The Dividend Policies of Private Firms: Insights into Smoothing, Agency Costs, and Information Asymmetry

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Abstract

We compare the dividend policies of privately- and publicly-held firms in order to examine Lintner's (1956) model of dividends, as wells as more recent agency-based and information-based explanations of observed dividend behavior. Our findings suggest that both public and private firms exhibit a strong aversion to dividend cuts and omissions; however, public firms adhere to a consistent policy of small increases in dividends that result in a relatively smooth path of dividends that is largely insensitive to transitory earnings shocks. Private firms, on the other hand, immediately distribute a significantly larger fraction of transitory earnings shocks that leads to a relatively more erratic path of dividends. We also find that public firms distribute a larger fraction of earnings through dividends and that their dividend policies are more sensitive to investment opportunities and free cash flow relative to those of private firms, consistent with the importance of shareholder protection in mitigating agency conflicts.

Miller and Modigliani (1961) show that dividend policy is irrelevant for firm value when markets are "perfect" and investment is held constant. However, both empirical (e.g. Allen and Michaely (2003)) and survey evidence (Lintner (1956) and Brav et. al. (2005)) strongly suggest that dividend policy is anything but irrelevant to managers and markets. Rather, corporate dividend policies exhibit very clear tendencies. In particular, dividends are "smoothed," dividends are rarely decreased, and investors react positively to dividend increases and negatively to dividend decreases. While these stylized facts are well-established, the economic mechanism behind these facts - that is, how and why firms decide about a particular dividend policy - is not well understood.

The most popular explanations for these facts come from theories predicated on either information asymmetry or agency problems between managers and shareholders. Under asymmetric information, dividends are used as a signal to convey information about future profitability (e.g., Bhattacharya (1979), Miller and Rock (1985), John and Williams (1985), and Bernheim and Wantz (1995)). In contrast, agency theories suggest that dividends are a means to mitigate perquisite consumption, empire building, or other value-destroying activities (e.g., Jensen and Meckling (1976), Easterbrook (1984), Jensen (1986), La Porta et al. (2000)). While both sets of theories are consistent with the link between dividend changes and the subsequent stock price reaction, other implications for dividend policy emanating from these theories have received mixed empirical support from a number of studies examining the dividend behavior of publicly traded firms.[1]

In this paper, we depart from the strategy of previous empirical studies by comparing the dividend policies of publicly-held firms with those of privately-held firms in the United

[1] See Allen and Michaely (2003) for a survey of the relevant empirical evidence.

Kingdom (UK). This approach enables us to make three contributions to the literature examining corporate dividend policy. First, we examine whether Lintner's findings of dividend smoothing are related to whether firms are publicly traded. That is, we test whether capital markets play a role in the decision to smooth dividends. Second, we provide novel evidence on several hypotheses motivated by agency problems and information asymmetry by using a sample where variation in these frictions is extreme relative to previous studies that examine only publicly traded firms. Finally, we provide general insight into the dividend policy of private firms, which have largely been ignored despite their importance to the economy.[2]

We begin by examining ownership data in order to classify firms into three groups differing in the degree of ownership concentration: (1) privately-held firms in which ownership is concentrated among a very few, sometimes only one, shareholders, (2) privately-held firms in which there exists a significant number of minority shareholders, such as rank-and-file employees, and (3) publicly-held firms. These groups, as we argue in section II, form a wide spectrum with respect to the degree of information asymmetry and agency problems between managers and shareholders. The first group, "Private Concentrated," is at one end of the spectrum, experiencing little informational or agency problems between managers and shareholders, who have strong incentives to monitor managers, who are often related to managers (e.g., family firms), and who often hold positions on the board of directors. The second group, "Private Dispersed," are at the other end of the spectrum, suffering from extreme informational opacity and agency conflicts but with relatively little investor protection or recourse against managerial abuses. The third group, "Public," fall in between these two

[2] Over 95% of firms in the UK are privately owned and are responsible for more than half of the UK GDP. Similarly, the US Small Business Administration reports that in 1998 businesses with fewer than 500 employees accounted for more than half of US GDP.

extremes since information and agency problems due to a relatively dispersed ownership structure are partly mitigated by institutional and regulatory structures designed to improve the flow and quality of information while also enforcing investor rights.

While the exercise of comparing the dividend policies among these three groups is, in principle, straightforward, a significant challenge in conducting our tests is that firms do not randomly allocate themselves to private and public status. To address this sample selection issue, we conduct all of our analysis on two mutually exclusive samples. Our primary sample is constructed using a propensity score matching technique pioneered by Rosenbaum and Ruben (1983) and further refined by Heckman, Ichimura, and Todd (1997, 1998). Using this technique we match our three sets of firms on several dimensions (e.g., size, sales growth, profitability, etc.), which enables us to better isolate the potential cause of any differences in dividend policy. Our secondary sample consists of firms that undergo a transition from private to public status (or vice versa). For this sample, we compare the dividend policies before and after the transition, controlling for changes in other dividend-related aspects of the firm. However, data limitations prevent classification of transition firms as private entities into Private Concentrated and Private Dispersed. Thus, the transition sample acts more as robustness test for our hypotheses characterizing Private firms, as a whole. Nonetheless, the similarity of results across these two samples provides further reassurance that our results are robust to the sample selection concern.

Our first set of results reveals the following insights on dividend smoothing and Lintner's (1956) behavioral model of dividend policy. First, we confirm that Public firms are strongly averse to cutting and omitting dividends, which they do 18.3% and 5.4% of the time, respectively. Interestingly though, Private Dispersed firms exhibit a similar aversion to dividend cuts and omissions, doing so 21% and 5.4% of the time. Even Private Concentrated firms appear

relatively hesitant to cut dividends (20%), though they are almost twice as likely to omit dividends – 9% of the time. Thus, the aversion to dividend cuts and omissions does not appear to be unique to public firms.

With regard to dividend increases, the distinction between public and private firms is more dramatic. Private Concentrated and Private Dispersed firms increase dividends 25% and 41% of the time, compared to 51% of the time for Public firms. However, when public firms increase their dividends, they do so, on average, by 44%. Private Concentrated and Private Dispersed increase their dividends, on average, by 217% and 83%. Therefore, public firms follow a policy of consistent, but relatively small, increases in dividends over time, in contrast to private firms that appear to increase their dividends less frequently but by significantly larger amounts.

Our final examination of Lintner's smoothing hypothesis is to estimate the response by firms' dividend policies to transitory shocks in earnings. We do so by estimating the original partial adjustment specification used by Lintner, and subsequently by Fama and Babiak (1968) and Brav et al. (2005). The results are illustrated in Figure 2, which show the dynamic response of dividends to a temporary £1 earnings shock. Private Concentrated firms immediately distribute over £0.25 of the £1 shock. Relative to their target payout ratio (i.e., dividends paid divided by earnings) of 0.29, this corresponds to an almost one-for-one increase in dividends associated with a transitory earnings shock, which has little effect on dividends three years after the earnings shock. Private Dispersed firms, on the other hand, distribute less than £0.10 of the £1 earnings shock in the initial period. However, relative to their target payout ratio, 0.15, this distribution corresponds to an increase in dividends of approximately 66% associated with the transitory earnings shock, which has little effect on dividends after four years. Finally, we see

that public firms distribute just under £0.09 of the £1 earnings shock in the initial period. However, relative to their target payout ratio of 0.20, this distribution corresponds to an increase in dividends of only 45% associated with the transitory earnings shock, which now has a significant impact on dividend policy for over six years. Thus, Public firms' dividend policies are relatively insensitive to transitory earnings shocks that they smooth over long periods of time, in contrast to both sets of private firms.

Our second set of results provides support for the view that agency considerations play an important role in determining the level of dividends. We find that public firms distribute an average of 24% of their profits in dividends, compared to only 16% of profits distributed in dividends by Private Dispersed firms. This finding is consistent with the "outcome" agency hypothesis proposed by La Porta et al. (2000), which suggests that greater investor protection – through better governance structure, regulatory environments, and legal recourse - affords public shareholders a greater power over management to extract dividends. Further reinforcing this view, we find that high (low) growth Public firms pay lower (higher) dividends, on average, whereas Private Dispersed firms show little sensitivity of dividend payments to investment opportunities. Similarly, high (low) free cash-flow Public firms pay higher (lower) dividends, on average, whereas Private Dispersed firms show no sensitivity of dividend payments to free cash flow. Thus, with relatively more power conferred through greater investor protection, shareholders of Public firms are willing to accept lower dividend payments from firms with high investment opportunities or low cash flow because they know that they can extract future profits.

Our final set of results examining the signaling hypothesis (e.g., Bhattacharya (1979)) provides relatively weak support for this hypothesis. We do find evidence of signaling motives among Public firms, in that positive dividend changes subsequently forecast positive changes in

earnings using both a linear (Nissim and Ziv (2000)) and nonlinear (Grullon et al. (2002)) model of earnings changes. However, this predictability is found only at the one-year horizon and only for Public firms. We see no evidence that dividend changes predict future earnings changes among either group of Private firms. If signaling is a first-order determinant of dividend policy, it is somewhat surprising that we do not observe any evidence of signaling among Private Dispersed firms, where information asymmetry is greatest.

The remainder of the paper is organized as follows. Section I develops the hypotheses in the context of theoretical arguments and existing empirical evidence. Section II describes the data, our sample selection, and provides summary statistics. Section III presents the primary results of the paper, including the empirical tests of the hypotheses outlined in Section I. Section IV concludes.

I. Development of Hypotheses

A. The Ownership Structure of Private and Public Firms

The ownership structure of private firms can differ dramatically from that of public firms. While we discuss the data in detail below in section II, we outline the differences in ownership structure here to provide a context for the development of our hypotheses. In particular, based on the ownership structure, we classify private firms into two groups: Private Concentrated and Private Dispersed. (The precise construction of these groups in light of the ownership data is discussed in Appendix B.) These groups are not only differentiated by their ownership structure but also by the degree of information asymmetry between the firm's managers and outside

[3] For example, the US Small Business Administration reports that in 1998 businesses with fewer than 500 employees accounted for more than half of US GDP.

shareholders, as well as the potential for agency conflicts between these stakeholders. Thus, these two groups of Private firms, in conjunction with Public firms, form a spectrum of information asymmetry and agency problems that is illustrated in Figure 1.

Private Concentrated firms are defined as privately-held firms with few, often only one, shareholders. For example, Ryalux Carpets is a carpet and rug manufacturer that is a wholly owned subsidiary of Sirdar Floor Coverings. Additionally, several of Sirdar's board members are also directors of Ryalux. Similarly, Coleman Properties is a real estate management company wholly owned by Mr. J. G. Coleman, who also serves on the board of directors. While these are two extreme examples, this category includes, more broadly, family firms and firms run by institutional investors, such as private equity funds, and other corporations, such as suppliers and distributors. Examples of the former type include the A. Oppenheimer & Company owned by the Adler Family and Cooper Callas owned by the Cooper family. An example of the latter type of firm includes Poldrait Textiles which is owned in part by private equity groups, Noble Grossart Investments and Mount Holdings. Importantly, in each of these examples, the companies are entirely owned by either family members, in the former examples, or institutional investors, in the latter example. There are no other shareholders.

Among this first group of private firms, the distinction between management and shareholders is often blurred so that the shareholder is privileged to hard and soft public and private information (Petersen and Rajan (1994)). The controlling shareholder also often operates in the same or related industry and, thus, possesses expertise in the operations of the firm. Additionally, the shareholders of firms in this category are often experienced monitors (e.g., private equity funds and other financial institutions) or the friends and family of management. Thus, more than just a high degree of ownership concentration and power over management,

shareholders of this group of firms are unlikely to be adversely affected by the informational opacity (Berger and Udell (1998)) and lack of investor protection typically associated with privately held firms. The nature of the ownership structure of these firms significantly aids in mitigating adverse selection problems and conflicts of interest between managers and shareholders, as well as affording investors in these firms a fair amount of power or control over management.

The next group in the spectrum of information asymmetry and agency problems is Public firms. While the relatively highly dispersed ownership structure of public firms potentially exacerbates information and agency problems, a number of institutional and corporate governance mechanisms are in place to protect the interests of outside shareholders of public companies. For example, all exchanges impose strict disclosure requirements on listed firms, above and beyond the reporting requirements faced by all firms (public and private) under the Companies Act. Firms listed on the London Stock exchange are subject to arbitrary information and explanation requests by the Exchange to ensure firms are adhering to the Disclosure Standards. Firms are also required to inform the stock exchange of any announcement affecting the rights of existing shareholders, as well as to provide a timetable for all dividends and interest payments.[4] Boards of directors also "face increased accountability for key management decisions and actions and must ensure that they run the company in the interests of shareholders."[5] Additionally, exchanges have authority to sanction and discipline any company contravening the rules and standards set forth by the exchange.[6] Outside of institutional protection, the market for corporate control also affords shareholders of public firms the ability to potentially remove

[4] See section 3 of the London Stock Exchange Admission and Disclosure Standards, July 2005
[5] London Stock Exchange AIM brochure, Page 6.
[6] See the Rules for Issuers on the OFEX website and the Disciplinary and Appeals Handbook available from the London Stock Exchange.

inefficient management through proxy fights and takeover contests (See for example, Becht, Bolton, and Roell (2003)).

The final group of firms at the top of the spectrum is Private Dispersed firms. These firms are characterized by a significant group of minority shareholders, such as rank and file employees. For example, the INEOS Group is a chemical group that "strongly believe[s] in employee share ownership."[7] This group of private firms has an ownership structure more similar to public firms, in terms of dispersed ownership. However, as investors in a private firm, shareholders are not afforded the protection or information disclosure discussed above that is afforded to investors in public firms. As such, information asymmetry and agency problems are likely extreme, in a relative sense, for these firms where investors have relatively little information or recourse in the event of managerial abuse.

To summarize, we will be focusing on three groups of firms: Private Concentrated, Private Dispersed, and Public. While the discussion has focused on the distinction in information asymmetry, we briefly discuss the issue of taxes. Since our tests rely on a comparison across the three groups of firms, the relevant issue is whether there exists tax heterogeneity across these groups that can affect firms' dividend policies. In fact, the tax treatment of dividends or income is uniform across legal status and, therefore, while taxes may impact dividend policy in general, it is unlikely to influence dividend policy differentially across the groups. Thus, tax effects, though potentially important, will not be examined in this study.

We now turn to the development of our hypotheses.

[7] From the INEOS corporate website: http://www.ineos.com/abo_int.html

B. Dividend Smoothing

In his seminal paper, Lintner (1956) surveyed managers on their attitudes toward dividend policy and concluded that managers target a long-term payout ratio. He also found that dividends are sticky, tied to long-term sustainable earnings, paid by mature companies, and are smoothed from year to year. These findings have since been confirmed with more recent empirical evidence examining dividend data (Fama and Babiak (1968) and Brav et al. (2005)), as well as new survey evidence (Brav et al. (2005)).

Despite the robustness of these empirical findings, neither Lintner (1956) nor the literature that followed have been able to offer an explanation as to why firms are so reluctant to cut dividends or why they appear to smooth dividends. However, there are reasons to believe that this behavior is linked directly to whether or not a firm is publicly traded. First, empirical evidence suggests that management's reluctance to cut dividends is partly driven by investors' reactions to such announcements. For example, Michaely, Thaler and Womack (1995) find that the consequences for dividend omissions are severe: equity prices fall, on average, by 6.1%. Further, the reaction to increases and decreases is asymmetric: the abnormal returns associated with dividend increases and decreases are 1.34% and -3.71%, respectively (Grullon, Michaely, and Swaminathan (2002)). For private firms, the immediate change in value is less visible and, therefore, potentially less important for the decision making process. Second, Brav et al. (2005) report survey evidence consistent with the notion that managers of private firms find the consequences of dividend cuts and omissions to be less severe than their public counterparts, primarily because of differences in informational content. Brav et al. also report that private firms are less likely to pay dividends in lieu of investing and that they are more likely to pay dividends in response to temporary changes in earnings. Thus, while there is suggestive evidence

on the importance of public capital markets in shaping dividend policy, there has yet to be any direct evidence on its relevance.

Although, an alternative explanation for this behavior – a propensity (aversion) to smooth (cut) dividends – may be that it is related to asymmetric information and agency problems. For example, Private Concentrated firms have little incentive to distort investment policy by smoothing dividends because often any managerial expropriation simply comes at the expense of management itself. Additionally, expropriation is significantly more difficult and costly in the presence of a controlling shareholder(s) and persistent monitor(s). Or, perhaps dividends smoothing is a device to convey information about the potential variability of cash flows rather than about their levels (e.g., Benartzi et al, 1997). Thus, we should expect that Private Concentrated firms will be less reluctant to change their dividends relative to Private Dispersed firms and certainly relative to Public firms. Although, under this null hypothesis, one would also expect Public Firms to be more likely to change their dividends relative to Private Dispersed firms, who suffer the most from information and agency problems.

While this discussion leads to several potential null hypotheses, we cast the empirical analysis in terms of the following three hypotheses, discussing the alternative hypotheses in light of the results below.

Hypothesis 1a:

> Public firms are the least likely to omit or cut dividends, followed by Private Dispersed firms, and then Private Concentrated firms who are the most likely to omit or cut dividends.

Hypothesis 1b:

> Public firms are the least likely to initiate or increase dividends, followed by Private Dispersed firms, and then Private Concentrated firms who are the most likely to initiate or increase dividends.

Hypothesis 2:

> Public firms are the most likely to smooth dividends by exhibiting a low sensitivity to transitory earnings shocks, followed by Private Dispersed firms, and then Private Concentrated firms who exhibit the highest sensitivity to transitory earnings shocks.

B. Agency Problems

Berle and Means (1932), Jensen and Meckling (1976), and Shleifer and Vishny (1986) identify the importance of agency problems in analyzing the structure and value of corporations. One dimension of conflict in a corporate setting is the link between insiders (i.e., managers) and outside shareholders. Management has an incentive to divert resources from outside shareholders by investing in unprofitable projects (e.g., empire building), perquisite consumption, and even outright theft (see, e.g., Jensen (1986)). Because the relationship between insiders and outsiders and the attendant governance mechanisms vary so widely across our three groups of firms, the potential agency costs vary as well. Thus, we examine several implications of agency theory for dividend policy.

The first implication concerns the level of dividend payments. Grossman and Hart (1980), Easterbrook (1984), and Jensen (1986) suggest that dividends payments can, at least partially, solve the agency conflict between shareholders and managers first identified by Jensen and Meckling (1976). By minimizing the cash that management controls, dividends make it more difficult for management to expropriate shareholder wealth through unmonitored activities. However, there are three factors that can mitigate the expropriation problem. First, expropriation can only occur in so far as it is unobserved by shareholders. Therefore, monitoring by a large shareholder, for example, can mitigate this problem. Second, if management's and shareholders' incentives are closely aligned, as in the case of a family owned firm, the expropriation problem is

likely diminished. Finally, governance mechanisms and the regulatory environment can also mitigate management's incentives to divert resources by offering shareholders greater power in corporate decisions and recourse in the event of managerial misbehavior (La Porta et al. (2000)). Thus, while greater informational asymmetry and agency problems should lead to higher dividends, this prediction should only hold for those firms where shareholders have the power to induce management to disgorge cash through dividends. Hence, we have the following hypothesis:

Hypothesis 3:

> Public firms and Private Concentrated firms will pay higher dividends than Private Dispersed firms.

The intuition for this hypothesis follows immediately from the preceding discussion. Public firms commit ex-ante to not undertake value-destroying actions by eliminating excess cash through dividend payments. Managers choose to pay dividends because of the "power" afforded to shareholders (e.g., selling shares to hostile raiders and legal recourse). To be clear, shareholders do not have an explicit right to dividends per se but rather they have more general rights in terms of voting for directors and protesting wealth destroying activities. Private Dispersed firms, facing similar if not worse agency conflicts, pay relatively smaller dividends because shareholders do not have the same power afforded to their public counterparts. Thus, there are relatively weak governance mechanisms in place for inducing managers of these firms to pay dividends.

In Private Concentrated firms, there is relatively little wealth expropriation because of the alignment of incentives between managers and shareholders (e.g., family firms) or the monitoring role played by knowledgeable shareholders (e.g., institutional investors). Thus, the

level of dividends should be free from any monitoring costs internalized by the firm or expropriation by management, implying that these firms will pay relatively higher dividends than Private Dispersed firms. However, we are unable to distinguish between the level of dividends paid by Public firms relative to Private Concentrated firms. One the one hand the public firms have more enforcement mechanisms; but on the other hand, Private Concentrated firms have lower agency problems.

A refinement of Hypothesis 3 discussed by La Porta et al. (2000) suggests that the dividend behavior of high and low growth firms, i.e., firms with good and poor investment opportunities, should also differ by the degree of investor protection. Protected investors would be willing to accept lower dividends and correspondingly high reinvestment rates from a firm with good investment opportunities because they know they can extract the profits from this firm after the investment pays off. This is not the case with unprotected investors who are likely more interested in getting what they can. A similar argument can be made to suggest that empowered investors are better positioned to extract dividends from cash-rich firms. Thus, we have the following two hypotheses

Hypothesis 4:

> Private Concentrated firms' dividends should exhibit the greatest sensitivity to investment opportunities, followed by Public firms' dividends, and then Private Dispersed firms' dividends, which should exhibit relatively little sensitivity to investment opportunities.

Hypothesis 5:

> Private Concentrated firms' dividends should exhibit the greatest sensitivity to profits, followed by Public firms' dividends, and then Private Dispersed firms' dividends, which should exhibit relatively little sensitivity to profits opportunities.

Finally, it should be noted that an additional force that might cause private firms to pay less dividends than public firms is access to capital markets. Paying out cash is less costly for public firms relative to private firms since public firms have greater access to capital markets and, typically, face lower transaction costs associated with raising capital (e.g., Brav (2005b) and Leary (2005)). While this reason leads to a prediction similar to hypothesis 4 (lower dividends by private firms), it does not predict that low-growth (or low free-cash flow) private firms will pay lower dividend than low-growth public firms.

C. Signaling Theories

Dividend signaling models such as Bhattacharya (1979), Bernheim and Wantz (1995) and reputation arguments such as Gomes (2000) and La Porta et al. (2000) suggest an alternative explanation for observed dividend policies: Because private firms have a weaker governance structure maintaining one's reputation and conveying quality is even more important. One vehicle to gain (or maintain) reputation is by paying dividends. Following La Porta et al. (2000) we label this alternative as "the substitute model". Firms substitute between the external monitoring that is associated with being a public firm and the self-imposed monitoring of dividends. Then, relative to public firms, private firms have a greater incentive to pay dividends to distinguish themselves from their peers. Public firms, who are subject to the scrutiny of the capital markets, have less need to use dividends to signal their quality. Thus, we have an alternative to hypothesis 4: Private Concentrated firms pay the smallest dividends, followed by Public firms and then Private Dispersed firms who pay the largest dividends.

With respect to the interaction between growth and dividend policy, the substitute model suggests that high growth firms may have a stronger incentive to establish a reputation since they

have a greater potential need for external finance, all else equal. Of course, this relation is offset by the higher marginal benefit of internal funds experienced by firms with better investment opportunities and, thus, the association is ambiguous.

Another immediate implication of most signaling models is that high quality firms who signal will actually experience better performance (e.g., Benartzi, et al. 1997). Thus, we should see a monotonic increase in the predictive ability of dividend changes for future earnings changes as we move from Private Concentrated firms to Public firms to Private Dispersed firms, where signaling will be most important.

Hypothesis 6:

> Following dividend increases, operating performance should improve for Private Dispersed firms and Public firms but there should be little or no relation between dividend increases and operating performance for Private Concentrated firms.

II. Data and Sample Selection

A. Data

The primary data source used in this study is the FAME database, provided by Bureau Van Dijk. FAME contains accounting statements (e.g., balance sheet, income statement, etc.) for **all** private and public companies in the United Kingdom. Our extract from this database encompasses a ten-year period covering 1993-2002 and our general sample frame definition follows closely that found in Brav (2005a, 2005b). A number of different types of entities are contained in the FAME database. We focus on private limited and public quoted firms.[8] We exclude assurance companies, guarantees, limited liability partnerships, public investment trusts,

[8] Public quoted includes firms quoted on the London Stock Exchange, OFEX, and AIM.

and “other” types. We do so to ensure that our sample contains only limited liability companies to which the Companies Act applies. The Companies Act provides auditing and reporting requirements that we use below to select our sample.

While all companies are required to submit their financial statements, reporting requirements vary by firm size. In particular, under the 1981 Companies Act “small” and “medium” size firms are only required to file abridged statements. This leads to a large number of missing data values, especially for small firms that only need to file an abridged balance sheet and are not required to file a profit and loss statement. Additionally, financial statements are audited only if annual sales exceed £0.35 million before June of 2000 and £1 million thereafter. Thus, to minimize missing data and ensure the validity of the data, we impose several size-related criteria in drawing our sample.

First, we exclude firms that do not satisfy the auditing requirements. Second, we exclude all small firms, as defined by Companies House – an executive agency of the UK Department of Trade and Industry. A firm is classified as small if two of the three criteria are met: (1) annual sales less than £1.4 million, (2) book value of total assets less than £1.4 million, and (3) number of employees less than 50. Another motivation behind these selection criteria is that they help mitigate - not eliminate - the potential for sample selection bias in our comparisons of private and public companies. By excluding small firms, we are also effectively eliminating those firms for which it is not possible to go public since these firms are unlikely to meet the listing requirement for the London Stock Exchange (LSE): £0.7 million in assets. Finally, for consistency with previous studies and to avoid policies governed by regulation, we eliminate financial firms (US SIC codes between 6000 and 6999), utilities (US SIC codes between 4900

and 4939), agricultural firms (US SIC codes less than 1000), and public sector firms (US SIC codes greater than 8999).

Table 1 presents summary statistics for our sample, as well as a sample of nonfinancial, nonutility, public US firms during the period 1993 to 2003 drawn from the Compustat database (all dollar amounts are converted to real GBPs using the calendar year-end exchange rate and UK CPI). All variables in the Table (and throughout the paper) are formally defined in Appendix A.

Focusing on the UK firms from FAME in Panel A, we see that public firms are approximately ten times larger than private firms both in terms of averages and medians. Public firms also invest more, have relatively more tangible assets, are more likely to pay a dividend, distribute a relatively larger fraction of profits through dividends, and experience higher sales growth. Though public firms have similar profitability to private firms, they are less levered. A comparison of Public firms across countries shows that the median firm in both countries is similar in size, though the US has a significantly larger number of very small firms and relatively few very large firms. On average, US firms invest at a lower rate, are less levered and less profitable, and less likely to pay a dividend. Though, most of these findings are largely a consequence of the different size-growth composition of US firms relative to UK firms.

B. Sample Selection

An important consideration for our analysis is sample selection biases. As illustrated in Table 1, private and public firms differ across a number of dimensions that are likely correlated with firms' dividend policies. We take two approaches to addressing this concern. The first approach involves looking at a subsample of the data in which firms undergo a transition in

ownership status from private to public or vice versa. To do so, we gather data on initial public offerings (IPOs) and going-private transactions that occur during our sample period. This data comes from two sources: SDC Platinum from Thompson and Zephyr from Bureau Van Dijk. From SDC, we extract all IPOs on the LSE and going-private transactions occurring during our sample period. However, since SDCs coverage of the United Kingdom is incomplete, we compliment this with data from Zephyr, which starts coverage of the UK in 1997.[9] Additionally, we are able to identify a number of going private transitions not captured by SDC or Zephyr by searching for the existence of a shareholder registry for each private firm.

This data on IPOs and going-private transactions serves two purposes. First, it eliminates measurement error in our classification of public and private firms. The public or private status of a particular firm in the FAME database is a "static" variable, containing information only at the time of the extract. Thus, if a firm goes public (or private) at some point during the sample period, using only the FAME data would lead to an incorrect classification of the firm as being public or private for the entire sample period. Second, identifying what we will refer to as "Transition" firms directly addresses the sample selection issue by comparing the within firm behavior as both a private and public entity. A limitation of this sample, however, is that a lack of historical information on the ownership structure of most firms precludes us from categorizing these firms as private entities into the two groups discussed earlier.[10] As such, our comparisons for this sample of firms are limited to comparisons between public and private firms as a whole.

Panel B of Table 1 presents summary statistics for the subsample of Transition firms. As in Panel A, we see that, once public, Transition firms invest more and have lower leverage. As public entities, these firms are also more likely to pay a dividend. Transition firms are, on

[9] We thank Omer Brav for use of his data from SDC and Zephyr that identifies IPOs and buyouts during our sample horizon.
[10] The details of the ownership data and classification are presented in Appendix B.

average, also marginally smaller as private entities. Finally, as private firms, median sales growth is lower, though average sales growth is higher. In sum, most of the relations between public and private firms found in the full sample of firms hold for the subsample of Transition firms, though the differences are far smaller in magnitude.

We note, though, that while addressing one sample selection issue, the Transition firms raise another. Specifically, the decision to go public or private is unique and, thus, these firms may not represent the more general population of public and private firms.[11] As such, we take an alternative approach to addressing the sample selection concern that enables us to comment more on the differences in dividend policies between private and public firms, more generally.

The second approach to addressing sample selection concerns involves forming a matched sample of public and private firms using a propensity score matching algorithm developed by Rosenbaum and Rubin (1983, 1985) and extended by Heckman and Robb (1986) and Heckman, Ichimura, and Todd (1997, 1998). We prefer a matching technique instead of alternative approaches (multivariate regression) for several reasons. First, previous studies have confirmed that propensity score matching methods can allow for more accurate inferences in a treatment-control group setting, such as ours (e.g., Rubin (1997), Conniffe, Gash, and O'Connell (2000)). Second, the matching technique is less restrictive than regression based approaches because we need not assume a linear association between firm characteristics and our measures of dividend policy (e.g., dividend / operating profit). Third, our data are particularly well suited to using a matching method (Heckman, Ichimura, and Todd (1997)). The pool of controls, in this case private firms, is particularly large (over 130,000 firm-year observations), which increases the likelihood of overlap in the support of firm characteristics across the two groups of firms. That is, it is more likely that we will find "close" matches for the public firms among the private

[11] Teoh, Welch, and Wong (1998) also suggest that IPO firms are susceptible to earnings management.

firms. Additionally, both public and private firms operate in a similar environment: all firms are based in the United Kingdom and subject to the same reporting requirements for the data used in this study.[12]

Because we look at three groups of firms, we perform two separate matches. First, we match Public firm-year observations to Private Dispersed firm-year observations. Then we take the Public observations from this first match and match them to Private Concentrated firm-year observations. We perform the matching in this order because the pool of Private Dispersed firms is relatively more limited. We also exclude all Transition firms from the matching process.

The details of the matching procedure are as follows. We begin by estimating a logit regression of an indicator variable for the firm's ownership status on firm characteristics.[13] We focus on characteristics most likely to distinguish public and private firms: firm size, sales growth, profitability, and leverage. Other features, such as ownership structure and industry are addressed explicitly in the analysis below. While this list of factors is far from exhaustive, it represents a tradeoff in terms of model parsimony and an accurate specification. The logit results presented in the first column of Panel A in Table 2, "Pre-Match," suggest that they are all – but for sales growth - statistically and economically important factors in the distinction between Public and Private Dispersed firms. The results highlight that public firms are, on average, larger, less profitable, and less levered, consistent with the bivariate comparisons in Panel A of Table 1.

Using the estimated logit model, we compute predicted probabilities, or propensity scores, for every firm-year observation in the sample with non-missing values for the variables in the logit model. This subset encompasses 4,121 public firm-year observations and 3,754 Private

[12] Other studies in economics and finance using the matching approach used here include McMillen and McDonald (2002), Blundell et al. (2000), and Drucker and Puri (2005).

[13] In unreported results, we also use a probit and semi-parametric model. Neither of these modifications to the matching procedure had a significant effect on our results.

Dispersed firm-year observations. We then match each public firm-year observation to a unique private firm-year observation by minimizing the absolute difference in the observations' propensity scores. [14] We restrict attention to matches in which difference in propensity scores is less than one standard deviation or 0.23. This creates a matched sample of 3,252 Public and Private Dispersed firm-year observations. To ensure the success of the matching procedure, we re-estimate the original logit specification on the matched sample. The results are presented in the second column of Panel A and reveal no statistically significant associations between the covariates and the decisions to go public. Equally important, the magnitude of the estimated coefficients all experience significant declines from the pre-to post-match results.

Using the Public observations from this first match, we repeat the matching process with the Private Concentrated firms. Panel B in Table 2 reveals significant differences between Public and Private Concentrated firms across all four dimensions before matching. After matching, however, all differences between the Public and Private Concentrated observations are eliminated. Because of the relatively large pool of Private Concentrated observations, we repeat the matching exercise to obtain a second set of matched Private Concentrated observations. The motivation is to increase statistical power in our analysis below. The column denoted "Post-Match 2" in Panel B presents the results of the logit regression using the Public observations and both sets of matched Private Concentrated observations. As the results suggest, there are no significant differences between the two firm types.

Panel C presents summary statistics for each of the three matched samples and highlights the similarity of each individual characteristic across the three groups. Pairwise t-tests of each characteristic, not presented, reveal no significant differences.

[14] We thank Erik Bergstralh and Jon Kosanke for the use of their matching code. The original reference article is Bergstralh and Kosanke (1995)

One issue with our matching approach is that a number of Public firm-year observations are lost in the first match to Private Dispersed firms. To ensure that our results are not-sensitive to this concern, we perform all of our analysis below on the entire sample of Public firm-year observations. The results are similar and the corresponding conclusions are unchanged. Thus, these results are not presented but are available from the authors upon request

III. Results

A. Dividend Smoothing

We begin our examination of Lintner's smoothing hypotheses in Table 3, which provides a detailed analysis of public and private firms' policies towards changing dividends. The first hypothesis, 1a, contends that Public firms are the least likely to omit or cut dividends, followed by Private Dispersed firms, and then Private Concentrated firms who are the most likely to omit or cut dividends. Focusing on the Matched sample of firms in Panel A, the first row presents estimates of the propensity to omit a dividend, where a dividend omission is defined as a firm-year observation in which the firm pays a positive dividend in the *preceding* year but no dividend in the current year. The results show that Private Concentrated firms omit a dividend 8.8% of the time, while Private Dispersed and Public firms omit dividends 5.4% of the time. The last two columns present t-statistics for pairwise comparisons of the difference in mean values for the Private Dispersed (Private Concentrated) and Public firms. These tests show that Private Concentrated firms are significantly more likely to omit a dividend relative to Public firms but there is no difference between Private Dispersed and Public firms with respect to omissions. Panel A also shows that Public and both groups of Private firms exhibit similar tendencies to cut

dividends – approximately 20%. Though, when firms do cut dividends, Private Concentrated firms cut them by a significantly larger amount.

The remainder of Panel A examines hypothesis 1b, which contends that Public firms are the least likely to initiate or increase dividends, followed by Private Dispersed firms, and then Private Concentrated firms who are the most likely to initiate or increase dividends. This hierarchy holds true with respect to the propensity to initiate dividends, although the difference between Public and Private Dispersed is statistically insignificant. With regard to dividend increases, we see that the hierarchy reverses: Public firms are the most likely to increase, followed by Private Dispersed, and then Private Concentrated firms who are the least likely to increase their dividends. However, when Public firms increase their dividends, it is by a relatively small amount (44%) in comparison to Private Dispersed (83%) and Private Concentrated (216%). (Median differences reveal a similar pattern.)

Panel B presents results for our sample of Transition firms. As mentioned above, because of data limitations, we are unable to distinguish Private Concentrated firms from Private Dispersed firms and, therefore, present results for Private firms in general. The results suggest that when Private, firms are more likely to omit, decrease, and initiate a dividend than when they are Public. However, as Public entities, firms are more likely increase their dividend, although these increases are significantly smaller than increases as Private firms. Comparing these findings with those in Panel A suggest that, for our Transition sample, Private firms behave as if having a Concentrated ownership structure. Given the relative large proportion of firms in the population that have a Private Concentrated ownership structure, this finding is, perhaps, unsurprising.

In sum, the results of Table 2 lead to the following conclusions. Public firms do not appear anymore averse to omitting or cutting a dividend, relative to otherwise similar Private firms with a dispersed ownership structure. Rather, the scrutiny of public equity markets appears to induce managers to make relatively small, consistent increases in dividends. Dividend increases appear somewhat less frequent and significantly more erratic, in terms of the magnitude of the increase, for both sets of private firms.

Hypothesis 2 contends that Public firms are the most likely to smooth dividends by exhibiting a low sensitivity to transitory earnings shocks, followed by Private Dispersed firms, and then Private Concentrated firms. There is some indirect evidence consistent with this conjecture in Table 2: Public firms appear to follow a unique strategy of relatively numerous but small increases in their dividends. Table 3 presents direct evidence on this hypothesis by estimating a partial adjustment model of dividends similar to that initially inspired by Lintner (1956) and subsequently used by Fama and Babiak (1968) and Brav et al. (2005).

This formulation is:

$$\Delta Dividend_{it} = \alpha_i + \lambda_i\left(\beta_i Profit_{it} - Dividends_{it-1}\right) + \varepsilon_{it} \qquad (1)$$

where $\Delta Dividend_{it}$ is the change in dividend for firm *i* from period *t-1* to *t*, $Profit_{it}$ is the net profit (loss), and ε_{it} is a random error term. Intuitively, Lintner's model implies that firms have a target payout that is a fraction, β_i, of their profits. Any difference between last period's dividends and this target is reduced by a fraction, λ, each period. We refer to β as the target payout ratio or "TP" and λ as the speed of adjustment or "SOA." This latter parameter corresponds to the response of firms' dividend policies to transitory earnings shocks. Large values for the SOA suggest an erratic dividend policy characterized by large changes driven by transitory shocks. Conversely, small values for the SOA suggest a smooth, persistent dividend policy characterized by

insensitivity to transitory shocks to earnings and a desire to smooth the earnings shock over many periods.

Estimating this model poses several econometric challenges (Arrelano and Bond (1991) and Blundell and Bond (1998)). However, because of data limitations, particularly a very short time series of observations, more advanced econometric procedures appear to struggle. Unreported results using a system GMM approach (Blundell and Bond (1998)) leads to a rejection of the model and unrealistic parameter estimates. As such, we employ a more pragmatic and transparent approach by estimating the equation (1) separately for each firm and then presenting the distribution of resulting parameter estimates. Additionally, because time-series observations are at a premium for this analysis, we utilize the entire time series for each firm in the matched sample. Finally, to mitigate heteroskedasticity and confounding scale effects, we run weighted regressions using the inverse of total assets as the weight.[15]

Table 4 presents the coefficient estimates for each of the three groups of firms. We see a monotonic decline in the average and median speed of adjustment moving from Private Concentrated firms (0.88 and 0.96) to Private Dispersed firms (0.63 and 0.64) to Public firms (0.43 and 0.36). This estimates imply that the dividend policies of Private Concentrated firms exhibit a relatively large sensitivity to transitory earnings shocks, followed by Private Dispersed firms, and, finally, Public firms, who exhibit a relatively little sensitivity to such shocks.

These results are illustrated in Figure 2, which presents the estimated impulse response function for each set of firms implied by the parameter estimates in Table 4. Immediately after a £1 shock to Profits, Private Concentrated firms distribute over £0.25 of the additional earnings to shareholders through an increase in dividends. While this may seem like a relatively small

[15] Regression results using variables normalized by the total assets as of the start of the period are virtually identical to those presented.

fraction, Private Concentrated firms maintain a long-run payout ratio (i.e., dividends paid divided by earnings) of 0.29, which is indicated in the figure by the dashed line and corresponding label. Thus, the change in dividends accompanying the temporary increase in earnings corresponds to an almost one-for-one increase in dividends. Additionally, this shift in dividend policy has a very short run effect, essentially reverting back to the original level of dividends within three years after the shock.

Private Dispersed firms, on the other hand, distribute less than £0.10 of the £1 earnings shock in the initial period. However, relative to their target payout ratio, 0.15, this distribution corresponds to an increase in dividends of approximately 66%. Further, the impact of the earnings shock dissipates relatively quickly, disappearing within four years. Finally, Public firms distribute just under £0.09 of the £1 earnings shock in the initial period. While similar in absolute magnitude to the response of Private Dispersed firms, Public firms exhibit a target payout ratio that is approximately 33% higher. Thus, relative to their target payout ratio of 0.20, Public firms distribute only 45% of the earnings shock initially, preferring to smooth the shock over a longer period of time relative to both sets of private firms.

These results are broadly consistent with our earlier findings in Table 3 and hypothesis 2. We also note that these results are not an artifact of higher earnings volatility for private firms. In unreported results, we find that the ratio of profits to assets exhibits greater within firm variation for Public firms when compared to both sets of Private firms, consistent with the summary statistics presented in Table 1.Thus far, our evidence suggests that what clearly distinguishes Public from Private firms is a strong tendency by the former to frequently increase dividends through time by relatively small amounts. The aversion to omitting and cutting dividends appears to be shared by Private firms, at least when ownership concentration is relatively dispersed.

However, Public firms reveal relatively little sensitivity to temporary earnings shocks in comparison to all Private firms, regardless of their ownership structure. Thus, Linter's (1956) description of Public firms' tendency to smooth dividends appears to be quite accurate, though the aversion to negative changes does not appear to be driven solely by the repercussions experienced in the public capital markets.

B. Agency Concerns

We now turn our attention to the relevance of agency concerns for dividend policy by examining hypotheses 3 through 5. To avoid redundancy and ease the presentation of results, we focus our discussion on the analysis of the ratio of dividends to operating profits. This normalization leads to a natural interpretation of this measure as the payout ratio. However, in unreported results, we also replicate our analyses using measures of dividends normalized by total assets, which has no effect on our inferences. We begin with hypothesis 3, which states that Public firms and Private Concentrated firms will pay higher dividends than Private Dispersed firms. Panel A of Table 5 examines this hypothesis in the Matched sample of firms. Consistent with the hypothesis, Public and Private Concentrated firms both pay relatively higher dividends that Private Dispersed.

Panel B of Table 5 performs a similar comparison for the Transition sample, finding that Public firms tend to pay relatively higher dividends than when they were Public. However, a potential concern with this comparison is that, unlike the matched sample, the Public and Private comparison made here is not between homogeneous observations. Namely, as firms transition from Public to Private (or vice versa) other characteristics possibly related to dividend policy may also change. Thus, in Panel C, we estimate a firm-fixed effect regression containing the

controls that we use in the matching procedure to better isolate the marginal effect of being public. Again, we see that Public firms pay out a significantly higher share of profits in the form of dividends. However, the magnitude of the difference is much less that that found in Panel B. This is consistent with earlier evidence suggesting that the transition firms, as Private entities, behave most like Private firms with concentrated ownership.

Hypothesis 4 contends that Private Concentrated firms' dividends should exhibit the highest sensitivity to investment opportunities, followed by Public firms' dividends, and then Private Dispersed firms' dividends, which should exhibit relatively little sensitivity to investment opportunities. To test this hypothesis, we follow La Porta et al. (2000) by examining a regression of industry adjusted leverage on several control variables and a measure of investment opportunities, one-year future sales growth. We use a forward looking proxy for investment opportunities for several reasons. Lagged values of sales growth are more reflective of past profitability than future investment opportunities. Second, in so far as firms have unbiased one-year projections of product demand, our proxy seems reasonable. Finally, this measure is similar to that used in La Porta et al. (2000) and, therefore, enables a close comparison with their results. We industry adjust the dependent and independent variables by subtracting off industry specific means from each observation, where industry is defined by Fama and French 12 industries. To ensure the robustness of our results, we employ both an OLS and median regression approach. The results are presented in Table 6.

We begin in Panel A, which presents OLS estimates for the three groups of firms from the Matched sample. Focusing on the estimated coefficient on sales growth, we see that Private Concentrated firms exhibit the highest – in magnitude - sensitivity, followed by Public firms, and finally Private Dispersed firms, who show no economic or statistically significant association

between the level of dividends and investment opportunities. While the statistical significance of the coefficient for Private Concentrated firms is marginal, the relative magnitude adheres to the predictions of hypothesis 4. In other words, high growth Private Dispersed firms are no more (or less) likely to pay higher dividends then their low growth counterparts. In contrast, high growth Public firms are significantly more likely to pay lower dividends than an otherwise similar low growth firm. The results of the median regressions in Panel B reinforce the relative relation between Private Dispersed and Public firms. However, the relative magnitude and statistical significance of the relation between dividends and sales growth for the Private Concentrated firms declines in this analysis, questioning the robustness along this dimension.

This regression framework also enables us to examine hypothesis 5, which contends that Private Concentrated firms' dividends should exhibit the greatest sensitivity to profits, followed by Public firms' dividends, and then Private Dispersed firms' dividends, which should exhibit relatively little sensitivity to profits opportunities. In Table 6, we see that Private Concentrated firms' dividends are very sensitive to the level of profits. Public firms' dividends are somewhat less sensitive, though still statistically significant - at least in the median regression results. Finally, Private Dispersed firms exhibit no statistically significant association between dividends and profits in either the OLS or median regressions. Rather, what Private Dispersed firms' dividends do appear to be sensitive to is the level of debt in their capital structure. This is particularly interesting because it suggests that while some stakeholders have little power to force management to distribute earnings, others, such as creditors with potential control rights, have a significant amount of power to extract cash.

Panels C and D perform similar analysis on the Transition firms. We see that the dividends of Public firms are significantly negatively correlated with investment opportunities,

whereas there is no significant association for the Private firms. With respect to profits, dividends are more sensitive to profits when firms are Private entities relative to when they are Public entities. Again, these findings are broadly consistent with what we find among the Matched sample of firms.

In sum, our findings are largely consistent with the predictions of the outcome agency theory put forth by La Porta et al. (2000). In particular, agency problems and the importance of investor protection appear to be particularly relevant for dividend policy, much like the findings of La Porta et al. (2000) in their study of dividend policies among public firms around the world.

C. Signaling

We now turn our attention to hypothesis 6, which suggests that operating performance should improve following dividend increases. Following work by Nissim and Ziv (1996) and Grullon, Michaely, and Swaminathan (2002), we estimate predictive models of the change in earnings. We look at two types of predictive models, linear and nonlinear, over two different forecasting horizons, one and two years.

Panel A of Table 7 present results from the linear partial adjustment model examined by Nissim and Ziv (1996). At the one-year horizon, there is some evidence of predictability of positive earnings changes by positive dividend changes among Public firms. Interestingly, this evidence appears to carry over to the nonlinear model in Panel. Positive changes in Public firms' dividends do appear to have some power in predicting positive earnings changes. However, this predictability extends only one period into the future and is limited to only Public firms. There is no predictability in either the linear or nonlinear model for the Private concentrated firms. For

the Private Dispersed firms, there is no predictability from positive changes in dividends and "perverse" predictability from negative changes to dividends for these firms.

Ultimately, the evidence of firms signaling future profitability with dividend changes is weak, at best. This is consistent with other work (e.g., Grullon, Michael, and Swaminathan (2002)) that has struggled to find compelling evidence for this theory of dividends, beyond that found in equity return response to these changes.

IV. Conclusion

We examined the dividend policies of publicly-held and private-held firms in the UK. Our evidence suggests that, consistent with Lintner's (1956) original conjecture, public capital markets appear largely responsible for the dividend smoothing exhibited by public firms. Public firms' dividend policies are largely insensitive to transitory earnings shocks, whereas private firms exhibit dramatically greater sensitivity. However, both public and private firms appear averse to negative changes in their dividend policy.

We also find evidence to suggest that agency concerns play an important role in the determination of the level of dividends. Public firms pay significantly higher dividends relative to otherwise similar private firms, where shareholders have relatively little power or recourse against managerial abuses. We also find that public firms' dividends exhibit a greater sensitivity to investment opportunities and cash flow relative to those private firms where informational opacity is greatest and the potential for agency conflicts largest. Similarly, in private firms where ownership concentration is so extreme (e.g., one shareholder, family-run firm, several institutional shareholders) that informational opacity and agency conflicts are largely eliminated, we see relatively higher dividend payout rates and greater sensitivity of dividends to earnings

and investment opportunities. Finally, we find relatively weak support for signaling models of dividend policy, as future earnings changes are only weakly correlated with current dividend changes.

Despite shedding light on several issues, our results also lead to new questions. Private firms comprise a significant fraction of the economy, in terms of their contribution to GDP (not only in the UK but in the US, as well. Thus, how does the aggregate behavior of private firms' dividend policies accord with that of their public counterparts? Or, aggregate consumption? We leave these macroeconomic oriented questions to future research.

Appendix A: Data Definitions

All definitions coincide with line items in corporate balance sheets and P&L accounts and are found in the FAME database.

Operating Profit = Gross Profit – Other Expenses.

Capital Investment = (Fixed Assets(t) – Fixed Assets(t-1)) / Fixed Assets(t-1)

Profits = net profit (loss)

Dividends = total dividends paid to shareholders

Assets = book value of total assets

Retained Earnings = profit – dividends – extraordinary items - minority interests

Book Equity = Issued Capital + Total Reserves

Sales Growth = (Sales(t) – Sales(t-1)) / Sales(t-1)

Debt = total debt defined as: Trade Creditors + Short Term Loans + Long Term Debt

Profit Volatility = average within firm standard deviation of *Profits*.

Appendix B: Classifying Ownership Structure

As discussed above, we classify private firms into three groups: Wholly Owned, Private Concentrated, and Private Dispersed. This classification is based on ownership data available on the FAME database. Specifically, FAME presents three sets of ownership information of varying degrees of precision and redundancy but all three sets of information are static. That is, they are only snapshots of the ownership structure at a particular time and, therefore, they offer only a proxy to the ownership structure of the firm over the duration of the sample time horizon. As such, our classification of private firms can only be performed for firms in the matched sample.[16] Unfortunately, these decisions simply reflect the limitations of the data; however, we believe this is a relatively small limitation. In particular, ownership structures for private firms are quite sticky. Shareholders of private firms may choose not to sell their shares for several reasons including familial obligation and long-term investment horizons (private equity funds (Kaplan and Stromberg (2003)). A more important consideration is that it is difficult and expensive to sell shares in a privately held firm. There are no market prices and liquidity is scarce at best.

The first set of ownership data is from Bureau Van Dijk (BVD), which contains information on any holding companies, defined as a shareholder controlling at least 50% of the voting shares in the company. This data also contains information on significant shareholders and, in some cases, their fractional holdings. When a BVD shareholder is registered as owning 100% of the company in question or their holdings are reported as "WO" (i.e., wholly owned), then the company is classified as Wholly Owned.

[16] Firms transitioning from private to public cannot be classified as historical information on the ownership structure of the firm as a private entity is not available. In principle, we could, however, classify firms that transition from public to private with the most recent set of data. Practically speaking, this is a relatively small sample whose purpose is more to provide a robustness check of our main results rather than illuminate differences in ownership structures.

The second set of ownership data is from the annual return filed at Companies House. This set also often contains information on significant shareholders and the number of shares they hold. When a firm does not have information from BVD on the holdings of any shareholders, we utilize the information in the annual returns. Specifically, we define as a wholly owned firm any company with either one shareholder or one shareholder that owns over 98% of the total number of shares listed in the return. For example, Zaira Caterers, classified as a Wholly Owned company despite having two shareholders because Mr. Hamid Ali owns 99 ordinary £1 shares and Mrs. Nazneed Ali owns 1 ordinary £1share. When there is no indication of a Wholly Owned entity from the BVD data or the annual return, the firm is defined as a Private Concentrated Firm. A firm is classified as Private Dispersed when there is no indication of the firm being Wholly Owned and the name of the shareholder from the annual return reads "NUMEROUS SHAREHOLDER" or "BULK LIST OF SHAREHOLDERS." Alternatively, when the type of shareholder – often "Individual" or "Corporation" – is described as "BULK LIST OF SHAREHOLDERS" then the firm is classified as a Private Dispersed.

The third set of ownership data is a list of shareholders from the Registry. This information is only available for quoted (i.e., Public) companies. However, in many instances, previous Registry information is still available for firms that are currently private, indicating that at one point the firm was once Public. This information enables us to classify a number of firms that transition from Public to Private but are not recorded in SDC or Zephyr. The date of this information (posted on the registry) also enables us to identify the approximate date of the transition.

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Figure 1
Ownership Classification of Firms

The figure summarizes where three groups of firms, defined by their ownership structure, fall on the spectrum of information asymmetry and agency problems between managers and shareholders. Private-Concentrated/Wholly Owned firms are privately held firms with highly concentrated ownership (usually less than five, and often one, shareholder). Private Dispersed firms are privately held firms with a significant number of minority shareholders. Public are publicly held firms. The defining characteristic of each group is beneath the group name.

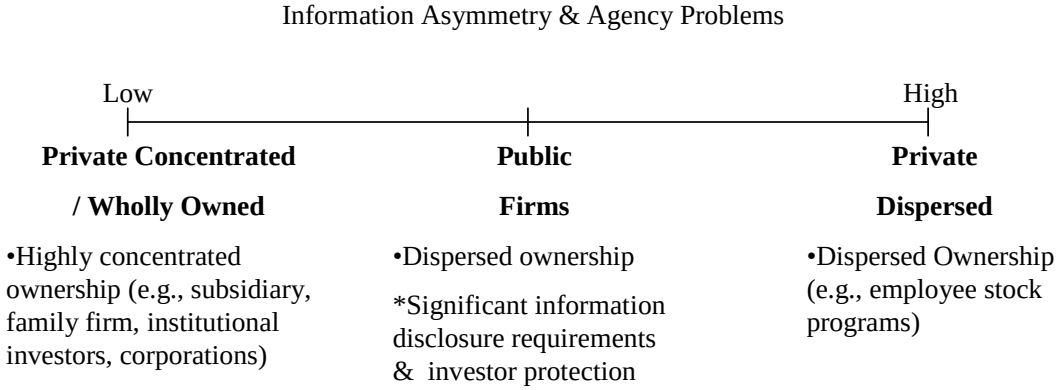

Figure 2
The Dynamic Response of Dividends to Earnings Shocks

The figure presents estimated dividend impulse response functions corresponding to a one unit (GBP) shock to earnings. We present results for three matched samples of firms: Private-Concentrated/Wholly Owned firms are privately held firms with highly concentrated ownership (usually less than five, and often one, shareholder). Private Dispersed firms are privately held firms with a significant number of minority shareholders. Public are publicly held firms. The dash lines correspond to the estimated target payout ratio (dividends / profits) of the three groups.

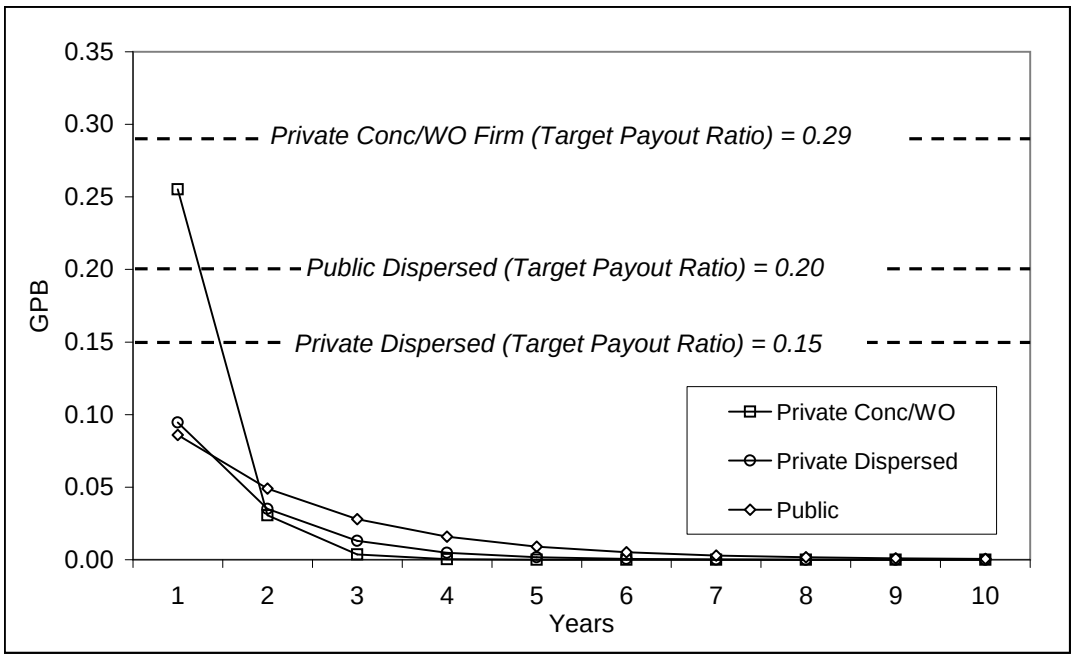

Table 1

Summary Statistics

The samples consists of all nonfinancial, nonagricultural, and nongovernment firms in the FAME database during the period 1993 - 2002 that are subject to the Companies Act auditing requirement. We also examine all nonfinancial firms in the intersection of CRSP and Compustat during 1993 - 2003. All US dollar values are converted to pounds (GBP) using end of calendar year exchange rates. The table presents summary statistics - mean, median (in brackets) and standard deviations (in parentheses) - for firm characteristics of public and private firms. Panel A presents results for the entire sample. Panel B presents the results for the subsample of UK firms that undergo a transition from public to private (or vice versa). All variable are defined in Appendix A.

Panel A: All Firms

	Compustat Firms			FAME Firms					
				Private			Public		
Variable	Obs	Mean	SD	Obs	Mean	SD	Obs	Mean	SD
Size	78,356	1,054.62	5,748.69	315,262	49.42	663.67	10,956	565.59	4,198.37
		[54.73]			[5.16]			[46.99]	
Capital Investment	63,302	0.26	0.90	271,050	0.18	0.73	9,532	0.33	1.17
		[0.04]			[0.01]			[0.06]	
Prof / Assets	76,165	-0.18	0.65	287,294	0.04	0.11	10,682	-0.01	0.21
		[0.01]			[0.04]			[0.04]	
Tangible Assets / Assets	77,220	0.29	0.24	304,134	0.27	0.23	10,644	0.33	0.24
		[0.22]			[0.21]			[0.28]	
$I(DividendPayer)$	172,215	0.11	0.31	335,120	0.34	0.47	11,055	0.71	0.46
		[0.00]			[0.00]			[1.00]	
Div / Prof	43,396	0.19	0.38	236,183	0.31	0.62	7,732	0.47	0.50
		[0.00]			[0.00]			[0.39]	
Debt / Assets	74,794	0.24	0.23	161,443	0.52	0.21	8,039	0.36	0.17
		[0.21]			[0.53]			[0.35]	
Sales Growth	61,843	0.24	0.87	238,196	0.12	0.44	9,259	0.21	0.67
		[0.06]			[0.04]			[0.06]	
Profit Volatility	11,709	0.26	0.46	37,680	0.07	0.06	1,533	0.12	0.14
		[0.09]			[0.05]			[0.07]	

Panel B: Transition Firms

	Private			Public		
Variable	Obs	Mean	SD	Obs	Mean	SD
Size	2,151	214.77	1,006.66	4,720	234.86	1,071.50
		[15.44]			[37.00]	
Capital Investment	1,714	0.38	1.33	4,121	0.49	1.75
		[0.02]			[0.08]	
Prof / Assets	1,992	-0.01	0.25	4,591	-0.04	0.27
		[0.03]			[0.04]	
Tangible Assets / Assets	1,896	0.30	0.26	4,524	0.31	0.25
		[0.23]			[0.27]	
$I(DividendPayer)$	2,229	0.45	0.50	4,778	0.62	0.48
		[0.00]			[1.00]	
Div / Prof	1,351	0.45	0.94	3,093	0.43	0.46
		[0.16]			[0.36]	
Debt / Assets	1,175	0.44	0.22	3,294	0.35	0.19
		[0.43]			[0.35]	
Sales Growth	1,268	0.44	2.29	3,916	0.36	1.18
		[0.08]			[0.10]	
Profit Volatility	500	0.12	0.16	835	0.15	0.18
		[0.06]			[0.07]	

Table 2

Propensity Score Matching

Panel A presents coefficient estimates from two logit regressions of an indicator variable equal to one if the firm is publicly held. The Pre-Match specification is estimated on the sample of Public and Private-Dispersed firms extracted from all nonfinancial, nonagricultural, and nongovernment firms in the FAME database during the period 1993 - 2002 that are subject to the audit requirement. The Post-Match 1 specification is estimated on the matched sample of Public and Private Dispersed firms for which the difference in propensity scores from the Pre-Match estimation is less than one standard deviation (0.23). Panel B presents similar results for the matching of Public firms to Private Concentrated/Wholly Owned firms. Because of a large set of controls in this match, we find two sets of matching private firms for this sample. That is, corresponding to each Public observation are two Private Concentrated/Wholly Owned observations. Panel C presents a comparison of firm characteristics across the three matched samples: Public, Private Dispersed, and Private Concentrated/Wholly Owned. Private-Concentrated/Wholly Owned firms are privately held firms with highly concentrated ownership (usually less than five, and often one, shareholder). Private Dispersed firms are privately held firms with a significant number of minority shareholders. Public are publicly held firms. All variable are defined in Appendix A.

Panel A: Logit Regressions (Public to Private Dispersed)

Parameter	Pre-Match	Post-Match 1
Intercept	-6.887	-0.747
	(-34.356)	(-1.524)
Size	0.762	0.088
	(39.577)	(1.850)
Sales Growth	0.030	0.027
	(0.510)	(0.301)
Oper Prof / Assets	-0.644	-0.241
	(-3.207)	(-0.708)
Debt / Assets	-2.265	-0.353
	(-15.173)	(-1.096)
Public Obs	4,121	1,626
Private Obs	3,754	1,626
Obs	7,875	3,252

Panel B: Logit Regressions (Public to Private Concentrated/Wholly Owned)

Parameter	Pre-Match	Post-Match 1	Post-Match 2
Intercept	-6.137	-0.319	-0.968
	(-43.351)	(-0.983)	(-3.434)
Size	0.395	0.021	0.018
	(31.501)	(0.710)	(0.714)
Sales Growth	0.318	-0.028	-0.026
	(5.944)	(-0.361)	(-0.377)
Oper Prof / Assets	-3.793	-0.323	-0.272
	(-18.440)	(-0.999)	(-0.809)
Debt / Assets	-3.948	0.317	0.266
	(-29.750)	(1.157)	(1.066)
Public Obs	1,626	1,626	1,626
Private Obs	123,041	1,626	3,252
Obs	124,667	3,252	4,878

Panel C: Matched Firm Characteristics

	Private Conc/WO			Private Disp			Public		
Variable	Obs	Mean	SD	Obs	Mean	SD	Obs	Mean	SD
Assets	3,252	364.87	2,510.50	1,626	219.21	1,499.20	1,626	287.28	1,968.28
		[19.19]			[19.75]			[24.46]	
Log(Assets)	3,252	10.22	1.93	1,626	10.05	1.59	1,626	10.27	1.65
		[9.86]			[9.89]			[10.10]	
Sales Growth	3,252	0.14	0.51	1,626	0.13	0.46	1,626	0.14	0.46
		[0.04]			[0.04]			[0.05]	
Operating Profit / Assets	3,252	0.04	0.12	1,626	0.03	0.14	1,626	0.03	0.16
		[0.05]			[0.05]			[0.07]	
Debt / Assets	3,252	0.38	0.19	1,626	0.40	0.21	1,626	0.39	0.18
		[0.36]			[0.38]			[0.38]	

Table 3
Dividend Changes for Private and Public Firms

Panel A presents summary statistics for three matched samples of firms: Private-Concentrated/Wholly Owned (Private Conc) firms are privately held firms with highly concentrated ownership (usually less than five, and often one, shareholder). Private Dispersed (Private Disp) firms are privately held firms with a significant number of minority shareholders. Public (Public) are publicly held firms. Panel B presents summary statistics and hypothesis test results for the sample of firms that underwent a transition from Public to Private (or vice versa) status. The t-statistics test pairwise differences in means using standard errors that are corrected for within firm correlation and heteroscedasticity. *Pr(Omit) (Pr(Initiation))* is the fraction of firm-year observations that follow a non-zero (zero) dividend payment in year $t-1$ with a zero (non-zero) dividend payment in year t. *Pr(Cut) (Pr(Increase))* is the fraction of firm-year observations that experience a decrease (increase) in the level of dividends from year $t-1$ to year t. *Decrease (Increase) / Dividends* is the change in dividends from year $t-1$ to year t divided by year end dividends in year $t-1$ for firm-year observations that experienced a decrease (increase) in dividends over the year.

Panel A: Matched Sample

		Sample				
		Private	Private	Public	t-Statistics	
Variable	Statistic	Conc (a)	Disp (b)	(c)	(a)-(c)	(b)-(c)
Pr(Omit)	Mean	0.088	0.054	0.054		
	SE	0.005	0.006	0.005	4.685	-0.078
	Obs	3,252	1,626	1,626		
Pr(Cuts)	Mean	0.196	0.209	0.183		
	SE	0.007	0.012	0.010	0.978	1.656
	Obs	3,252	1,626	1,626		
Decrease / Dividends	Mean	-0.694	-0.534	-0.588		
	SE	0.014	0.023	0.021	-4.221	1.700
	Obs	636	340	298		
Pr(Initiation)	Mean	0.081	0.051	0.042		
	SE	0.005	0.006	0.005	5.477	1.151
	Obs	3,252	1,626	1,626		
Pr(Increase)	Mean	0.250	0.405	0.507		
	SE	0.008	0.017	0.018	-13.117	-4.143
	Obs	3,252	1,626	1,626		
Increase / Dividends	Mean	2.165	0.833	0.440		
	SE	0.346	0.117	0.036	4.962	3.220
	Obs	545	570	749		

Panel B: Transition Firms

		Sample		t-statistic
Variable	Statistic	Private (a)	Public (b)	(a)-(b)
Pr(Omit)	Mean	0.117	0.052	
	SE	0.006	0.003	9.088
	Obs	2,087	4,563	
Pr(Cuts)	Mean	0.368	0.223	
	SE	0.010	0.007	11.853
	Obs	2,087	4,563	
Decrease / Dividends	Mean	-0.745	-0.611	
	SE	0.015	0.016	-6.063
	Obs	478	741	
Pr(Initiation)	Mean	0.076	0.047	
	SE	0.005	0.003	4.631
	Obs	2,087	4,563	
Pr(Increase)	Mean	0.258	0.449	
	SE	0.012	0.013	-11.001
	Obs	2,087	4,563	
Increase / Dividends	Mean	3.311	0.549	
	SE	0.442	0.032	6.232
	Obs	377	1,818	

Table 4
Lintner Model of Dividends

The estimation sample consists of all firm-year observations for firms in each of the three matched samples: Private-Concentrated/Wholly Owned (Private Conc) firms are privately held firms with highly concentrated ownership (usually less than five, and often one, shareholder). Private Dispersed (Private Disp) firms are privately held firms with a significant number of minority shareholders. Public (Public) are publicly held firms. The table presents summary statistics for the distribution of parameter estimates from Linter's model of dividends. Specifically, we model dividends as:

$$\Delta Dividend_t = \alpha + \lambda(\beta Profit_t^* - Dividend_{t-1}) + \varepsilon_t,$$

and estimate the model for each company producing a cross section of parameter estimates. The model is estimated separately on each firm in each of the three matched samples by weighted least squares, where the inverse of the total assets is the weight. We require each firm to have at least eight observations for the regression. The table presents summary statistics for the distribution of parameter estimates, which have been trimmed at the upper and lower 2.5 percentiles. All variable are defined in Appendix A.

Parameter	Firms	Mean	SE(Mean)	Min	25%	Median	75%	Max
Private Concentrated/Wholly Owned Firms								
Intercept	1,544	1.21	0.22	-3.06	0.00	0.04	0.46	36.61
SOA	1,499	0.88	0.01	-0.04	0.61	0.96	1.16	1.78
TP	1,502	0.29	0.06	-0.82	0.00	0.14	0.46	2.32
Private Dispersed Firms								
Intercept	306	0.06	0.01	-0.35	0.00	0.01	0.06	1.32
SOA	299	0.63	0.02	-0.20	0.27	0.64	1.00	1.49
TP	300	0.15	0.02	-0.21	0.01	0.08	0.23	1.14
Public Firms								
Intercept	378	1.18	0.22	-1.16	0.03	0.13	0.61	46.12
SOA	376	0.43	0.02	-0.22	0.14	0.36	0.67	1.40
TP	378	0.20	0.05	-0.99	0.01	0.14	0.35	1.45

Table 5

Dividend Levels for Private and Public Firms

Panel A presents summary statistics and hypothesis test results for the three matched samples: Private-Concentrated/Wholly Owned (Private Conc) firms are privately held firms with highly concentrated ownership (usually less than five, and often one, shareholder). Private Dispersed (Private Disp) firms are privately held firms with a significant number of minority shareholders. Public (Public) are publicly held firms. Panel B presents summary statistics and hypothesis test results for the sample of firms that underwent a transition from public to private (or vice versa) status. Panel C presents regression results from a firm fixed-effect regression of dividends dividend by operating profits. All variable are defined in Appendix A. All standard errors are robust to heteroscedasticity and within firm correlation.

Panel A: Matched Sample

		Sample					
		Private	Private	Public	t-Statistics		
Variable	Statistic	Conc/WO (a)	Disp (b)	(c)	(a)-(b)	(a)-(c)	(b)-(c)
Dividends / Operating Profit	Mean	0.213	0.163	0.242			
	SE	0.009	0.008	0.008	4.220	-2.490	-7.003
	Obs	2,353	1,240	1,199			

Panel B: Transition Firms

Variable	Statistic	Sample		t-statistic
		Private (a)	Public (b)	(a)-(b)
Dividends / Operating Profit	Mean	0.124	0.214	
	SE	0.007	0.005	-10.663
	Obs	1,112	2,746	

Panel C: Transition Firms - Firm Fixed Effect Regression

Intercept	-0.327
	(-2.495)
$I(Public)$	0.034
	(2.504)
Sales Growth(t+1)	0.036
	(2.602)
Size	0.042
	(4.180)
Debt / Assets	-0.102
	(-3.624)
Oper Prof / Assets	0.106
	(2.263)
Firm Fixed Effects	Yes
$Adj.R^2$	0.543
RMSE	0.109
Obs	2,171

Table 6

Dividend Level Regressions

The sample consists of all nonfinancial firms in the FAME database during the period 1993 - 2003 that underwent a transition from private to public (or vice versa). The table presents estimates from a regression of dividends in year t, normalized by year-end operating profits in t, on several variables. Panels A (OLS estimates) and B (Median regression estimates) presents the results from estimating the regression on each of the three matched samples: Private-Concentrated/Wholly Owned (Private Conc) firms are privately held firms with highly concentrated ownership (usually less than five, and often one, shareholder). Private Dispersed (Private Disp) firms are privately held firms with a significant number of minority shareholders. Public (Public) are publicly held firms. Panels C (OLS estimates) and D (Median regression estimates) presents the results from estimating three regression on the subsample of firms that underwent a transition from public to private (or vice versa) status. Variable definitions are provided in the Appendix. Also included in the regressions but not presented are year indicator variables. Standard errors are robust to both heteroscedasticity and within firm correlation.

Panel A: Matched Sample (OLS Regression)

Parameter	Private Conc/WO	Private Disp	Public
Intercept	-0.306	-0.031	-0.168
	(-4.893)	(-0.471)	(-3.327)
Sales Growth(t+1)	-0.055	0.017	-0.042
	(-1.704)	(0.467)	(-1.987)
Size	0.028	0.005	0.031
	(7.051)	(0.790)	(7.601)
Debt / Assets	-0.054	-0.190	-0.220
	(-1.347)	(-5.191)	(-5.823)
Oper Prof / Assets	0.605	0.030	0.102
	(5.010)	(0.274)	(1.517)
R^2	0.067	0.079	0.205
RMSE	0.267	0.140	0.137
Obs	1,648	863	875

Panel B: Matched Sample (LAV Regression)

Parameter	Private Conc/WO	Private Disp	Public
Intercept	-0.271	-0.021	-0.256
	(-16.465)	(-0.593)	(-6.534)
Sales Growth(t+1)	-0.020	0.033	-0.058
	(-1.319)	(1.050)	(-2.337)
Size	0.015	0.006	0.035
	(10.281)	(1.805)	(10.302)
Debt / Assets	-0.038	-0.246	-0.203
	(-2.316)	(-9.207)	(-5.265)
Oper Prof / Assets	0.286	0.027	0.165
	(6.157)	(0.302)	(2.175)
Obs	1,648	863	875

Panel C: Transition Firms (OLS Regression)

Parameter	Private	Public
Intercept	0.087	-0.111
	(0.880)	(-2.578)
Sales Growth(t+1)	0.014	-0.030
	(0.480)	(-2.628)
Size	0.016	0.025
	(2.263)	(7.864)
Debt / Assets	-0.053	-0.073
	(-1.336)	(-3.072)
Oper Prof / Assets	0.258	0.239
	(2.584)	(6.180)
R^2	0.070	0.190
RMSE	0.187	0.132
Obs	508	1,663

Panel D: Transition Firms (LAV Regression)

Parameter	Private	Public
Intercept	-0.021	-0.091
	(-0.350)	(-3.085)
Sales Growth(t+1)	0.037	-0.052
	(1.561)	(-4.474)
Size	0.012	0.030
	(2.135)	(12.001)
Debt / Assets	-0.064	-0.098
	(-2.276)	(-4.603)
Oper Prof / Assets	0.319	0.259
	(3.320)	(6.794)
Obs	508	1,663

Table 7
Raw Earnings Change Regression

The sample is a matched sample consisting of nonfinancial firms in the FAME database during the period 1993 - 2003 that did not undergo a transition from private to public (or vice versa). The table presents regression estimates of the change in earnings from year $t-1$ to year t, normalized by book equity in $t-1$, on several determinants for each of the three matched samples: Private-Concentrated/Wholly Owned (Private Conc) firms are privately held firms with highly concentrated ownership (usually less than five, and often one, shareholder). Private Dispersed (Private Disp) firms are privately held firms with a significant number of minority shareholders. Public (Public) are publicly held firms. *DPC* (*DNC*) is a binary variable equal to one if the firm increased (decreased) its dividend. *Div* is the level of dividends. *Earn* is the level of profits after taxes and interest. *ROE* is the return on equity defined as the ratio of profits after taxes and interest to book equity. *E(ROE)* is the expected return on equity defined as the predicted value from a regression of ROE on lagged values of the natural logarithm of market-to-book, the natural logarithm of assets deflated by the GDP deflator, and ROE. *Book Equity* is the book value of equity. The $[x]^+$ ($[x]^-$) notation denotes the max (min) of zero and x. Also included in both specifications but not reported are calendar year indicator variables. t-statistics in parentheses are computed using standard errors adjusted for within firm dependence.

Panel A: Linear Partial Adjustment

	Period t Earnings Change			Period $t+1$ Earnings Change		
Parameter	Private Conc/WO	Private Disp	Public	Private Conc/WO	Private Disp	Public
Intercept	0.1502	0.0707	0.0402	0.1311	0.0562	0.0226
	(4.5937)	(1.0501)	(2.4135)	(3.5500)	(0.6945)	(1.0463)
$DPC_{t-1} \times \Delta Div_t/Div_{t-1}$	-0.0006	0.0039	0.0280	0.0047	-0.0066	0.0036
	(-0.2749)	(0.6332)	(2.8368)	(1.4376)	(-1.1871)	(0.3457)
$DNC_{t-1} \times \Delta Div_t/Div_{t-1}$	0.0043	0.0412	0.1161	-0.0216	-0.0680	-0.0660
	(0.4491)	(1.6834)	(3.1463)	(-1.7463)	(-2.2727)	(-1.6563)
ROE_{t-1}	-0.3480	-0.5220	-0.5516	-0.0406	-0.0796	-0.0659
	(-8.0632)	(-7.9246)	(-7.9813)	(-1.0849)	(-1.2877)	(-0.9976)
$\Delta Earn_{t-1}/BookEquity_{t-2}$	-0.0907	-0.0706	-0.0677	-0.0348	0.0267	0.0432
	(-3.1929)	(-1.4208)	(-1.2947)	(-0.9820)	(0.3188)	(1.1124)
R^2	0.12	0.27	0.19	0.01	0.02	0.01
Obs	7,589	2,286	2,758	6,534	1,951	2,355

Panel B: Nonlinear Partial Adjustment

	Period t Earnings Change			Period $t+1$ Earnings Change		
Parameter	Private Conc/WO	Private Disp	Public	Private Conc/WO	Private Disp	Public
Intercept	0.0640	0.0537	-0.0172	0.0969	0.0557	0.0420
	(2.7292)	(0.7952)	(-0.8469)	(2.9575)	(0.7511)	(1.8245)
$DPC_{t-1} \times \Delta Div_t/Div_{t-1}$	-0.0026	0.0021	0.0199	0.0036	-0.0065	0.0054
	(-1.0637)	(0.3011)	(2.1580)	(1.0040)	(-1.0156)	(0.4994)
$DNC_{t-1} \times \Delta Div_t/Div_{t-1}$	0.0154	0.0561	0.1237	0.0022	-0.0651	-0.0412
	(1.5708)	(2.0727)	(3.5751)	(0.1698)	(-1.8089)	(-0.9345)
$ROE_{t-1} - E(ROE_{t-1})$	-0.1091	-0.0796	0.0047	0.1083	-0.3837	-0.2131
	(-0.7272)	(-0.3662)	(0.0271)	(1.0832)	(-1.4847)	(-1.1332)
$[ROE_{t-1} - E(ROE_{t-1})]^-$	-0.7733	-0.9424	-1.0668	-0.3012	0.0463	-0.0457
	(-3.5196)	(-3.5081)	(-4.9909)	(-1.3885)	(0.1112)	(-0.1607)
$([ROE_{t-1} - E(ROE_{t-1})]^-)^2$	0.0529	-0.1318	-0.1446	-0.1171	-0.1054	-0.0718
	(0.6780)	(-2.0707)	(-1.6835)	(-1.1116)	(-0.9286)	(-1.5997)
$([ROE_{t-1} - E(ROE_{t-1})]^+)^2$	0.1028	-0.2209	-0.3528	-0.1974	0.6638	-0.0478
	(0.5434)	(-0.4039)	(-0.8141)	(-1.8786)	(1.2089)	(-0.1263)
$\Delta Earn_{t-1}/BookEquity_{t-2}$	-0.1199	-0.2979	-0.1325	0.0083	0.2631	0.1461
	(-1.4347)	(-1.7945)	(-1.2024)	(0.0998)	(1.0958)	(0.9973)
$[\Delta Earn_{t-1}/BookEquity_{t-2}]^-$	0.3611	0.6706	0.3359	-0.2451	-0.1318	0.0921
	(2.6134)	(2.3061)	(1.3334)	(-1.2951)	(-0.3549)	(0.3660)
$([\Delta Earn_{t-1}/BookEquity_{t-2}]^-)^2$	0.1015	0.3251	0.1365	-0.1223	-0.0407	0.0309
	(1.3532)	(3.3475)	(0.5724)	(-0.7711)	(-0.4341)	(0.1915)
$([\Delta Earn_{t-1}/BookEquity_{t-2}]^+)^2$	0.0143	0.1721	0.0764	0.0017	-0.3011	-0.0266
	(0.3915)	(1.8312)	(1.9613)	(0.0357)	(-1.9089)	(-0.6268)
R^2	0.21	0.35	0.26	0.01	0.03	0.01
Obs	6,168	1,900	2,356	5,194	1,586	1,968