0.047 −(1.20)		
YLDFINL			0.030 (6.54)***		
YLDNUNF			0.023 (6.27)***		
YLDUTIL			0.097 (13.13)***		
DUMHIGHR				0.000 (0.02)	
DUMLOWR				0.048 (3.60)***	
YLDHIGHR				0.089 (17.71)***	
YLDLOWR				0.019 (4.31)***	
YLDNR				0.069 (13.46)***	
RYIELD					−0.002 −(1.64)*
R-square	0.17	0.15	0.20	0.18	0.17

Results of panel data regressions of LINDIV, a logistic transformation of the firm's individual ownership (INDIV) on the following explanatory variables: LEV, the firm's leverage; LSIZE, the natural logarithm of the firm's SIZE; STD, the standard deviation of the firm's weekly returns during the first 250 trading days of the year; YIELD, the firm's dividend yield; DUMDIV, a dummy variable which is equal to 1 if YIELD is greater than zero, and equal to 0 otherwise; DUMFINL and DUMNUNF, which are dummy variables that are equal to 1 if the firm is in the financial sector and the non-utilities non-financial sector, respectively; YLDFINL, YLDNUNF, and YLDUTIL, which are equal to YIELD if the firm is in the financial sector, the non-utilities non-financial sector, and the utilities sector, respectively, and are equal to zero otherwise; DUMHIGHR and DUMLOWR, which are dummy variables that are equal to 1 if the firm's S&P rank is high and low, respectively; YLDHIGHR, YLDLOWR, and YLDNR, which are equal to YIELD if the firm is high ranked, low ranked, and non-ranked, respectively, and are equal to zero otherwise; and RYIELD, which is the firm's repurchase yield. The data includes all sample firms for the 1989–1996 period and the number of observations is 29,626. To account for both a firm effect and a time effect, the panel regression is run after clustering by firm and by including time dummies for each year (the corresponding results are not reported below). The *t*-statistics shown in parentheses are based on clustered (Rogers) standard errors that account for heteroscedasticity and within cluster correlation. *, **, and *** denote 10, 5, and 1% level of significance, respectively.

statistically significant in two of the four cases). The coefficient of STD is not significantly different from zero in any specification. The *R*-square values for individual regressions range from 0.43 to 0.45, and suggest that the overall fit is of a reasonable degree for these specifications.

In [Table 7](#), the results of panel regressions of LINST are shown for the sample of all (dividend-paying and non-paying) firms as opposed to the sample of dividend-paying firms only as was done in [Table 6](#). Consistent with the previous results, the slope coefficient of YIELD is negative and statistically significant and the slope coefficient of RYIELD is positive and statistically significant indicating that institutional investors prefer low dividend yields and larger share repurchases. The other results in [Table 7](#) are mostly similar to those reported in [Table 6](#) for the sample of dividend-paying firms. However, now the coefficient of STD is negative and statistically significant in all specifications, which suggests that institutional investors are sensitive to a security's total risk. This is somewhat surprising as institutions are well-diversified. A possible explanation for this result is that the requirement to behave in a prudent manner may lead institutional investors to be concerned about the total risk of each individual security even though only the market risk of the security should be relevant for investment decisions. Similar considerations to be prudent may be less applicable if the firm already pays a dividend.

In regression specification (2) of [Table 7](#), I substitute DUMDIV for YIELD (as these variables are highly correlated with each other, both are not included simultaneously). The slope coefficient of DUMDIV is negative and statistically significant at the 1% level indicating that institutional investors tend to prefer non-dividend-paying firms to dividend-paying firms. This result is not only inconsistent with the tax-based dividend clientele hypothesis but it also suggests that fiduciary, legal, and other non-tax factors, that are typically believed to induce institutional investors to prefer dividend-paying firms, are relatively less important. This finding is inconsistent with the results in [Grinstein and Michaely \(2005\)](#), which reports that institutions prefer dividend-paying firms to non-paying firms during the corresponding period. However, that study uses a sample of industrial firms only, whereas this study uses a more complete sample of all firms including industrials, financials, and utilities. This is of critical importance because about 42.5% of dividend-paying firms belong to the financial and utility sectors (see [Table 1](#)). Also, [Grinstein and Michaely \(2005\)](#) classifies only those firms that pay quarterly dividends as dividend-paying firms. It is not entirely clear how it treats dividend-paying firms that pay monthly, semi-annual, and annual dividends but it seems that these firms may have been misclassified as non-paying firms. The difference in results between the two papers highlights the importance of using a more comprehensive sample that includes firms in all sectors (industrials, financials, and utilities) and with all dividend-paying frequencies (including annual, semi-annual, quarterly and monthly).

For purposes of comparison, the preference of individuals for (high) dividends and share repurchases is examined in [Table 8](#), which reports results for regressions of LINDIV for the sample of all firms. The slope coefficients of YIELD and similar variables (YLDFINL, YLDNUNF, YLDUTIL, YLDHR, YLDDL, and YLDNR) are positive and statistically significant at the 1% level in all regression specifications suggesting that individuals prefer high dividend yield firms to low dividend yield firms in all sectors and across all quality types. Similarly, as shown in regression specification (2), the slope coefficient of DUMDIV is positive and statistically significant at the 1% level suggesting that individuals prefer dividend-paying firms to non-paying firms. These results are contrary to the tax-based dividend clientele hypothesis and suggest that individual investors are the marginal investors in dividend-paying firms.

Finally, the coefficient on RYIELD is negative and marginally statistically significant in specification (5). This result is somewhat puzzling because individual investors are shown to prefer payouts in the form of cash dividends, despite the associated tax penalty. One explanation for this

result is that the possibility of expropriation by better informed institutional investors dampens the enthusiasm of individual investors for firms that engage in frequent share repurchases. An implication of these findings is that if institutions are indeed monitors as is widely assumed, and if firms actually value the monitoring role of institutions, then paying (high) dividends may not help. Instead, consistent with the prediction in Brennan and Thakor (1990), firms may consider repurchasing shares to attract institutional investment.

4. Additional results and robustness check

4.1. The preferences of insiders for dividends

In additional tests I examine the preferences of insiders for dividends (the detailed results are not reported here). I find that the insider ownership of a firm is negatively related to its dividend yield. Also, insider ownership is higher in non-paying firms relative to dividend-paying firms. These results are consistent with the finding of Perez-Gonzalez (2000) that tax preferences of large individual shareholders explain a considerable part of the decline in dividend payouts for firms since the late 1980s. The results are also consistent with the tax-based dividend clientele hypothesis as insiders are likely to be wealthy investors. However, the insider ownership in a firm could also be negatively related to its dividend yield because in an agency cost framework high insider ownership may serve as a substitute for dividends (see, e.g., Bathala, Bowlin, & Rao, 1995).

4.2. Taxable versus tax-exempt institutions' preferences for dividends

Although the CDA Spectrum dataset lists separately the shareholding of each institution in a firm, two regulatory features of 13(f) filings make it virtually impossible to distinguish between taxable and tax-exempt institutions.⁸ First, each institution is required to file only one 13(f) form, which contains information on the holdings of several funds/units aggregated and reported under the principal fund manager. Second, the institutional ownership data are available for only those institutions that have investment discretion over their portfolio.⁹ Nevertheless, I use 1996 data to examine the preferences of taxable and tax-exempt institutions separately to see if these entities have different preferences for dividends (the detailed results are not reported here).

As in Strickland (1997), I find that taxable institutions prefer low dividend yield stocks to high dividend yields stocks whereas there is no statistically significant relation between tax-exempt institutional ownership and dividend yield. So the tax-based dividend clientele hypothesis appears to be valid, at least in a limited sense. However, the hypothesis is rejected if one compares

⁸ The primary source used to classify institutions is *The Money Market Directory of Pension Funds and their Investment Advisors (MMD)*. Government, corporate pension, union, college endowment, and foundation funds that manage their own investment portfolios are classified as tax-exempt institutions. Taxable institutions include mutual funds, life insurance companies, banks and trusts, real estate advisors, and other miscellaneous investment advisors.

⁹ Many tax-exempt institutions hire investment managers to manage their holdings. So it is not uncommon for investment managers, who manage some taxable assets and can consequently be categorized as "taxable," to have investment discretion over substantial tax-exempt assets. Other tax-exempt assets under the investment discretion of "taxable" investment managers are the assets of various retirement plans such as 401(k), 403(b), and Keogh plans, and the assets of non-individual administered Investment Retirement Accounts (IRAs). Table 7 (page xxvi) of the 1996 edition of *MMD* reports that more than half of the aggregate holdings of institutions such as insurance companies, investment managers, and banks that are typically categorized as taxable were for tax-exempt accounts.

Table 9

Value-weighted average dividend and repurchase yield of stocks held by institutions, individuals, and insiders

Year	Value-weighted average ownership of all common stocks (%)			Value-weighted average dividend yield (%)			Value-weighted average repurchase yield (%)		
	INST	INDIV	INSIDER	INST	INDIV	INSIDER	INST	INDIV	INSIDER
1996	51.12	42.16	6.72	1.71	2.03	0.81	1.46	1.37	1.34
1995	52.57	40.15	7.28	1.94	2.31	1.09	1.57	1.39	1.06
1994	52.10	40.14	7.75	2.38	2.94	1.50	1.09	0.95	1.17
1993	51.21	40.43	8.36	2.30	2.78	1.39	0.65	0.59	0.68
1992	51.68	40.52	7.80	2.43	3.00	1.57	0.70	0.66	0.68
1991	51.12	41.47	7.41	2.53	2.99	1.79	0.76	0.66	0.83
1990	49.99	43.41	6.60	3.28	3.71	2.35	1.83	1.55	1.72
1989	48.04	43.37	8.60	2.99	3.16	2.64	1.43	1.28	1.53

Value-weighted average ownership of all qualifying NYSE, AMEX, NASDAQ National Market, and Over-the-Counter firms, and corresponding value-weighted average dividend yield and value-weighted average repurchase yield of the stocks held by institutions, individuals, and insiders for each year in the 1989–1996 period. The weighting is done on the basis of firm size, which is calculated as the market value of common equity at the end of the year (*source*: CRSP). The dividend yield of a firm is calculated as 100 times the ratio of the gross annual cash dividends per share (in \$) during the year and the share price (in \$) at the end of the year (*source*: Compustat); and the repurchase yield is calculated as the cumulative share repurchases by a firm during the year, where each share repurchase is calculated as 100 times the ratio of the shares repurchased to the shares outstanding prior to the repurchase (*source*: CRSP). INDIV, INSIDER, and INST are the ownership (in %) of individuals, insiders, and institutions in a firm, respectively (*source*: CDA Spectrum). The number of observations for which all data are available each year ranges from 3287 to 4296.

the preferences of tax-exempt institutions that are indifferent to high or low dividends, to the preferences of higher taxed individual investors who prefer high dividends.

4.3. Ownership and aggregate dividends and repurchases

Finally, in Table 9, I use an alternative approach to check for the robustness of the results on investor preferences for dividends and repurchases. For each year, I calculate the value-weighted dividend yields and repurchase yields of the firms owned by institutional and individual investors. For completeness I also report the results for insiders. The weighting is done on the basis of firm size, which is measured by year-end market capitalization.

Table 9 also reports the value-weighted average ownership (in %) of the three groups of investors. The ownership pattern is relatively stable over the 1989–1996 period. In each year, institutions own around 50% of all outstanding equity, individuals own a little over 40%, and insiders own the remainder. In each year, the value-weighted average dividend yield associated with firms owned by institutions is lower than that for firms owned by individuals. However, the value-weighted dividend yield is lowest for firms owned by high-taxed insiders. Finally, in each year, the value-weighted average repurchase yield associated with firms owned by institutions is higher than that for firms owned by individuals. These results are consistent with the results elsewhere in this paper and suggest that, relative to individual investors, institutional investors prefer firms that pay low or no dividends and that engage in larger share repurchases.

5. Conclusion

After controlling for other factors, this study shows that relatively lower-taxed institutional investors prefer low dividend yield stocks to high dividend yield stocks whereas higher-taxed

individual investors are found to prefer high dividend yield stocks to low dividend yield stocks. Additionally, individual investors prefer dividend-paying firms whereas institutional investors typically prefer non-paying firms. Finally, an examination of investor preferences for share repurchases reveals that, relative to individual investors, institutional investors generally prefer firms that engage in larger share repurchases.

These results are inconsistent with the tax-based dividend clientele hypothesis and are counter-intuitive because during the period studied individual investors generally faced a higher tax burden from dividend income as opposed to potentially deferrable and lower-taxed capital gains. The results are also inconsistent with the widely held belief that non-tax factors (such as fiduciary reasons or charter restrictions) induce institutions to invest in dividend-paying firms.

An important implication of the finding that higher taxed individual investors dominate dividend-paying stocks and high dividend yield stocks is that the personal tax rate on equity could be considerably higher than is typically assumed (see, e.g., Miller, 1977). This, in turn, has implications for future theoretical research that analyses the capital structure choice of firms. The results also have implications for research that analyses the effect of personal taxes on asset prices. For example, many papers have attempted to detect whether or not a dividend tax penalty is capitalized into the return on a firm's common stock but the issue is generally believed to be unresolved (see, e.g., Fama & French, 1998). The standard approach in the corresponding literature has been to use the dividend yield to capture both the level of tax-disadvantaged dividend income and whether the marginal investor is more likely to be a low-tax or a high-tax investor.¹⁰ The results of this study suggest that inferring the tax status of the marginal investor on the basis of a firm's dividend yield may be misleading. Finally, the results have important implications for corporate financial decisions, especially corporate payout policy. For example, if institutions are indeed monitors, and if firms actually value the monitoring role of institutions, then paying (high) dividends is unlikely to help firms attract institutional monitors, but an increase in share repurchases could attract institutions.

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References

- Allen, F., Bernardo, A., & Welch, I. (2000). A theory of dividends based on tax clienteles. *Journal of Finance*, 55, 2499–2536.

¹⁰ A notable exception is Dhaliwal, Li, and Trezevant (2003), which uses the level of institutional and corporate ownership to capture the identity of the marginal investor and finds that both a firm's dividend policy and its ownership structure impact the size of the dividend tax penalty.

- Badrinath, S. G., Gay, G. D., & Kale, J. R. (1989). Patterns of institutional investment, prudence, and the managerial safety-net hypothesis. *Journal of Risk and Insurance*, 56, 605–629.
- Badrinath, S. G., Kale, J. R., & Ryan, H. E., Jr. (1996). Characteristics of common stock holdings of insurance companies. *Journal of Risk and Insurance*, 63, 49–76.
- Bathala, C. T., Bowlin, O. D., & Rao, R. P. (1995). Debt structure, insider ownership, and dividend policy: A test of the substitutability hypothesis in an agency framework. *Research in Finance*, 13, 237–260.
- Bhattacharya, S. (1979). Imperfect information, dividend policy, and the 'Bird in the Hand' fallacy. *Bell Journal of Economics*, 10, 259–270.
- Blume, M. E. (1976). Two tiers—But how many decisions? *Journal of Portfolio Management*, 2, 5–12.
- Blume, M. E., Crockett, J., & Friend, I. (1974). Stock ownership in the United States: Characteristics and trends. *Survey of Current Business*, 54, 16–48.
- Brav, A., & Heaton, J. B. (1998). *Did ERISA's prudent man rule change the pricing of dividend omitting firms?* Working paper. The Fuqua School of Business, Duke University.
- Brennan, M. J., & Thakor, A. V. (1990). Shareholder preferences and dividend policy. *Journal of Finance*, 45, 993–1018.
- Cready, W. M. (1994). Determinants of relative investor demand for common stocks. *Journal of Accounting, Auditing and Finance*, 10, 487–509.
- DeAngelo, H., DeAngelo, L., & Skinner, D. J. (2004). Are dividends disappearing? Dividend concentration and the consolidation of earnings. *Journal of Financial Economics*, 72, 425–456.
- Del Guercio, D. (1996). The distorting effect of the prudent-man laws on institutional equity investments. *Journal of Financial Economics*, 40, 31–62.
- Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of Political Economy*, 93, 1155–1177.
- Dhaliwal, D., Erickson, M., & Trezevant, R. (1999). A test of the theory of tax clienteles for dividend policies. *National Tax Journal*, 52, 179–194.
- Dhaliwal, D., Li, O. Z., & Trezevant, R. (2003). Is a dividend tax penalty incorporated into the return on a firm's common stock? *Journal of Accounting and Economics*, 35, 155–178.
- Easterbrook, F. (1984). Two agency-cost explanations of dividends. *American Economic Review*, 74, 650–659.
- Elton, E. J., & Gruber, M. J. (1970). Marginal stockholder tax brackets and the clientele effect. *Review of Economics and Statistics*, 52, 68–74.
- Fama, E. F., & French, K. R. (1998). Taxes, financing decisions, and firm value. *Journal of Finance*, 53, 818–843.
- Fama, E. F., & French, K. R. (2001). Disappearing dividends: Changing firm characteristics or lower propensity to pay? *Journal of Financial Economics*, 60, 3–43.
- Feldstein, M., & Green, J. (1983). Why do companies pay dividends. *American Economic Review*, 73, 17–30.
- Firth, M. (1995). The impact of institutional stockholders and managerial interests on the capital structure of firms. *Managerial and Decision Economics*, 16, 167–175.
- Gompers, P. A., & Metrick, A. (2001). Institutional investors and equity prices. *Quarterly Journal of Economics*, 116, 229–259.
- Graham, J. R. (2003). Taxes and corporate finance: A review. *Review of Financial Studies*, 16, 1075–1129.
- Graham, J. R., & Kumar, A. (2006). Do dividend clienteles exist? Evidence on dividend preferences of retail investors. *Journal of Finance*, 61, 1305–1336.
- Grinstein, Y., & Michaely, R. (2005). Institutional holdings and payout policy. *Journal of Finance*, 60, 1389–1426.
- Jagannathan, M., Stephens, C. P., & Weisbach, M. S. (2000). Financial flexibility and the choice between dividends and stock repurchases. *Journal of Financial Economics*, 57, 355–384.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76, 323–329.
- Lewellen, W., Stanley, K. L., Lease, R. C., & Schlarbaum, G. G. (1978). Some direct evidence on the dividend clientele phenomenon. *Journal of Finance*, 33, 1385–1400.
- Miller, M. (1977). Debt and taxes. *Journal of Finance*, 32, 261–275.
- Miller, M. H., & Rock, K. (1985). Dividend policy under asymmetric information. *Journal of Finance*, 40, 1031–1051.
- Perez-Gonzalez, F. (2000). *Large shareholders and dividends: Evidence from U.S. Tax Reforms*. Working paper. Harvard University.
- Petersen, M.A. (2005). *Estimating standard errors in finance panel data sets: Comparing approaches*. Working paper. Northwestern University.
- Pettit, R. R. (1977). Taxes, transaction costs and the clientele effect of dividends. *Journal of Financial Economics*, 5, 419–436.
- Redding, L. S. (1997). Firm size and dividend payouts. *Journal of Financial Intermediation*, 6, 224–248.

- Reilly, F. (1975). A three-tier stock market and corporate financing. *Financial Management*, 4, 7–15.
- Shleifer, A., & Vishny, R. (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94, 461–488.
- Stephens, C. P., & Weisbach, M. S. (1998). Actual share reacquisitions in open-market repurchase programs. *Journal of Finance*, 53, 313–333.
- Strickland, D. (1997). *Determinants of institutional ownership: Implications for dividend clienteles*. Working paper. Ohio State University.