

# **Corporate Dividend Policies: Lessons from Private Firms\***

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# **Corporate Dividend Policies: Lessons from Private Firms**

## **Abstract:**

We compare the dividend policies of publicly- and privately-held firms in order to identify the forces shaping corporate dividends. Our findings show that private firms smooth dividends significantly less than their public counterparts, suggesting that the scrutiny of public capital markets plays a central role in the propensity of firms to smooth dividends over time. Consistent with agency theory, we also find that public firms - with greater investor protection than private firms - pay relatively higher dividends and follow a dividend policy that is more sensitive to changes in investment opportunities. Finally, signaling based theories are largely unsupported by the data, while tax considerations and financing constraints play a secondary role in explaining the observed differences in dividend policies between public and private firms.

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 (Lintner (1956) and Brav et. al. (2005)) evidence suggest that dividend policy is anything but irrelevant to managers and markets. Rather, corporate dividend policies exhibit clear patterns. In particular, dividends are “smoothed” and 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 on a particular dividend policy - is not well understood despite an abundance of empirical evidence.<sup>1</sup>

The goal of this paper is to shed new light on the forces responsible for shaping dividend policy by comparing the dividend behavior of publicly-held firms with that of privately-held firms in the United Kingdom (UK). This approach enables us to make three contributions to the existing literature on corporate dividend policy. First, we examine the extent to which Lintner’s evidence of dividend smoothing is related to whether firms are publicly traded. Second, we provide novel evidence on several hypotheses motivated by agency problems and information asymmetry (as well as taxes and financing constraints) 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 policies of private firms, which have largely been ignored despite their importance to the economy.<sup>2</sup> An important by-product of our strategy is that by using data from the UK, we not only overcome the obstacle of obtaining a large sample of financial data on privately-held firms; but, we also examine firms in an economic environment similar to that found in the United States.<sup>3</sup>

We begin by highlighting the differences between public and private firms, focusing attention on the differences in corporate governance and the diversity of ownership structures encountered among private firms. The variation in ownership structure enables us to employ a unique empirical approach that simultaneously examines three distinct groups of firms. The first group, which we denote “Wholly Owned,” corresponds to privately held firms with few, often

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<sup>1</sup> See Allen and Michaely (2003) for a survey of the relevant empirical (and theoretical) literature.

<sup>2</sup> 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.

<sup>3</sup> Acharya, John, and Sundaram (2005) note that, other than the treatment of creditors and debtors in bankruptcy, the UK and US financial systems are much alike. Allen, Carletti, and Marquez (2006) also note that systems of corporate governance in the US and UK are very similar.

only one, shareholders that are intimately involved in the operations and management of the firm through positions on the board of directors, through financing arrangements, or even through managerial positions. For these firms, there is little, if any, separation between ownership and control. Consequently, these firms coincide closely with Jensen and Meckling's (1976) "100%-alpha" firms for which agency costs are fully internalized.

The second group, "Private Dispersed," consists of privately held firms with a dispersed shareholder base. The average asset value of these firms is 750 million pounds and, by definition, they have a minimum of 27 shareholders, though this number reaches into the thousands for many firms. Private Dispersed firms lie at the other end of the agency cost spectrum relative to Wholly Owned firms because of a combination of two characteristics. Specifically, Private Dispersed firms suffer from relatively greater informational opacity and agency conflicts between controlling shareholders (insiders) and minority shareholders who have limited protection and recourse against managerial abuses because of relatively few and poor governance mechanisms.

The third group, "Public," consists of publicly held firms and falls in between these two extremes because the information and agency problems arising from the dispersed ownership are partially mitigated by institutional and regulatory structures designed to improve the flow and quality of information while also enforcing investors' rights (see for example, La Porta et al. (2000)).

To address sample selection concerns, we investigate two mutually exclusive samples: (1) a propensity score matched sample (Rosenbaum and Rubin (1983) and Smith and Todd (2003)), and (2) a sample of firms that undergo a transition from private to public status (or vice versa). While neither sample can be considered as randomly assigning firms to public and private status, both samples take significant and very different strides towards that ideal. Thus, our conclusions are based only on results found in both samples.

Our first set of results illustrates that the propensity to smooth dividends (Lintner (1956)) is closely linked to whether or not the firm is publicly held. Specifically, we show that Public firms are significantly more averse to omitting or cutting dividends than either Wholly Owned or Private Dispersed firms. In fact, for firms that transition from private to public (or vice versa) in our sample, the rate of dividend omission decreases by 56% and the rate of dividend cuts

decreases by 40% when firms are publicly-held. Greater smoothing by Public firms is also reflected in a lower tendency - approximately 38% lower - to initiate dividends, as well.

We then show that the response of dividends to transitory earnings shocks varies significantly across the three groups of firms in a manner also consistent with the importance of public capital markets shaping dividend policy. Figure 2 shows the dynamic response of dividends, scaled by their estimated target payout ratio, to a temporary £1 earnings shock. Wholly Owned firms immediately distribute over £0.26 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 shock. Private Dispersed firms, on the other hand, immediately distribute approximately 65% of the earnings shock (relative to their target payout ratio), which dissipates within four years. Finally, Public firms immediately distribute only 41% of the earnings shock (relative to their target payout ratio), which now impacts 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 supports the view that agency considerations play an important role in determining the level of dividends. One such view, the "outcome agency" view proposed by La Porta et al. (2000), suggests that greater investor protection - due to stronger governance structures, regulatory environments, and legal recourse - affords minority shareholders a greater "power" over management to extract free cash flow through dividend payments. Consistent with this view, we find that firms facing stronger governance mechanisms and greater minority investor protection (i.e., Public firms) distribute 27% of their profits in dividends, whereas closely-held firms with little minority shareholder protection (i.e., Private Dispersed firms) distribute only 20% of their profits in dividends.

Reinforcing this support for the outcome agency view, we also find that Public firms' dividends are more sensitive to investment needs than Private Dispersed firms' dividends: When the need for cash is low, shareholders of Public firms can induce management to distribute excess cash whereas the shareholders of Private Dispersed firms cannot. Additionally, the sensitivity of dividends to investment is greatest among Wholly Owned firms, which are subject to little, if any, conflicts of interest between controlling and minority shareholders. This result reaffirms the interpretation of their dividend policies as most closely resembling the residual

financing decision predicted by Miller and Modigliani (1961). 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 because they can most likely extract future profits - in contrast to the shareholders of Private Dispersed firms.<sup>4</sup>

The third set of results examines an alternative view supported by reputation (e.g., Gomes (2000)) and signaling theories (e.g., Bhattacharya (1979)), which suggests that firms subject to stricter regulations and monitoring have a lower need to pay dividends, either because of fewer agency conflicts or because of lower benefits associated with dividend signaling. We find, at best, weak support for this hypothesis. Not only do Private Dispersed firms pay lower dividends, on average, than Public firms, but the dividends of Private Dispersed firms have no predictive ability for future profits. That is, dividends do not appear to signal any future changes in profitability, even in firms for which informational opacity is more severe. This result is similar to that found in studies using US data (e.g., Grullon, Michaely, and Swaminathan (2002)) and casts further doubt on the ability of existing reputation and signaling theories to explain the observed dividend behavior.

Finally, we examine the implications of taxes and financing constraints for differences in dividend policies across public and private firms. While private and public firms face identical tax environments in the UK, differences in the effective tax rates of each group's owners can potentially affect dividend policy. Also, tax incentives may induce owners of Wholly Owned firms to pay out cash in the form of dividends rather than salary. Our evidence reveals that taxes are unable to explain the majority of our findings, which are robust to a regulatory change in the tax rate on dividends for pension funds (a significant shareholder of public firms) and reveal that most Wholly Owned firms, in fact, do not pay any dividends - counter to the notion that these firms substitute between wages and dividends to exploit tax differences.

Similarly, we find a number of results that are inconsistent with the notion that limited access to capital markets (i.e., financing constraints) are driving dividend policy. First, the majority of private firms pay a dividend each year, counter to the definition of a financially constrained firm in much of the financial literature (e.g., Fazzari, Hubbard, and Petersen (1988)). Nonetheless, differential access to external financing has two immediate implications for

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<sup>4</sup> In a recent paper, Renneboog and Szilagyi (2006) show that firms with weak investor protection in the Netherlands pay lower dividends.

dividend policy: First, relatively more constrained private firms will pay lower dividends. This implication is similar to that of the outcome-agency hypothesis and thus, we are precluded from distinguishing between the two theories based on this implication. However, the second implication is that more constrained firms will increase dividends by less when times are good (i.e., they will hoard cash) - an implication that is empirically untrue. Private firms, in fact, pay higher dividends in response to positive earnings shocks, counter to any storage incentives brought on by limited access to external capital. Thus, while taxes and financing constraints may be relevant for dividend policy, they do not appear to be responsible for our findings.

The remainder of the paper is organized as follows. Section I begins by introducing the data. Section II analyzes the differences between public and private firms. Section III discusses the sample selection. Section IV examines Lintner's description of dividend smoothing as a function of the presence of public capital markets and variation in agency costs. Section V we develop and test agency-based hypotheses. Section VI examines signaling-motivated hypotheses. Section VII examines the impact of tax considerations. Section VIII analyzes the impact of limited access to external capital. Section IX concludes.

## **I. 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, approximately 2.1 million in total. Our extract from this database encompasses a ten-year period covering 1993-2002, and our general sample frame definition follows that found in Brav (2005a, 2005b). We focus on private limited and public quoted firms.<sup>5</sup> We exclude assurance companies, guarantees, limited liability partnerships, public investment trusts, 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

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<sup>5</sup> Public quoted includes firms quoted on the London Stock Exchange, OFEX, and AIM.

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 ensure the validity of our data and minimize missing values, we impose several additional 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 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. These selection criteria help mitigate – but 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. The focus on private limited and public quoted firms subject to these size requirements reduces the number of firms from 2.1 million to 91,327.

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). This final screen results in 40,810 firms that form our sample frame.

Table 1 presents summary statistics for our sample (all levels are inflation adjusted using the UK CPI). Variations in the number of observations for each variable reflect missing data and figures in brackets are medians. All variables in the Table 1 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 greater sales growth. Though the median public firm is as profitable as the median private firm, private firms tend to be more highly levered. We also note that private firms have, on average, lower sales growth and earnings volatility than public firms.



## II. Public versus Private Firms

Theories of dividend behavior are often predicated on the degree of information asymmetry and/or the extent of agency conflicts between managers and shareholders. Additionally, tax considerations and financing constraints are potentially important factors. For this reason, it is crucial to understand how these frictions vary across public and private firms. Thus, before turning to the development of our hypotheses and empirical tests, we discuss the key distinctions between these two sets of firms and how they impact information asymmetry, agency conflicts, taxes, and financing constraints.

### *A. Corporate Governance*

The first relevant difference between public and private firms is the power afforded to outside shareholders by institutional and governance mechanisms. For public companies, there exist a number of designed, at least in part, to protect the interests of outside or minority shareholders. For example, all exchanges in the UK (as well as in the US) impose strict disclosure requirements on listed firms above and beyond the reporting requirements under the Companies Act. Firms listed on the London Stock Exchange are subject to arbitrary information and explanation requests by the exchange to ensure that 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 and to provide a timetable for all dividends and interest payments.<sup>6</sup>

Similarly, boards of directors of public firms also “face increased accountability for key management decisions and actions and must ensure that they run the company in the interests of shareholders.”<sup>7</sup> Additionally, exchanges have the authority to sanction and discipline any company contravening the rules and standards set forth by the exchange.<sup>8</sup> Outside of institutional protection, the market for corporate control also affords shareholders of public firms the ability to potentially remove inefficient management through proxy fights and takeover contests (See for example, Becht, Bolton, and Roell (2003)).

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<sup>6</sup> See section 3 of the London Stock Exchange Admission and Disclosure Standards, July 2005.

<sup>7</sup> London Stock Exchange AIM brochure, Page 6.

<sup>8</sup> See the Rules for Issuers on the OFEX website and the Disciplinary and Appeals Handbook available from the London Stock Exchange.

Each of these mechanisms is largely unique to public firms and, in concert, helps to ease the monitoring and discipline of managers. By doing so, these mechanisms afford outside shareholders of such firms with a certain amount of “power” (La Porta et al. (2000)) over managerial actions. In turn, this power partly mitigates the information and agency problems experienced by the dispersed shareholder base in most public firms. Thus, while information and agency problems are an inherent feature of public firms with their broad-based ownership structures, the many institutions and governance mechanisms surrounding these firms work to offset these problems, at least to a degree.

### *B. Ownership Structure*

Before drawing any conclusions regarding the extent of information and agency problems in public firms vis a vis private firms, one must recognize that the ownership structures of private firms exhibit far greater diversity than those of public firms. Some private firms exhibit little, if any, separation between ownership and control because ownership is highly concentrated. For example, Zaira Caterers has only two shareholders: Mr. Hamid Ali, who owns 99 ordinary £1 shares, and Mrs. Nazneed Ali, who owns 1 ordinary £1 share. Both Mr. and Mrs. Ali are also on the board of directors.

For such firms, shareholders internalize most, if not all, agency costs arising from adverse selection or moral hazard. In effect, these firms correspond closely to Jensen and Meckling’s (1976) “100%-alpha” firms in which there is no expropriation of wealth from outside shareholders because there often are none. In the instances where outside shareholders do exist, they are often immediate or close family members or informed and active monitors, such as financial intermediaries or corporations with close ties to the firm. As such, we assume that the unique nature of these additional shareholders works to align incentives between controlling and minority shareholders, as in the case of Zaira Caterers, for example. Thus, we refer to firms in which ownership is concentrated in the hands of less than 26 shareholders as “Wholly Owned” to denote their close integration of ownership and control.<sup>9</sup>

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<sup>9</sup> We categorize firms as “Wholly Owned” if shareholders are not “too numerous too list” on the annual return filed at Companies House. For many private firms, the list of shareholders provided on the annual return denotes only that the number of shareholders are “too numerous too list” or “bulk list of shareholders” (or some misspelled permutation of these phrases). Discussions with Bureau Van Dijk reveal that this data value is assigned to privately-held firms with more than 20 shareholders. Our analysis of the data reveals that up to 26 shareholders are listed on

There are also a number of privately-held firms with a significant number of minority shareholders. For example, INEOS Group Limited is a chemical conglomerate that “strongly believes in employee share ownership” (Jim Ratcliffe, CEO). It is tempting to presume that employees are, by definition, insiders of the firm and, therefore, privy to management’s information or that proximity amongst employees may help align incentives. However, INEOS Group employs over 7,000 people in 50 manufacturing plants throughout 15 different countries. Further, INEOS Group is by no means unique. TI Automotive, a supplier of automotive parts, employs over 20,000 people in 130 facilities throughout 28 countries. Their current ownership structure is divided among management (25%), The Smiths Group technology company (19.9%), and a large number of “external shareholders” (50%). Similarly, Mott Macdonald is an employee-owned management, engineering, and development consultancy that employs over 9,000 people across the globe. These companies, and many more, stand in stark contrast to some common perceptions of private firms as small companies preparing to go public (e.g., Kaplan and Stromberg (2003), and Kaplan, Sensoy, and Stromberg (2005)); however, they are also common in the US.<sup>10</sup>

In companies such as these, there is a separation between ownership and control for minority shareholders, much like in publicly-held firms. As such, there exists the potential for conflicts of interest between active or controlling shareholders and minority shareholders. Firms of this nature often fall under the rubric of “closely-held corporations” (e.g., Gomes and Novaes (2005) and Bennedsen and Wolfenzon (2000)), whose agency problems are best characterized by O’Neal (1987):

The most frequently occurring conflict of interest [in closely-held corporations] is between active shareholders...and shareholders who are not active in the business. Holders of a majority of the voting shares in a corporation, through their ability to elect and control a majority of the directors and to determine the outcome of shareholders’ votes on other matters, have tremendous power to benefit themselves at the expense of minority shareholders. (page 125)

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the annual return for some privately-held firms, suggesting that the 20 threshold is a lower bound to the number of shareholders implied by the data values “too numerous too list” or “bulk list of shareholders.”

<sup>10</sup> According to Forbes, in 2004 there were over 300 privately-held companies in the United States with revenues in excess of \$1 billion. Examples of such companies include Cargill, Koch Industries, Mars, Bechtel, etc. In fact, on their website, Koch Industries – a family-run firm - notes that they “reward their people [spanned across 60 countries] like entrepreneurs, paying them a portion of the long-term value they create.”

In conjunction with the absence of the many formal governance mechanisms protecting shareholders of publicly-held corporations' interests, closely-held firms are characterized by relatively high informational opacity and high agency costs, as suggested by O'Neal (1987). To ease our discussion, we refer to private firms for which there are too many shareholders to list on the annual return (i.e., greater than 26 shareholders) as "Private Dispersed" firms to highlight their private status but indicate their relatively diffuse ownership structure.

The final group of firms is denoted "Public" and consists of all publicly-held firms. These firms, despite their dispersed ownership, suffer from moderate information and agency problems because of the institutional and governance mechanisms discussed in the previous subsection. Thus, these three groups of firms form a spectrum of information asymmetry and agency problems: low (Wholly Owned), medium (Public), and high (Private Dispersed). This spectrum is illustrated in Figure 1 for reference.

### *C. Taxes*

All UK firms, both public and private, are subject to the same tax environment and dividend imputation schemes (see Ball and Shivakumar (2002) and Bell and Jenkinson (2002)). Nonetheless, taxes may play a role in shaping dividend policy via differences in the ownership structure discussed above. For example, it is possible that the marginal (and average) investors of private and public firms are subject to different taxes. Thus, in spite of a homogenous tax environment, variation in the marginal investor across these groups of firms can produce variation in the value of dividends to the investors in these groups of firms.

Another potential channel for taxes to influence dividend policy differentially across public and private firms is through differences in the owners' abilities to substitute between dividends and wages as a means of extracting cash from the firm. At first glance, dividends appear to be tax-advantaged relative to ordinary income because of the UK dividend tax-imputation system. Such a tax wedge creates an apparently obvious incentive for managers to prefer receiving income via the dividend channel, as opposed to the wage channel. However, it is not clear that the UK tax authority (Inland Revenue during our sample period) would allow such a tax avoidance scheme, and this scheme becomes more difficult as the number of owners increases beyond an individual owner (e.g., Wholly Owned firm). Ultimately, the extent to which

owners of private firms use dividends as a means to extract funds from the firm in order to avoid taxes is an empirical question that we address below.

#### *D. Capital Market Access*

Another relevant distinction between public and private firms is access to capital markets. Public firms have significantly greater access to equity capital and, potentially, debt capital, in so far as their public status eases constraints on debt markets (Faulkender and Petersen (2006)). Therefore, differential access to external financing may impact a firm's relative reliance on internal funds as a source of financing and, consequently, dividend policy.

Additionally, the limited liquidity in private equity markets might force owners of private firms to hold undiversified portfolios relative to the portfolios of public firm owners (e.g. Leland and Pyle (1977)). Specifically, insiders of private firms face a more difficult task in selling some of their shares for diversification or consumption purposes relative to their public counterparts.<sup>11</sup> Thus, differences in the ability to access external capital markets, coupled with risk aversion, can lead to different preferences for dividends by the owners of private and public firms.

### **III. Sample Selection**

An important consideration for our analysis is sample selection. As illustrated in Table 1, private and public firms differ across a number of dimensions that are correlated with firms' dividend policies. We take two approaches to address this concern, resulting in two mutually exclusive samples on which we focus our analysis.

#### *A. The Transition Sample*

The first approach involves looking at the sample firms that 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. However, since SDC's coverage of the United Kingdom is incomplete, we supplement this data

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<sup>11</sup> In many instances, equity repurchases by privately-held companies is restricted by law.

with data from Zephyr, which provides coverage of the UK beginning in 1997.<sup>12</sup> 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, suggesting that the company was public as of the date of the registry.

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 - 2002. 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 same firms as both a private and public entity.

A limitation of this sample, however, is a lack of historical information on the ownership structure of these firms. This dearth of information complicates classifying these firms as private entities into the two private groups discussed earlier. However, there are at least two reasons to believe that the ownership structure of the transition firms as private entities is best classified as Private Dispersed. First, the large majority (> 70%) of private to public transition firms are true IPOs, not spin-offs of previously wholly owned divisions. Second, evidence from the US during our sample horizon suggests that management owns, on average, only 21% of pre-IPO shares outstanding (Ljungqvist and Wilhelm (2003)). Additionally, Ljungqvist and Wilhelm (2003) also show that institutional-investors’ ownership shares range from 14% to 40%, while other corporate shareholders, when present, hold stakes of approximately 30% to 40%. While US ownership structure is only a proxy for our UK firms, Acharya, John, and Sundaram (2005) and Allen, Carletti, and Marquez (2006) note that the US and UK share many commonalities in terms of capital markets (if not bankruptcy law). Thus, by our criteria, the majority of transition firms as private entities are, perhaps, best described as closely-held companies and, therefore, fall comfortably into the category Private Dispersed.

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

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<sup>12</sup> We thank Omer Brav for the use of his data from SDC and Zephyr that identify IPOs and buyouts during our sample horizon.

public entities, these firms are also more likely to pay a dividend. Transition firms are, on 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.

### *B. The Matched Sample*

While addressing one sample selection issue, the Transition firms raise another. Specifically, the period surrounding the IPO is arguably unique. Thus, these firms may not represent the more general population of public and private firms. As such, we take an alternative approach to addressing the sample selection concern that enables us to comment on the differences in dividend policies between private and public firms more generally. This second approach is a propensity score matching algorithm developed by Rosenbaum and Rubin (1983, 1985) and extended by Heckman, Ichimura, and Todd (1997).

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., 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, 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 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.

We only heuristically discuss the matching procedure here, relegating the details and results to Appendix B. Intuitively, the matching procedure finds for each Public firm-year observation a corresponding Private Dispersed (or Wholly Owned) firm-year observation that is statistically indistinguishable along a number of dimensions. Of course, one would ideally match

firms on as many dimensions as possible but this number is tempered by statistical power considerations. Thus, we rely on previous empirical specifications, which suggest that firm size, profitability, leverage, investment opportunities (sales growth), and industry are important determinants of dividend policy (e.g., Allen and Michaely (2003) summarizes these studies). The result of the matching procedure is three samples of firm-year observations, one sample corresponding to each of the three groups of firms (Wholly Owned, Private Dispersed, and Public), that are statistically indistinguishable across a number of observable characteristics.

To illustrate the outcome of the matching process, consider Table 2, which presents a comparison of firm characteristics across the three matched samples. Immediately, we note that the private firms, regardless of the ownership structure, are not small. The average book asset value of private firms is approximately £700 million, comparable, by construction, to that of public firms. This particular result reinforces the comment made earlier concerning pre-conceived notions of what constitutes a private firm. Our comparisons are made across firms of similar sizes and these sizes are quite large. We also note that the other matching factors are economically similar and that the distribution across industries (not reported) is statistically indistinguishable across the three groups.

Before turning to our results, it is important to recognize the limitations of the matching procedure. The matching procedure can only control for selection on observables. Thus, unobservable differences among the groups can potentially compromise our identification strategy if those unobservable differences are also correlated with the observable characteristics. However, as the results in Table 2 and Appendix B illustrate, the matching procedure successfully homogenizes the groups along the dimensions mentioned above. Additionally, all of our conclusions are subject to the requirement that they hold for both the matched *and* transition samples – two mutually exclusive sets of firms. Finally, we note that any ambiguity or error in our classification strategy will only work to minimize any differences across the three groups.

## **IV. Dividend Smoothing**

### *A. Motivation*

In his seminal paper, Lintner (1956) questions managers on their attitudes toward dividend policy and concludes that managers target a long-term payout ratio. He also finds that dividends are sticky, tied to long-term sustainable earnings, paid by mature companies, and



smoothed from year to year. These findings have since been confirmed with more recent empirical evidence (Fama and Blahnik (1968) and Brav et al. (2005)), as well as new survey evidence (Brav et al. (2005)).

Despite the robustness of these 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 several reasons to suspect 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 average 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 view the consequences of dividend cuts and omissions as less severe than their public counterparts, primarily because of differences in information content. Brav et al. (2005) also report that private firms are more likely to pay dividends in response to temporary changes in earnings, suggesting that private-firms' dividend policies are more erratic. Overall, while there is suggestive evidence on the importance of public capital markets in shaping dividend policy, there is no direct evidence on its relevance. Comparing dividend policies of public and private firms, as we do here, provides such direct evidence on this potentially important link.

In the context of our three groups of firms, this discussion suggests that Public firms will tend to "smooth" their dividend streams relative to both groups of private firms: Private-Dispersed and Wholly Owned. Specifically, Public firms should be less likely to alter their dividend payments via increases, decreases, omissions, or initiations than private firms. Similarly, Public firms' dividend policies should be less sensitive to transitory earnings shocks relative to private firms.

While these conjectures are motivated by the presence or absence of public capital markets, it is also possible that smoothing is related to agency issues or asymmetric information.

If so, then we may be able to distinguish between the temporal behaviors of the two groups of private firms as follows. Wholly Owned firms' dividend policies should correspond most closely to those predicted by Modigliani and Miller's (1961) irrelevance proposition because these firms are subject to the least severe information and agency problems. That is, dividends for Wholly Owned firms should behave approximately like the residual decision, made after investment and financing decisions. This suggests that Wholly Owned firms are more likely to alter their dividend stream and less likely to smooth dividends than Private Dispersed firms.

### *B. Results*

Table 3 provides a detailed analysis of public and private firms' policies towards changing dividends. The estimates presented are unconditional in the sense that they do not depend on whether or not a firm paid a dividend in the previous period. In unreported analysis, we examine estimates conditional on the firm paying a strictly positive dividend at time  $t-1$  (with the exception of initiations) and find qualitatively similar results.<sup>13</sup>

Focusing first 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 Wholly Owned firms omit a dividend 9.0% of the time, Private Dispersed firms omit a dividend 4.3% of the time, and Public firms omit a dividend only 3.7% of the time. The last two columns present t-statistics for pairwise comparisons of the difference in mean values for the Private Dispersed (Wholly Owned) and Public firms. Here, as in all statistical analysis, test statistics are computed using standard errors that are robust to within-firm correlation and heteroskedasticity (Petersen (2005)). Consistent with the discussion above, these tests show that Wholly Owned firms are more than twice as likely to omit a dividend relative to Public firms. Likewise Private Dispersed firms are almost 16% more likely to omit a dividend relative to Public firms, though this difference is statistically insignificant.

The next row examines the propensity to cut dividends, defined as a firm-year observation in which the change in dividend is negative. We find a similar pattern for dividend cuts: Both groups of private firms are significantly more likely to cut their dividends than Public

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<sup>13</sup> For the Matched samples, 46% of Wholly Owned, 79% of the Private Dispersed, and 83% of the Public firms pay dividends in any given year.

firms. Both pairwise differences are statistically significant. Finally, conditional on cutting dividends, Wholly Owned firms decrease their dividends by significantly more than Public firms. Though, we find no difference in the average relative magnitude of dividend cuts between Private Dispersed and Public firms. Private firms are not only more likely to cut and omit dividends; they are also more likely to initiate dividends. In a given year, 7.8% of Wholly Owned firms initiate dividends compared with 3.3% of Private Dispersed firms and only 3.0% of Public firms.

Perhaps the most striking result, however, pertains to dividend increases. Public firms increase their dividends 64% of the time, relative to 48% for Private Dispersed and only 29% for Wholly Owned. In light of the above conjectures, this result might seem surprising. However, the relative magnitudes of dividend increases exhibit precisely the opposite pattern, consistent with Lintner's observations. Specifically, the magnitude of Public firms' dividend increases are approximately one quarter the size of Private Dispersed firms and one tenth the size of Wholly Owned firms. (An inspection of medians reveals a similar ranking.) Unreported analysis also reveals that the frequency of large changes in dividends also increases as one progresses from Public to Private Dispersed to Wholly Owned. The likelihood of increasing one's dividend by at least 50% is 13%, 19%, and 33%, respectively, with all pair wise differences being statistically significant. Thus, while Public firms increase dividends more frequently than private firms, they do so in much smaller amounts.

Panel B presents results for our Transition sample and illustrate a close correspondence with those found in the Matched sample. The results illustrate that when Private, firms are significantly more likely to omit, decrease, and initiate a dividend than when they are Public. However, as Public entities, firms are more likely to increase their dividend, although these increases are significantly smaller than increases as Private entities.

Thus far, the results of Table 3 lead to the following conclusions. Public firms are averse to omitting, cutting, and initiating dividends relative to otherwise similar private firms. These differences are more pronounced relative to Wholly Owned firms than Private Dispersed firms. Public firms are also more averse to large dividend increases than their private counterparts. These findings suggest that the scrutiny of public equity markets appears to induce managers to follow a policy of relatively small, consistent increases in dividends, while avoiding any reduction in dividends. In contrast, dividend increases appear less frequently and more

erratically, in terms of the magnitude of the increase, for Private Dispersed and Wholly Owned firms. Interestingly, this behavior coincides closely with the survey responses by CFOs of publicly- and privately-held companies in the US (Brav et al. (2005)).

Another aspect of dividend smoothing is the response of firms' dividend policies to transitory earnings shocks. Table 3, in fact, already presents indirect evidence of differential responses to earnings shocks. Public firms appear to follow a unique strategy of relatively numerous but small increases in their dividends coupled with a strong aversion to any negative or large changes. However, Table 4 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 for firm  $i$  in period  $t$  is:

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

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  $\varepsilon_{it}$  is a random error term. Intuitively, Lintner's model implies that firms have a target payout that is a fraction,  $\beta_i$ , of their profits. Any difference between last period's dividends and this target is reduced by a fraction,  $\lambda_i$ , each period. We refer to  $\beta$  as the target payout ratio or "TP" and  $\lambda$  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 earnings shocks and a desire to smooth such shocks over time.

We estimate the model in equation (1) separately for each firm and then present the distribution of resulting parameter estimates.<sup>14</sup> This approach has been used in previous studies, such as Brav et al. (2005). Because time-series observations are at a premium for this analysis, we utilize the entire time-series for each firm in the matched sample, conditional on nonmissing data for at least eight observations. Finally, to mitigate heteroskedasticity and confounding scale effects, we run weighted regressions using the inverse of total assets as the weight.<sup>15</sup>

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<sup>14</sup> Estimating this model poses several econometric challenges (Arellano and Bond (1991) and Blundell and Bond (1998)). However, because of data limitations, particularly a short time series of observations, more advanced econometric procedures do not produce reliable results, as suggested by model diagnostics, and lead to economically unrealistic parameter estimates. Thus, we follow previous studies examining this issue in order to ease comparisons.

<sup>15</sup> Regression results using variables normalized by the total assets as of the start of the period are virtually identical to those presented.

Table 4 presents the estimation results. We see a monotonic and significant decline in the average speed of adjustment moving from Wholly Owned firms (0.89) to Private Dispersed firms (0.65) to Public firms (0.41). (Medians show a similar relation.) These estimates imply that Wholly Owned firms' dividend policies exhibit the highest sensitivity to transitory earnings shocks, followed by Private Dispersed firms, and, finally, Public firms, whose dividend policies are relatively insensitive to such shocks.

These results are illustrated in Figure 2, which presents the estimated impulse response function, scaled by the estimated long-run (i.e., target) payout ratio, for each set of firms. For example, consider Wholly Owned firms with an average estimated long-run payout ratio (i.e., dividends paid divided by earnings) of 29% (see Table 4). Immediately after a £1 shock to profits, Wholly Owned firms distribute approximately £0.26 of the additional earnings to shareholders through an increase in dividends. Relative to the target payout ratio, this corresponds to a 89% distribution, which is the estimated speed of adjustment. This implies that dividends change almost one-for-one, relative to the long-run payout ratio, at the time of the earnings shock. In the following year, dividends increase by only 6% relative to their average level and less than a percent thereafter.

Private Dispersed firms distribute only £0.104 of the £1 earnings shock in the initial period. However, relative to their target payout ratio, 16%, this distribution corresponds to an immediate increase in dividends of approximately 65% in response to the shock. After only four years, the effect of the earnings shock is effectively gone. Finally, Public firms distribute £0.086 of the £1 earnings shock in the initial period. Relative to their target payout ratio, 21%, this distribution corresponds to an immediate increase in dividends of only 41% in response to the shock. In the subsequent years, we see that the effect of the shock is still felt in dividends, having been smoothed over the next six to seven years.

These results are consistent with the notion that public firms follow more conservative dividend policies than private firms. The findings are also consistent with the evidence in Table 3, where we found a relatively strong aversion to negative dividend changes and a propensity for frequent, but small, dividend increases among Public firms. This behavior implies a relatively nonvolatile dividend path for Public firms, which we are able to confirm and quantify with the analysis in Tables 3 and 4 and Figure 2. We also note that these findings are not an artifact of higher earnings volatility for private firms. In unreported results, we find that the ratio of profits

to assets actually exhibit *greater* within firm variation for Public firms when compared to both sets of Private firms, consistent with the summary statistics presented in the last row of Table 1.

These findings shed new light on Lintner's (1956) description of firms' dividend policies. First, Lintner's finding of dividend smoothing appears related to market frictions, such as agency conflicts and information asymmetry. In Wholly Owned firms, where such frictions are minimal, there is little, if any, smoothing of dividends, and the adjustment is almost immediate. However, in Private Dispersed and Public firms, where such frictions are present, there is relatively more significant dividend smoothing behavior.

Second, the scrutiny of public capital markets also seems to play a significant role in the decision to smooth dividends – above and beyond what is implied by variation in agency costs and information asymmetry. Agency and information considerations imply a specific ranking among the three groups (recall Figure 1) according to the severity of these frictions: Wholly Owned (least severe), Public, and Private Dispersed (most severe). Our results in Tables 3 and 4; however, do not strictly abide by this ranking. Rather, Public firms smooth their dividends the most, followed by Private Dispersed firms, and then Wholly Owned firms. Thus, information and agency explanations can be responsible for only a part of the motivation behind dividend smoothing. The remainder appears to come from the scrutiny of the public capital markets.

## **V. Agency Costs**

### *A. Hypotheses*

Jensen and Meckling (1976) and Shliefer and Vishny (1986), among others, 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 widely across our three groups of firms, the potential agency costs vary widely as well. Thus, we examine two 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. The extent of this expropriation is a function of two considerations: (1) the alignment of incentives between managers and shareholders, and (2) the ability of shareholders to observe and take recourse against any expropriation.

These two considerations, in light of earlier discussions, suggest that Wholly Owned firms, for which the incentives between management and shareholders are closely aligned, should pay higher dividends relative to Private Dispersed firms. Similarly, Public firms should pay higher dividends than Private Dispersed firms. This second implication follows from the “outcome” Agency hypothesis put forth by La Porta et al. (2000). This hypothesis builds on the notion that institutional and governance mechanisms can afford minority shareholders a certain amount of power over management. Thus, any misalignment of incentives between insiders or controlling shareholders and minority shareholders of Public firms is partially mitigated by the protection and empowerment of minority shareholders due to the presence of strong governance structures. To be clear, shareholders of Public firms 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. As such, Public firms commit ex-ante to not undertake value-destroying actions by eliminating excess cash through dividend payments. Thus, we have the following hypothesis:

**Hypothesis 1:** Public and Wholly Owned firms should pay higher dividends than Private Dispersed firms.

Agency theory, however, does not produce a clear prediction about the level of dividends paid by Public firms relative to Wholly Owned firms. On the one hand, Public firms have more enforcement mechanisms; on the other hand, Wholly Owned firms have fewer agency problems.

Continuing with the implications of agency theory, Wholly Owned firms (with minimal agency conflicts) should exhibit the greatest sensitivity between investment and dividends if dividends for this group are closest to behaving like the residual in their decisions. Specifically, dividends are reduced when investment opportunities abound and increased when investment

opportunities shrink. We also expect Public firms to exhibit a similar sensitivity to investment, at least in direction if not magnitude, whereas Private Dispersed firms should exhibit a relatively lower sensitivity to investment opportunities. This relation follows from the outcome agency hypothesis of La Porta et al. (2000), which suggests that better protected investors (i.e., shareholders of Public firms) will compel managers to pay higher dividends when growth opportunities are low and vice versa. This discussion leads to the following hypothesis.

**Hypothesis 2:** Wholly Owned 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.

### *B. Results*

We now turn our attention to the relevance of agency concerns for dividend policy by examining Hypotheses 1 and 2. To ensure the robustness of our findings, we present results examining two different ratios: dividends to operating profits and dividends to total assets. The former measure has a more natural economic interpretation of a payout ratio, whereas the latter is simply an alternative normalization.

We begin with Hypothesis 1, which states that because of better governance, Public firms will pay higher dividends than Private Dispersed firms. Private firms will also distribute fewer dividends than Wholly Owned firms because of greater agency conflicts. Panel A of Table 5 examines this hypothesis in the Matched sample of firms and reveals results consistent with this conjecture. Specifically, Public firms distribute 27% (2.0%) of their operating profits (assets) in dividends - significantly more than that distributed by Private Dispersed (20% of operating profits, 0.9% of assets). Wholly Owned firms also pay a relatively larger amount of dividends (20% of operating profits and 1.4% of assets) than Private Dispersed, though the difference between the payout ratios is significant only when scaled by assets.

Panel B of Table 5 performs a similar comparison for the Transition sample, finding that firms pay relatively higher dividends, on average, when they are public than when they are private. Relative to operating profits (assets), Transition firms as public entities distribute 21.4% (1.4%) compared to only 12.4% (0.9%) as private entities. 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. Therefore, in unreported results, we estimate a firm-fixed effect regression containing the controls that we use in the matching procedure (i.e., size, profitability, leverage, sales growth, and industry) to better isolate the marginal effect of being public on dividends. Consistent with the results in Panel B, we find that Public firms pay out a significantly higher share of profits in the form of dividends, though the magnitude of the difference is slightly smaller than that found in Panel B.

Turning to Hypothesis 2, we follow La Porta et al. (2000) by examining a regression of dividends on sales growth, which corresponds to their, and our, empirical proxy for investment opportunities. Specifically, we regress dividends normalized by operating profits in year  $t$  on sales growth in year  $t+1$  and year  $t-1$  controls for size, leverage, profitability, and industry and year indicator variables. We use a forward-looking proxy for investment opportunities for several reasons. First, 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.

The results are presented in Table 6. We begin in Panel A, which presents ordinary least square (OLS) estimates for the three groups of firms from the Matched sample. Again, we present results examining the ratio of dividends to operating profits and the ratio of dividends to assets to ensure the robustness of our findings. Focusing attention of the former ratio, we note that the estimated coefficient on sales growth is greatest – in magnitude – for the Wholly Owned firms (-0.16 with a t-stat of -2.6), followed by Public firms (-0.085 with a t-stat of -4.1), and finally Private Dispersed firms (-0.076 with a t-stat of -0.49), who show no statistically significant association between the level of dividends and investment opportunities. We find similar results for the ratio of dividends to total assets. These findings suggest that high growth Public firms pay, on average, lower dividends than otherwise similar low growth Public firms. In contrast, high growth Private Dispersed firms pay, on average, dividends that are statistically indistinguishable from those paid by low growth Private Dispersed firms.

This finding is consistent with the prediction of Hypothesis 2, as well as the findings in La Porta et al. (2000). In the context of agency theory, governance mechanisms in Public firms

appear to protect and empower minority shareholders in such a manner as to meaningfully affect corporate dividend policies. More precisely, these governance mechanisms enable outside shareholders to induce managers to disgorge cash when profitable investment opportunities are low. Likewise, they enable managers to retain cash for profitable investment opportunities when such opportunities are high. Hence, the dividend policies of public firms are more sensitive to investment opportunities than those of private firms.

The results for Wholly Owned firms only serve to reinforce this interpretation. Wholly Owned firms, who suffer the fewest agency problems, exhibit the highest sensitivity to investment needs. Thus, dividends are strongly negatively correlated with investment opportunities for those firms where agency problems are largely irrelevant.

Panel B reports the result of a similar analysis on the Transition firms. We see that the dividends of firms as public entities are significantly negatively correlated with investment opportunities, whereas there is no significant association for these firms as private entities. This finding is not only consistent with the results in Panel A, but it also serves to reinforce our conjecture that the most likely ownership classification for these firms as private entities is Private Dispersed.

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. In the base case, when there are no agency problems (the Wholly Owned sample), dividends are highly sensitive to changes in investments: Dividends decrease when cash is needed and vice versa. When agency problems become relevant (Private Dispersed and Public samples), we find that governance mechanisms that protect Public firms' investors appear to empower these investors to sway managers to disgorge cash when growth opportunities are low and, analogously, to trust managers to retain cash when growth opportunities are high. Without these mechanisms in place (Private Dispersed sample), the ability of outside investors to affect managements' actions appears significantly more limited.

## **VI. Signaling Theories**

### *A. Hypotheses*

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," where 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, which 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 1 above: Wholly Owned firms pay the smallest dividends, followed by Public firms and then Private Dispersed firms, which pay the largest dividends.<sup>16</sup>

Another important implication of most signaling models is that firms that signal their quality through dividend payments will subsequently experience better performance (e.g., Benartzi, Michaely, and Thaler (1997)). Thus, we should see a monotonic increase in the predictive ability of dividend changes for future earnings changes as we move from Wholly Owned firms to Public firms to Private Dispersed firms, where signaling will be most important.

**Hypothesis 3:** 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 Wholly Owned firms.

### *B. Results*

In fact, several results presented thus far conflict with the implications of dividend signaling theories. First, according to these theories, Private Dispersed firms, the most informationally-opaque group, should distribute a larger portion of their profits as dividends relative to both Wholly Owned and Public firms. However, this prediction of signaling theory is

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<sup>16</sup> The substitute model also suggests that high growth firms may have a stronger incentive to establish a reputation since they have a greater potential need for external finance. However, 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.

rejected by the evidence presented in Table 5, showing that Private Dispersed firms, on average, pay the lowest amount of dividends. Second, Kumar (1988) suggests that dividend smoothing should be monotonically related to information asymmetry. We find limited evidence that asymmetric information is an important factor behind dividend smoothing since information asymmetry does not appear to be monotonically related to dividend smoothing.

We now examine more closely a third prediction of signaling theories, summarized by Hypothesis 3, which suggests that firms that pay dividends, and, in particular, firms that increase their dividends, are firms that are undervalued by the market. A prediction common to all dividend signaling models is that dividend increases convey good news about the firm's future cash flows. That is, operating performance should improve following dividend increases. Following work by Fama and French (2000) 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 (Benartzi, Michaely, and Thaler (1997) and Nissim and Ziv (2001)) and Panel B presents the results for the nonlinear model (Benartzi et al. (2005)). It is reassuring to observe that when no asymmetric information exists (Wholly Owned firms), firms do not attempt to signal future change in earnings by dividend increases. However, even when asymmetric information is severe (Private Dispersed firms), there is no evidence that firms signal future changes in earnings by dividend increases. At the one-year horizon, there is some evidence of predictability of positive earnings changes by positive dividend changes among Public firms, but this result disappears when we account for nonlinearity in the specification. Thus, positive changes in dividends in period  $t$  do not appear to contain information about positive changes in earnings in the periods to follow.

The results for dividend decreases suggest a perverse relation where dividend decreases are associated with subsequent earning increases in the following year (for Public firms): while this is clearly inconsistent with signaling theories, it is consistent with prior empirical evidence which uses US data (Healy and Palepu (1988) and Benartzi, Michaely, and Thaler (1997)).

Ultimately, both private firms' and public firms' dividend behaviors are largely unresponsive of the predictions of existing dividend signaling theories. Firms with less information asymmetry (Wholly Owned and Public firms) pay *higher* dividends than firms with more (Private Dispersed firms); and, for none of these three groups of firms do we observe that

dividends convey information about subsequent earnings changes. This is consistent with work using data on US public firms (e.g., Grullon, Michaely, and Swaminathan (2002)) that has struggled to find compelling evidence for this theory of dividends, beyond that found in equity return responses to these changes. However, to be clear, we are not suggesting that dividends cannot be a signal of something, such as changes in future *permanent* profitability; rather, our evidence suggests that existing theoretical explanations predicated on forecasting future profitability are not supported by the data.

## VII. Taxes

As discussed in Section II, despite the homogenous taxation of public and private firms, variation in investor composition across these groups of firms can produce variation in the value of dividends to the investors in these firms. We explore two specific tax channels in this section.

### *A. Investor Clienteles*

There is reason to suspect that investors in private firms face higher dividend taxation relative to investors in public firms. A significant portion of investors in Public firms' are pension funds and other entities for which dividends are either tax-neutral or tax-advantaged (Bell and Jenkinson (2002)). For example, £1 of dividends to corporate shareholders, such as insurance companies, is still worth £1 after taxes. Similarly, a pound of dividends to pension funds is worth £1.25, before 1997, and £1 after 1997 (we revisit this change below). If we consider individual investors, we suspect a similar relation in that investors of privately held firms are more likely to be of greater wealth than those of public firms and, therefore, are more likely to face higher dividend taxes.<sup>17</sup>

All else equal, one tax implication for dividend policy is that private firms' dividends should be lower than public firms' dividends. Table 5 provides evidence consistent with this conjecture, in that both Wholly Owned and Private Dispersed firms pay lower dividends (0.20 weighted average payout ratio) than Public firms (0.27 payout ratio). However, taxes have little to say about the prominent differences in smoothing behavior and sensitivity of dividends to

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<sup>17</sup> Dividends for higher tax rate (i.e., wealthier) individuals face a 25% after tax discount, while dividends for lower and basic rate individuals are tax-neutral.

investment found across the public-private divide. Nonetheless, we explicitly examine the sensitivity of our results to a sharp change in the tax regime.

As in most studies, testing the effect of taxes is complicated by the inability to observe the relevant tax rate of the marginal investor. However, in 1997, the incoming Labour government radically reformed the taxation of dividend income in the UK by withdrawing the ability of tax-exempt investors (e.g., Pension funds) to reclaim dividend tax credits. This change led to a 20% reduction in the value of their dividend income. As pension funds own almost a quarter of the outstanding publicly traded equity in the UK (Bell and Jenkinson (2002)), this act represents a significant shift in the after-tax value of dividends to a significant investor in the public equity markets. We use this policy shift, as Bell and Jenkinson (2002) do in the context of their ex-dividend day study, to examine the sensitivity of our results to tax considerations.

Because the results based on before- and after-1997 subsamples are qualitatively and quantitatively similar to those presented above, we limit ourselves to a discussion of the most salient findings. For example, we find that the average ratios of dividends to assets in the pre-1997 era for Wholly Owned, Private Dispersed, and Public firms are 0.017, 0.011, and 0.022, respectively. In the post-1997 era, the average ratios are 0.012, 0.009, and 0.020, respectively. Additionally, the pairwise differences among the three groups are all statistically significant in both eras. We also find identical patterns in the propensity to omit, cut, initiate, and increase dividends across the three groups of firms in both the pre- and post-1997 period. Thus, even after a change in the effective tax rate on dividends for a particularly significant clientele, our results show no significant response to this change.

### *B. Dividends as Wages*

Another potential channel for taxes to influence dividend policy differentially across public and private firms is through differences in owners' abilities to substitute between dividends and wages as a means for compensation. An owner of a Wholly Owned firm may find it advantageous to be paid in the form of dividends relative to wages, which are taxed at a higher rate as ordinary income. Assuming the tax authority (Inland Revenue) would allow such a policy, its most obvious implication is that Wholly Owned firms should pay higher dividends than either Private Dispersed firms or Public firms. As the results in Table 5 suggest, this is clearly not the case. Moreover, if this type of tax-saving is the primary motive behind private firms' dividend

policies and any differences in the dividend policies of private and public firms, then it is unclear why only 42% of the Wholly Owned firms in our sample pay dividends compared to 81% of Public firms that pay dividends. Thus, substitution between dividends and wages does not appear to be a first order activity for most private firms.

To be clear, the evidence in this section does *not* imply that taxes are irrelevant for dividend policy. Rather, they simply suggest that the majority of our results are unlikely explained solely by tax considerations.

## **VIII. Limited Capital Market Access**

### *A. Limits on the Firm*

Another potential alternative explanation for our results is simply limited access to financial capital. Public firms have greater (or less costly) access to external capital than their private firm counterparts. As such, private firms may be less willing to distribute cash, which represents a relatively low marginal cost source of funds. Before re-examining our earlier results in light of this alternative and presenting new evidence, it is interesting to note that almost half of Wholly Owned firms pay a dividend and that 79% of Private Dispersed firms pay a dividend, compared to 83% of public firms. If we follow the investment literature (e.g., Fazzari, Hubbard, and Petersen (1988)) that uses the payment of a dividend as a proxy for the degree of financing constraints, it is clear that private firms, and in particular Private Dispersed firms, are not significantly more financially constrained than their public counterparts. Nonetheless, we examine this issuer further here.

Focusing first on Table 5, we see that private firms do pay relatively lower dividends than public firms, consistent with a desire to retain a greater fraction of earnings. Private firms are also more apt to omit and cut dividends (Table 3) than public firms. These inferences are found for both the Matched and Transition samples, the latter of which reveals that the propensity to omit (cut) dividends by private firm is 11.7% (36.8%) compared with 5.2% (22.3%) for public firms (Table 3, Panel B). However, while this evidence is consistent with a limited access to capital story, Private firms are more likely to initiate dividends (e.g., 7.6% vs. 4.7% for the Transition sample) and their dividend increases are significantly larger (Table 3). Thus, the evidence on the relation between dividend payments and financial constraints is somewhat mixed.

Another implication of limited access to capital is that private firms should exhibit different sensitivities to positive and negative earnings shocks. To test this implication, we examine each sample's dividend reaction to positive and negative earnings shocks, where the shocks are defined as the residual from a firm fixed-effect regression of earnings on a time trend. Residuals falling in the lower (upper) third of the distribution are classified as negative (positive) earnings shocks. The results are presented in Table 8. Consistent with the results in Tables 3 and 4, Wholly Owned and Private Dispersed firms' dividends are more sensitive to earnings changes, whether positive or negative, relative to Public firms. For example, in response to a negative shock, Wholly Owned firms reduce dividends by 9% compared to an increase of 4% by Public firms. For earnings increases, Wholly Owned firms increase dividends by 31% and Public firms increase by 17%.

Panel B of Table 8 presents qualitatively similar findings for the Transition sample. Specifically, firms as private entities reduce dividends, on average, by 12% in response to a negative earnings shock, compared to a 1% increase as public entities. And, firms as private entities increase dividends by 59% in response to a positive earnings shock, in contrast to the 18% increase as public entities.

In sum, while limited access to capital likely affects dividend policy, its importance in explaining differences in the dividend policies between public and private firms is limited. First, as alluded to above, it is not clear that private firms in our sample are de facto more constrained than their public counterparts. In addition to many, if not most, private firms paying a dividend, private firms in our Matched sample are not small, with a median asset value equal to that of Public firms (approximately £100 million, Table 2). Indeed, the mixed empirical results appear to reflect this ambiguity in terms of the relative constraints faced by private and public firms.

### *B. Limits on the Owner*

Independent of limitations on private firms' abilities to raise external capital, owners of private firms may face similar constraints. Selling portions of their holdings can be difficult and costly precisely because shareholders of private firms do not have access to a public capital



market for their shares.<sup>18</sup> Therefore, dividends can play a significant role in meeting private-owners diversification and consumption needs.

The key implication of this role for dividends is that private firms' dividends should be higher than those of their public counterparts. We find the opposite result in Table 4, where private firms pay out significant *less* than their public counterparts. More striking is that Panel B of Table 4 reveals that transition firms pay lower dividends as private entities than as public entities. This behavior is in spite of the sharp increase in liquidity occurring at the time of the IPO. Thus, while diversification motives may be relevant for dividend policy, they are unlikely responsible for all of our results.

## **IX. Conclusion**

By examining the behavior of private firms, our study is able to make several key contributions towards understanding *how* firms choose their dividend policies. One such contribution is to provide explicit evidence that dividend smoothing is directly tied to the scrutiny of the public capital markets. In other words, while market imperfections, such as agency conflicts and information asymmetry, can generate a role for dividend smoothing, there is something inherent in the presence of public capital markets that motivates publicly-held firms to smooth their dividends above and beyond what traditional financing frictions would predict.

Additionally, we show how the interplay between agency conflicts and governance mechanisms leads to very different dividend policies. Specifically, while conflicts of interest between controlling and minority shareholders work to lessen dividend payments in many private firms, governance mechanisms present in public firms mitigate these conflicts and lead to substantially higher dividend streams. By the same token, dividends of public firms are more responsive to fluctuations in investments relative to many private firms, precisely because governance mechanisms work to empower minority shareholders.

On the other hand, 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 irrelevant, we observe relatively higher dividend payout rates and a greater sensitivity of dividends to earnings and investment opportunities. In essence,

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<sup>18</sup> Consistent with this argument, theoretical research suggests that diversification and consumption concerns are motives to go public. For example, see Leland and Pyle, (1977) and Zingales (1995)

dividend policy for these firms resembles that of a residual financing decision, occurring after the investment decision. This finding is comforting since these firms correspond closely to Jensen and Meckling's (1976) 100%-alpha firms, in which agency costs are fully internalized.

Further investigation into alternative hypotheses for dividend behavior is equally revealing. Specifically, while relatively limited access to external capital by private firms is consistent with some of our results, we find that private firms are *less* likely to hoard cash in response to positive earnings shocks - counter to concerns over financing constraints. With respect to taxes, we find that all of our results are robust to a regulatory change in the taxation of dividends for pension funds, a significant shareholder of public firms. Additionally, we find that privately-held firms with extreme ownership concentrations do not appear to substitute between wages and dividends to take advantage of any tax differentials. Finally, we find that reputation and signaling models do no better at describing the dividend policies of UK private and public firms than they do at describing the dividend policies of US public firms. Thus, while financing constraints and taxes may be relevant for dividend policy, they are not responsible for our findings.

Looking forward, our evidence also leads to several new questions: What is the mechanism present in public capital markets that is responsible for dividend smoothing? How does the propensity to smooth dividends vary cross-sectionally? We look forward to future research addressing these questions.

## **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: Matching Procedure and Results

We perform two matches: (1) Public to Private Dispersed and (2) Public to Wholly Owned. The matching procedure that we employ is a one-to-one nearest neighbor matching with replacement, restricting attention to propensity scores falling in the common support of both groups (see Smith and Todd (2003) for details). The matching begins by first estimating a probit regression of an indicator variable equal to one if the firm is in the Public category and zero if the firm is in the Private Dispersed (Wholly Owned) category.<sup>19</sup> The results of this regression are presented in the Pre-Match column in Table B1. Panel A presents the results for the Public to Private Dispersed match; Panel B presents the results for the Public to Wholly Owned match.

Both panels illustrate sharp differences between the three groups of firms. Focusing first on Panel A, we see that, on average, Public firms are much larger but less profitable and less levered than Private Dispersed firms. Similar relations are found in Panel B comparing Public with Wholly Owned firms. Though not reported, we also find that there are also differences across the three groups, in terms of the distribution across industries, which we measure using the Fama and French 12 industry definitions.<sup>20</sup>

Using the predicted probabilities (i.e., propensity scores) from the estimated probit regressions, we match to each Public firm-year observation, the corresponding Private Dispersed (Wholly Owned) firm-year observation that minimizes the absolute value of the difference between propensity scores. Because the matching is done with replacement, duplicate observations can result. Indeed, of the 4,093 Private Dispersed observations matched to the Public observations, 1,329 are unique. Similarly, 3,402 of the Wholly Owned observations matched to the Public firms are unique. However, this feature of the matching process improves the accuracy of the matching while sacrificing statistical power. Thus, this feature works against us finding statistically significant differences in our analysis because the number of independent observations is significantly smaller than the literal number of observations.<sup>21</sup>

The Post-Match column in Panels A and B illustrate that the matching procedure is successful. Specifically, most every coefficient experiences a sharp attenuation in magnitude, as well as statistical significance. Additionally, casual inspection of the industry fixed effects reveals no significant estimates, as well. In fact, the only marginally significant coefficient is that

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<sup>19</sup> Using a logit and semi-parametric model, as opposed to a probit, leads to qualitatively similar results.

<sup>20</sup> We thank Ken French for providing these data on his website.

<sup>21</sup> As noted in the text, all of our standard errors are computed by clustering at the firm level.

on Profitability. However, the pseudo-R-square suggests that the explanatory power of this specification is 1% for the Public versus Private Dispersed comparison and less than 0.5% for the Public versus Wholly Owned comparison.

Because we often compare the Wholly Owned firms with the Private Dispersed firms, we also estimate a probit regression using the Post-Match samples of these two groups. (The indicator now equals one if the observation corresponds to a Private Dispersed firm and zero if the observation corresponds to a Wholly Owned firm). The results are qualitatively similar to the Post-Match results presented in Panels A and B and, therefore, are not presented.

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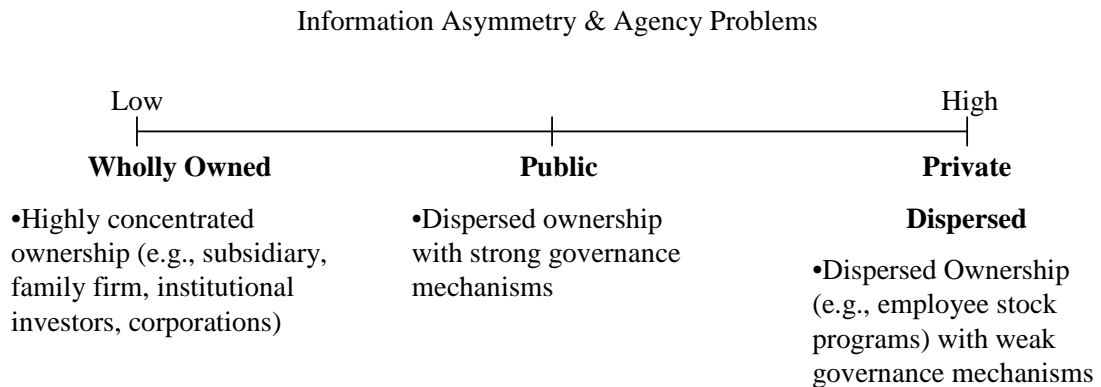
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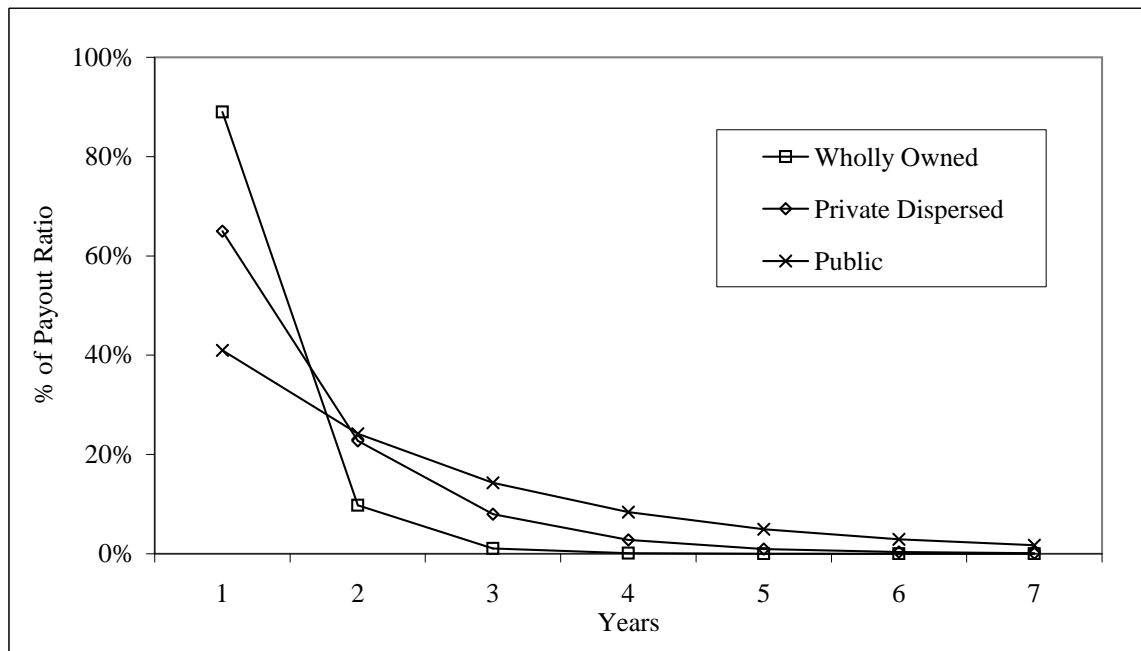
## Figure 1 Ownership Classification of Firms

The figure summarizes where the three groups of firms, defined by their ownership structure, fall on the spectrum of information asymmetry and agency problems between managers and shareholders. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) 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 the estimated dividend impulse response functions corresponding to a one unit (GBP) shock to earnings, as a fraction of firms' estimated target payout ratios. We present results for three matched samples of firms. Wholly Owned firms are privately held firms with less than five shareholders. Private Dispersed firms are privately held firms for which the number of shareholders are "too numerous" to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) firms. For example, a unit shock to earnings leads Wholly Owned firms to increase their dividends in the year of the shock by 92% relative to their target payout ratio. In the following year, dividends only increase by 6% relative to their target payout ratio.



## Table 1

### Summary Statistics

The sample 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. 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 variables are defined in Appendix A.

Panel A: All Firms

Variable	Private			Public		
	Obs	Mean	SD	Obs	Mean	SD
Size	315,262	49.42 [ 5.16]	663.67	10,956	565.59 [ 46.99]	4,198.37
Capital Investment	271,050	0.18 [ 0.01]	0.73	9,532	0.33 [ 0.06]	1.17
Prof / Assets	287,294	0.04 [ 0.04]	0.11	10,682	-0.01 [ 0.04]	0.21
Tangible Assets / Assets	304,134	0.27 [ 0.21]	0.23	10,644	0.33 [ 0.28]	0.24
<i>I(DividendPayer)</i>	335,120	0.34 [ 0.00]	0.47	11,055	0.71 [ 1.00]	0.46
Div / Prof	236,183	0.31 [ 0.00]	0.62	7,732	0.47 [ 0.39]	0.50
Debt / Assets	161,443	0.52 [ 0.53]	0.21	8,039	0.36 [ 0.35]	0.17
Sales Growth	238,196	0.12 [ 0.04]	0.44	9,259	0.21 [ 0.06]	0.67
Profit Volatility	37,680	0.07 [ 0.05]	0.06	1,533	0.12 [ 0.07]	0.14

Panel B: Transition Firms

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

**Table 2**  
**Summary Statistics for the Matched Samples**

The table presents summary statistics - mean, median (in brackets) and standard deviations (in parentheses) - for three matched samples of firms. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) firms. All variables are defined in Appendix A.

Variable	Wholly Owned			Private Dispersed			Public		
	Obs	Mean	SD	Obs	Mean	SD	Obs	Mean	SD
Size	4,023	656.23 [ 99.06]	2,199.86	4,093	767.25 [ 90.83]	2,536.52	4,093	790.30 [ 86.39]	3,367.03
Prof / Assets	3,822	0.04 [ 0.04]	0.06	3,879	0.03 [ 0.03]	0.06	3,888	0.03 [ 0.05]	0.09
Debt / Assets	4,020	0.36 [ 0.34]	0.18	4,084	0.35 [ 0.32]	0.19	4,088	0.36 [ 0.35]	0.16
Sales Growth	3,823	0.08 [ 0.03]	0.24	3,885	0.07 [ 0.03]	0.20	3,889	0.09 [ 0.05]	0.23

**Table 3**  
**Dividend Changes for Private and Public Firms**

Panel A presents summary statistics for three matched samples of firms. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) 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 heteroskedasticity.  $Pr(Omit)$  ( $Pr(Initiation)$ ) 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  $t$ .  $Decrease / Dividends$  ( $Increase / Dividends$ ) 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 experience a decrease (increase) in dividends over the year.

Panel A: Matched Sample

Variable	Statistic	Sample			t-Statistics	
		Wholly Owned (a)	Private Dispersed (b)	Public (c)	(a)-(c)	(b)-(c)
Pr(Omit)	Mean	0.090	0.043	0.037		
	SE	0.005	0.010	0.003	8.778	0.669
	Obs	4,023	4,093	4,093		
Pr(Cuts)	Mean	0.211	0.227	0.164		
	SE	0.008	0.024	0.007	4.370	2.494
	Obs	4,023	4,093	4,093		
Decrease / Dividends	Mean	-0.664	-0.492	-0.510		
	SE	0.016	0.044	0.016	-6.889	0.382
	Obs	850	928	673		
Pr(Initiation)	Mean	0.078	0.033	0.030		
	SE	0.005	0.006	0.003	8.609	0.386
	Obs	4,023	4,093	4,093		
Pr(Increase)	Mean	0.285	0.484	0.639		
	SE	0.009	0.033	0.013	-22.813	-4.386
	Obs	4,023	4,093	4,093		
Increase / Dividends	Mean	2.728	1.061	0.290		
	SE	0.635	0.476	0.012	3.839	1.619
	Obs	823	1,830	2,468		



Panel B: Transition Firms

Variable	Statistic	Sample		t-statistic (a)-(b)
		Private (a)	Public (b)	
Pr(Omit)	Mean	0.117	0.052	9.088
	SE	0.006	0.003	
	Obs	2,087	4,563	
Pr(Cuts)	Mean	0.368	0.223	11.853
	SE	0.010	0.007	
	Obs	2,087	4,563	
Decrease / Dividends	Mean	-0.745	-0.611	-6.063
	SE	0.015	0.016	
	Median	-1.000	-0.656	
	Obs	478	741	
Pr(Initiation)	Mean	0.076	0.047	4.631
	SE	0.005	0.003	
	Obs	2,087	4,563	
Pr(Increase)	Mean	0.258	0.449	-11.001
	SE	0.012	0.013	
	Obs	2,087	4,563	
Increase / Dividends	Mean	3.311	0.549	6.232
	SE	0.442	0.032	
	Median	0.622	0.167	
	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. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) firms. The table presents summary statistics for the distribution of parameter estimates from Lintner’s (1956) model of dividends. Specifically, we model dividends as:

$$\Delta Dividend_{it} = \alpha_i + \lambda_i(\beta_i Profit_{it} - Dividend_{it-1}) + \varepsilon_{it},$$

and estimate the model for each company, which produces 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 variables are defined in Appendix A.

Parameter	Firms	Mean	SE(Mean)	Min	25%	Median	75%	Max
Wholly Owned Firms								
Intercept	1,437	2.18	0.31	-8.50	0.00	0.10	1.54	49.19
SOA	1,397	0.89	0.01	-0.01	0.64	0.95	1.17	1.81
TP	1,400	0.29	0.02	-0.98	0.00	0.15	0.49	2.04
Private Dispersed Firms								
Intercept	275	0.06	0.01	-0.50	0.00	0.01	0.07	1.56
SOA	271	0.65	0.02	-0.20	0.29	0.65	1.00	1.50
TP	271	0.16	0.02	-0.21	0.01	0.09	0.25	1.14
Public Firms								
Intercept	461	2.42	0.93	-1.66	0.03	0.18	1.07	55.69
SOA	459	0.41	0.02	-0.26	0.11	0.33	0.67	1.40
TP	459	0.21	0.07	-0.99	0.01	0.14	0.36	2.67

**Table 5**

**Dividend Levels for Private and Public Firms**

Panel A presents summary statistics and hypothesis test results for the three Matched samples. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) 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. All standard errors are robust to heteroskedasticity and within firm correlation.

Panel A: Matched Sample

Variable	Statistic	Sample			t-Statistics		
		Wholly Owned (a)	Private Dispersed (b)	Public (c)	(a)-(b)	(a)-(c)	(b)-(c)
Dividends / Operating Profit	Mean	0.203	0.199	0.270			
	SE	0.008	0.021	0.005	0.182	-6.991	-3.359
	Obs	2,991	3,195	3,211			
Dividends / Assets	Mean	0.014	0.009	0.020			
	SE	0.001	0.001	0.001	4.711	-7.693	-11.416
	Obs	3,822	3,889	3,889			

Panel B: Transition Firms

Variable	Statistic	Sample		t-statistic (a)-(b)
		Private (a)	Public (b)	
Dividends / Operating Profit	Mean	0.124	0.214	
	SE	0.007	0.005	-10.663
	Obs	1,112	2,746	
Dividends / Assets	Mean	0.009	0.014	
	SE	0.001	0.000	-6.489
	Obs	1,935	4,248	

**Table 6**  
**Dividend Level Regressions**

The table presents estimates from a regression of dividends in year  $t$ , normalized by year-end operating profits in  $t$ , on several variables. Panel A presents the results from estimating the regression on each of the three Matched samples. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) firms. Panel B presents the results from estimating three regressions on the subsample of firms that underwent a transition from public to private (or vice versa) status. Variable definitions are provided in Appendix A. Also included in the regressions but not presented are year indicator variables. Standard errors are robust to both heteroskedasticity and within firm correlation.

Panel A: Matched Sample

Parameter	Dividends / Operating Profit			Dividends / Assets		
	Wholly Owned	Private Dispersed	Public	Wholly Owned	Private Dispersed	Public
Intercept	-0.230 ( -2.654)	0.195 ( 0.549)	0.034 ( 0.790)	-0.019 ( -2.805)	0.011 ( 0.930)	-0.005 ( -1.922)
Sales Growth(t+1)	-0.161 ( -2.631)	-0.076 ( -0.486)	-0.085 ( -4.125)	-0.006 ( -2.017)	0.016 ( 1.235)	-0.002 ( -1.810)
Size	0.034 ( 6.044)	0.005 ( 0.240)	0.029 ( 10.639)	0.002 ( 5.914)	-0.000 ( -0.228)	0.002 ( 10.048)
Debt / Assets	-0.184 ( -2.603)	-0.282 ( -1.596)	-0.184 ( -4.892)	-0.011 ( -2.453)	-0.005 ( -0.995)	-0.015 ( -6.243)
Oper Prof / Assets	0.908 ( 5.558)	0.112 ( 0.123)	-0.064 ( -0.831)	0.168 ( 13.936)	0.078 ( 4.465)	0.097 ( 19.918)
$R^2$	0.055	0.064	0.127	0.146	0.133	0.393
RMSE	0.448	0.349	0.173	0.034	0.015	0.012
Obs	2,138	2,422	2,441	2,628	2,878	2,820

Panel B: Transition Firms

Parameter	Dividends / Operating Profit		Dividends / Assets	
	Private	Public	Private	Public
Intercept	0.087 ( 0.880)	-0.111 ( -2.578)	0.013 ( 1.255)	-0.004 ( -1.068)
Sales Growth(t+1)	0.014 ( 0.480)	-0.030 ( -2.628)	0.000 ( 0.374)	-0.001 ( -1.840)
Size	0.016 ( 2.263)	0.025 ( 7.864)	0.001 ( 0.900)	0.001 ( 4.823)
Debt / Assets	-0.053 ( -1.336)	-0.073 ( -3.072)	-0.004 ( -0.661)	-0.004 ( -1.675)
Oper Prof / Assets	0.258 ( 2.584)	0.239 ( 6.180)	0.042 ( 6.776)	0.039 ( 15.317)
$R^2$	0.070	0.190	0.117	0.317
RMSE	0.187	0.132	0.020	0.014
Obs	508	1,663	682	2,149

Table 7

Raw Earnings Change Regression

The sample is a Matched sample consisting of nonfinancial firms in the FAME database during the period 1993 - 2002 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. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) 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

Parameter	Period $t$ Earnings Change			Period $t + 1$ Earnings Change		
	Wholly Owned	Private Dispersed	Public	Wholly Owned	Private Dispersed	Public
Intercept	0.1149 ( 3.8800)	0.0597 ( 0.8896)	0.0421 ( 2.9667)	0.0910 ( 2.9281)	0.0194 ( 0.2483)	0.0362 ( 1.7347)
$DPC_{t-1} \times \Delta Div_t / Div_{t-1}$	0.0003 ( 0.1573)	-0.0002 ( -0.0454)	0.0246 ( 2.6334)	0.0033 ( 1.2266)	-0.0015 ( -0.4078)	-0.0035 ( -0.3413)
$DNC_{t-1} \times \Delta Div_t / Div_{t-1}$	-0.0135 ( -1.4244)	0.0340 ( 1.3670)	0.0814 ( 2.8264)	-0.0197 ( -1.6228)	-0.0548 ( -1.8529)	-0.0569 ( -1.5152)
$ROE_{t-1}$	-0.2529 ( -5.8646)	-0.5064 ( -7.3673)	-0.5125 ( -8.3401)	-0.0163 ( -0.4531)	-0.0874 ( -1.3790)	-0.1117 ( -1.7987)
$\Delta Earn_{t-1} / BookEquity_{t-2}$	-0.1211 ( -3.6897)	-0.0336 ( -0.6714)	-0.0841 ( -1.6923)	-0.0211 ( -0.5602)	-0.0084 ( -0.1038)	0.0688 ( 1.7332)
$R^2$	0.09	0.21	0.18	0.00	0.02	0.01
Obs	7,398	2,092	3,436	6,375	1,796	2,932

Panel B: Nonlinear Partial Adjustment

Parameter	Period $t$ Earnings Change			Period $t + 1$ Earnings Change		
	Wholly	Private		Wholly	Private	
	Owned	Dispersed	Public	Owned	Dispersed	Public
Intercept	0.0321	0.0483	-0.0182	0.0867	0.0093	0.0402
	( 1.3369)	( 0.7590)	( -1.0650)	( 2.7308)	( 0.1275)	( 1.9948)
$DPC_{t-1} \times \Delta Div_t / Div_{t-1}$	-0.0023	-0.0047	0.0105	0.0009	-0.0001	0.0004
	( -1.1474)	( -0.8364)	( 1.1339)	( 0.3414)	( -0.0170)	( 0.0383)
$DNC_{t-1} \times \Delta Div_t / Div_{t-1}$	0.0111	0.0525	0.0980	-0.0179	-0.0326	-0.0449
	( 1.1771)	( 1.8679)	( 3.4011)	( -1.3234)	( -0.8875)	( -1.0942)
$ROE_{t-1} - E(ROE_{t-1})$	0.2016	-0.3027	-0.1004	0.0789	-0.2525	-0.1867
	( 1.6097)	( -1.2721)	( -0.6208)	( 0.6156)	( -0.9792)	( -1.0854)
$[ROE_{t-1} - E(ROE_{t-1})]^-$	-1.0342	-1.0414	-0.8906	-0.1215	0.2679	-0.0897
	( -4.6600)	( -2.8674)	( -4.1942)	( -0.5680)	( 0.5549)	( -0.3313)
$([ROE_{t-1} - E(ROE_{t-1})]^-)^2$	-0.0039	-0.2697	-0.0996	0.0284	0.0535	-0.0474
	( -0.0344)	( -1.5458)	( -1.2703)	( 0.3079)	( 0.3465)	( -0.8051)
$([ROE_{t-1} - E(ROE_{t-1})]^+)^2$	-0.2519	0.1015	0.2504	-0.1185	-0.3050	-0.0684
	( -1.5744)	( 0.2136)	( 0.6557)	( -0.8424)	( -0.5464)	( -0.2607)
$\Delta Earn_{t-1} / BookEquity_{t-2}$	-0.0840	-0.1010	-0.1142	0.0117	0.3383	0.1609
	( -1.0457)	( -0.5566)	( -1.1224)	( 0.1397)	( 1.4660)	( 1.1586)
$[\Delta Earn_{t-1} / BookEquity_{t-2}]^-$	0.0978	0.8242	0.1674	-0.0587	-0.5982	0.1062
	( 0.6086)	( 2.4090)	( 0.6367)	( -0.3337)	( -1.4688)	( 0.3554)
$([\Delta Earn_{t-1} / BookEquity_{t-2}]^-)^2$	-0.1034	0.4662	-0.0732	0.0672	-0.2192	0.0606
	( -1.0379)	( 2.1941)	( -0.2916)	( 0.6750)	( -1.5867)	( 0.2102)
$([\Delta Earn_{t-1} / BookEquity_{t-2}]^+)^2$	-0.0199	0.0672	-0.0029	0.0043	-0.1780	-0.0143
	( -0.5225)	( 0.5551)	( -0.0542)	( 0.1027)	( -1.1708)	( -0.2799)
$R^2$	0.19	0.28	0.25	0.01	0.03	0.01
Obs	6,069	1,746	2,932	5,136	1,464	2,452



**Table 8**  
**Dividend Responses to Negative and Positive Earnings Shocks**

The table shows the dividend response, measured by the growth in dividends, to negative and positive earnings shocks. Earnings shocks are measured by the residual from a firm-specific regression of earnings on a constant and a time trend. The shocks are ranked into three groups and negative (positive) earnings shocks are those shocks falling in the lowest (highest) group. Panel A presents summary statistics and hypothesis test results for the three matched samples. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) firms. Panel B presents the results for the sample of firms that underwent a transition from public to private (or vice versa) status.

Panel A: Matched Sample

Variable	Sample			t-Statistics		
	Wholly Owned (a)	Private Dispersed (b)	Public (c)	(a)-(b)	(a)-(c)	(b)-(c)
Negative Earnings Shock	-0.09	-0.08	0.04	-0.05	-2.51	-4.32
Positive Dividend Change	0.31	0.32	0.17	-0.15	2.43	3.50

Panel B: Transition Firms

Variable	Private	Public	t-Statistic
Negative Earnings Shock	-0.12	0.01	-1.58
Positive Earnings Change	0.59	0.18	2.80

**Table B1**  
**Propensity Score Matching Diagnostics**

Panel A presents coefficient estimates from two probit 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 specification is estimated on the Matched sample of Public and Private Dispersed firms. Panel B presents similar results for the matching of Public firms to Wholly Owned firms. Wholly Owned firms are privately-held firms with less than five shareholders. Private Dispersed firms are privately-held firms for which the number of shareholders are “too numerous” to list according to BVD and no one investor owns more than 50% of the firm. Public firms are publicly-held (i.e., quoted) firms. All variables are defined in Appendix A.

Panel A: Probit Regressions (Public to Private Dispersed)

Variable	Pre-Match	Post-Match
Intercept	-3.99 ( 0.37)	-0.11 ( 0.51)
Log(Assets)	0.44 ( 0.04)	0.01 ( 0.04)
Sales Growth	0.03 ( 0.05)	0.04 ( 0.07)
Profitability	-0.51 ( 0.22)	0.76 ( 0.28)
Leverage	-1.29 ( 0.19)	0.32 ( 0.32)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Control	3,623	4,093
Treatment	4,121	4,093
Obs	7,744	8,186
Pseudo $R^2$	0.28	0.01

Panel B: Probit Regressions (Public to Wholly Owned)

Variable	Pre-Match	Post-Match
Intercept	-4.00 ( 0.07)	0.10 ( 0.12)
Log(Assets)	0.36 ( 0.00)	0.00 ( 0.01)
Sales Growth	0.16 ( 0.02)	0.02 ( 0.03)
Profitability	-1.35 ( 0.08)	0.26 ( 0.12)
Leverage	-2.20 ( 0.05)	0.06 ( 0.08)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Control	123,171	4,023
Treatment	4,093	4,023
Obs	127,264	8,046
Pseudo $R^2$	0.30	0.00