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Elective Stock and Scrip Dividends

Finance Working Paper N° 574/2018
September 2018

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This paper can be downloaded without charge from:
https://doi.org/10.67929/ecgi-fin-574-2018

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ECGI Working Paper Series in Finance

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Abstract

We investigate firms' decisions to pay elective stock dividends, known in the UK as scrip dividends. Scrip dividends give investors the choice between receiving new shares or the equivalent value as a cash dividend. UK firms paying scrip dividends are more likely to be financially constrained, and scrip dividends are used more when access to external financing is costly. Our results are robust to using the 2008 financial crisis as an exogenous shock to credit supply. Cash preservation is the most important corporate incentive to use scrip dividends as they tend to be distributed in combination with dividend cuts and with major corporate investments such as debt-financed mergers and acquisitions. Analysis of US dividend reinvestment plans by which investors purchase new shares confirms firms' cash-preservation motives.

Keywords: Stock dividends, scrip dividends, elective stock dividend, optional stock dividend, dividend policy, payout policy, crisis, dividend reinvestment plans, DRIP, financial constraints, financial crisis, cash retention, mergers and acquisitions

JEL Classifications: G35, G32, G34, G01

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Elective Stock and Scrip Dividends

1. Introduction

Maintaining financial flexibility is an important element of managerial decision making, as ideally, firms hold sufficient resources to invest in value-increasing projects while avoiding financial distress. A key component to tune financial flexibility is the firm's payout policy (Bonaimé, Hankins, and Harford, 2014): profitable firms pay regular dividends to enhance their access to external finance in the equity market, payouts are reduced when cash reserves are insufficient, and repurchases are mostly used to distribute temporary excess cash flows (DeAngelo and DeAngelo, 1990; Guay and Harford, 2000; Brav, Graham, Harvey, and Michaely, 2005). When cash reserves are not sufficient to cover investment needs and dividend payments – due to reductions in cash flows, operational losses, or limited access to external finance – financially constrained firms must find ways to reduce the amount of cash leaving the firm. For dividend paying firms, cash can be retained through reductions in the dividend payout level (DeAngelo and DeAngelo, 1990). In contrast to the interest payment, which is a debt-induced bonding device, dividend payout is merely a managerial pre-commitment mechanism. However, firms generally still shy away from a decrease in the payout level in order to prevent a heavy penalization by the market (Denis, Denis, and Sarin, 1994; Yoon and Starks, 1995; Michaely, Thaler, and Womack, 1995; Leary and Michaely, 2011). Recent studies even show that managers are so reluctant to cut dividends that they would rather cut investments than dividends (Brav et al., 2005; Daniel, Denis, and Naveen, 2010).

In this context, our study focuses on the elective stock or scrip dividend. In the UK, these scrip dividends offer shareholders the choice between receiving a cash dividend or the equivalent value in newly issued company shares. Scrip dividends therefore provide a way for financially constrained firms to preserve cash: shareholders who prefer new shares do not receive cash, but they avoid dilution of their ownership stake following the creation of new shares. On the other hand, shareholders who prefer cash experience a dilution of their stake in the company. Elective stock dividends (variations of the scrip dividend) are also offered in, for example, the US, France, Norway, Spain, and the Netherlands. In the wake of the financial crisis, one in eight UK and European firms have offered scrip dividends, preserving £55 billion of cash amounting to 34% of their total dividend payout value.[1] An example of the use of scrip dividends as a cash retention measure is the case of Statoil. Like many of its competitors, the Norwegian oil and gas producer suffered from sharp reductions in operational cash flows due to lower oil prices. On February 4th, 2016 Statoil announced that it would offer a scrip dividend, allowing its shareholders to accept newly issued shares rather than cash dividends. Statoil's CEO stated that the scrip dividends are "*an additional tool (...) to strengthen our financial capacity and fund our investment*

[1] "Scrip payments save European groups £55bn over 3 years," *Financial Times*, April 30th 2018.

program," an argument that was backed by Norway's Minister of Petroleum and Energy who mentioned that "*this dividend model provides shareholders with options, and enhances the company's flexibility.*"[2]

The literature on elective stock and scrip dividends is modest: many studies focus on bonus dividends that are not part of a firm's regular dividend distributions, and given the institutional differences across countries in terms of regulation and taxation, most concentrate on a single country. Lasfer (1997a) examines scrip dividends in the UK firms, and mainly studies tax issues for the sample period prior to the abolition of the advanced corporation tax (ACT) in 1999. Prior to 1999, scrip dividends in the UK received a favourable tax treatment relative to cash dividends, which encouraged firms to offer scrip dividends. A pre-1999 survey among managers of LSE-listed firms confirmed that the main incentive for paying scrip dividends was the tax advantage (Lasfer, 1997b). Since 1999 however, cash and scrip dividends are subject to the same tax treatment. Between 2004 and 2014, we find that 30% of UK LSE-listed firms still choose to pay elective stock dividends, the incentives for which are hence no longer taxation-driven. David and Ginglinger (2016) investigate the determinants of offering optional stock dividends in France, and find that they are used by those firms most committed to paying dividends and intending to avoid dividend cuts when faced with insufficient cash reserves. There are however considerable institutional differences between elective stock dividends in France and the UK: scrip schemes in the UK are generally part of a multiple-year dividend distribution plan that needs to be approved only once by shareholders at an annual general meeting, in contrast to optional stock dividends in France where the decision needs to be approved annually by the shareholders.

There is little research on firms' incentives to pay scrip dividends in a UK context since the change in the tax law in 1999. A firm can retain cash and maintain its financial flexibility by paying scrip dividends while avoiding dividend cuts. But one may also wonder whether elective scrip dividends are used to distract the unsophisticated shareholder when the switch in dividend channel from cash to scrip coincides with a dividend decrease. Our study fills a gap in the literature by providing answers to the following questions: *(i) Are financially constrained firms more likely to pay scrip dividends in order to maintain financial flexibility while avoiding dividend cuts?, (ii) Do firms pay scrip dividends when external financing is costly?, (iii) Are scrip dividends used to retain cash before or after large debt-financed investments?, and (iv) Are scrip dividends used in combination with or as an alternative to dividend cuts?* We investigate these questions by means of a UK sample of LSE-listed firms from 2003 to 2014, using a selection model which allows us to control for firms' propensities to pay out a dividend.

Employing a broad range of proxies for financial constraints and access to finance, we find evidence consistent with financially constrained firms retaining cash to maintain financial flexibility and avoid financial distress. Firms with a higher leverage ratio, Hadlock and Pierce (HP) index, cash-to-assets ratio, and financial constraints (FC) index are up to 11% more likely to offer scrip dividends than regular cash dividends. Additionally, firms are 6% more likely to pay scrip dividends in periods with limited access to external financing (i.e. in the great recession period (Ivashina and Sharfstein, 2010)). We confirm the financial constraints hypothesis when using the 2008 financial crisis as an exogenous

[2] Wall Street Journal, February 4th 2016.

shock to external finance availability, mitigating endogeneity concerns as firms' pre-crisis financial positions are less likely to be correlated to unobserved changes in the likelihood of paying scrip dividends during the crisis (Duchin, Ozbas, and Sensoy, 2010). The effect of financial constraints increases by almost 4% in the crisis period relative to non-crisis periods. The relation between financial constraints and scrip dividends is stronger for young and small firms for which external financing is harder and costlier to obtain.

Even in the absence of cash shortages or financial constraints, a firm's cash reserves may become insufficient to cover future cash needs. Large debt-financed investments such as M&As increase the firm's future debt payments and drain future cash flows, increasing the need to hoard cash. We find that firms paying scrip dividends are more likely to engage in future debt-financed M&A activity, and also that firms announcing debt-financed M&As are more likely to announce scrip dividends following the announcement. Consistent with the cash retention hypothesis, we find that firms facing an increase in cash drain resulting from a growth in future debt payments following large investments are more likely to resort to scrip dividends.

We also investigate the relation between scrip dividends and dividend cuts. The latter are generally perceived negatively by the market and are more likely to be made by firms whose financial constraints become binding (DeAngelo and DeAngelo, 1990). We investigate whether firms use scrip dividends as an alternative to, or in combination with a reduction in the payout level. Both the scrip dividend and the dividend cut enable firms to save cash, but the former may be more interesting from the perspective of managers who are reluctant to reduce the payout. However, the amount saved in case of a scrip dividend depends on the take-up of the dividend which is unknown until approximately three weeks before the payment date. If cash-constrained firms desire more certainty about the amount of cash retention, they may want to combine a decrease in payout with a scrip dividend payment. They may even attempt to disguise the dividend cut by a scrip dividend announcement, as these dividends are generally not well understood by common investors: e.g. for stock dividends, Dong, Robinson, and Veld (2005) find based on a survey of 555 Dutch retail investors that even university-educated investors do not perceive a stock dividend as a tiny stock split, but rather consider it equivalent to a cash dividend. As scrip dividends offer a combination of stock and cash dividends, it seems unlikely that common investors fully understand the implications of this type of dividend: the online trading platform Interactive Investor even labelled scrip dividends as "*a dividend conceit every investor should know*" [3] Hence, a scrip offer may distract investors from a payout reduction, and thus possibly avoid negative market reactions to the cut. We complement the results by David and Ginglinger (2016) by showing that scrip dividends are more likely to be used in combination with dividend cuts, suggesting that scrip dividends are complements to dividend cuts rather than substitutes.

[3] Interactive Investor warned investors in a 2016 article, stating that scrip dividends enabled firms to "*create the illusion of retaining high overall dividends even as they slashed cash dividend payments by one-third*", and that "*the best way to see a scrip dividend is as an additional layer of obfuscation that demands greater shareholder scrutiny*". http://www.iii.co.uk/articles/320463/dividend-conceit-every-investor-should-know

Furthermore, we find that the average market reaction to a scrip dividend does not significantly differ from the market reaction to a cash dividend; both are positive. When a scrip dividend is combined with a dividend decrease, however, we find suggestive evidence that the market reacts significantly more negatively, especially when the firm had already been paying scrip dividends before. This indicates that the market is not fooled by the scrip payment and it suggests the presence of a "learning effect" (Kalay and Zhang, 2016).

To test the robustness of our results, we also investigate elective stock dividends in a US context. In the UK, a firm that wants to offer a dividend in the form of new shares is legally obliged to offer shareholders the choice between newly issued shares or the equivalent value in cash. The US allows firms to offer a pure stock dividend, which is an empty gesture boiling down to a tiny stock split (e.g. 1.02 shares for any old share) that triggers a small issue of new ordinary shares or a reimbursement of treasury shares.[4] Whereas a regular stock split can have a positive impact on the share price by affecting stock liquidity or by signalling expected earnings increases, these arguments do not hold for tiny stock splits in the form of stock dividends, as any signalling or liquidity effects are not substantial enough to be economically relevant. Therefore, one could call this type of regular stock dividend a purely cosmetic operation or a "phantom dividend" as it has no bearing on the firm's value nor its shareholders' stake and value. Stock dividends were popular in the 1950s, but their use has sharply decreased to less than 0.5% of listed firms in the 2010s (Kalay and Zhang, 2016).

Although the US context does not offer a UK-style scrip dividend in which shareholders need to opt at every single payout for cash or new shares, a comparable alternative exists in the form of a dividend reinvestment plan (DRIP). DRIP schemes enable investors to reinvest their cash dividends in company shares, sometimes offered at a discount. The source of the shares can differ however, as the shares to be distributed can be new issues, treasury shares, or they can be purchased by the firm in the open market.[5] Although data constraints do not enable us to perfectly distinguish between these types of DRIPs (firms are not obliged to report the source of the shares distributed in DRIPs), we are able to identify DRIPs relying on new share issues or treasury issues with a high probability as we only select the DRIPs of firms registering new shares for DRIP schemes based on S-3D forms that have to be filed with the SEC. New issue or treasury DRIPs are most similar to a typical UK scrip dividend, as they offer shareholders the choice between cash or maintaining their stake in the firm. As for the UK, we find strong evidence that US DRIP-paying firms are more financially constrained, suggesting that DRIPs can also enable firms to retain cash, particularly in times when external financing is costly.

[4] In addition to the US stock dividend literature, other studies investigate stock dividends in Australia (Balachandran et al., 2005), Denmark (Bechmann and Raaballe, 2007), Germany (Wulff, 2002), Greece (Papaioannou et al., 2000; Leledakis et al., 2009), China (Barnes and Ma, 2004), India (Lukose and Rao, 2002), Japan (Kato and Tsay, 2002), Korea (Dhatt et al., 1997), or Switzerland (Kunz and Rosa-Majhensek, 2009).

[5] The vast majority of studies on US DRIPs do not distinguish between these types of schemes, as firms are not obliged to report the source of the shares distributed in a DRIP. Mukherjee et al. (2002) use a hand-collected sample of 68 DRIP-paying firms from 1983 to 1992 to show that external funding needs drive firms' initiation of new-issue DRIPs. Berkman and Koch (2017) use changes in the firm's shares outstanding in CRSP to identify new-issue DRIPs. This method however only captures relatively large changes in the firm's shares outstanding, as smaller changes are only recorded once per month. For an overview of the DRIP literature, see He (2009) and Kiymaz (2009).

Overall, we provide evidence that more financially constrained firms, firms with more costly access to external financing, and firms that face increasing future debt payments use scrip dividends as a way of retaining cash in the firm in order to cover their current and future cash needs. We find that scrip dividends tend to be combined with dividend cuts and that this triggers strongly negative market reactions. Moreover, our results also hold when investigating US DRIP schemes, which offer a similar choice to investors, providing further evidence that firms can use elective stock or scrip dividends to retain cash.

The remainder of the paper is structured as follows: Section 2 discusses the institutional background of scrip dividends, and Section 3 formalizes our hypotheses. Section 4 discusses our data and methodology. Section 5 presents the results for the UK and US. Section 6 concludes.

2. Institutional Background

UK firms can reward investors in the form of elective stock or scrip dividends, which give investors the option to receive new shares or the equivalent value in cash.[6] As an illustration of the scrip dividend process, we consider the scrip dividend announcement by Royal Dutch Shell PLC for the first quarter of 2016 on May 4th, 2016 (See Figure 1). Investors holding shares on the ex-dividend date (May 19th) had until June 6th to decide whether to opt for the scrip dividend (and receive new shares) or to forego the stock issue (and receive a cash dividend). Investors who are offered a scrip dividend face the trade-off between receiving cash and maintaining an intact share stake (avoiding dilution). At the payment date on June 27th, investors who chose stock received new company shares that are in all respects equal to the ordinary shares outstanding and are equivalent in value to the cash value of the dividend.

[Insert Figure 1 about here]

The number of shares received depends on the value of the dividend, the number of shares held at the record date (typically one day after the ex-dividend date), and on the scrip reference price, which is the average market price of the firm's shares over the five trading days starting on the ex-dividend date and which is announced a couple of days before shareholders have to make their final decision[7]:

$$\#\ of\ shares\ received = \frac{\#\ shares\ held\ at\ record\ date * cash\ value\ of\ dividend}{scrip\ reference\ price}$$

Investors who forego the stock option[8] receive a cash dividend, but their existing stake in the company's equity is diluted by the newly issued shares. It is important to note that, from the perspective of investors, this trade-off between cash and control is not affected by taxation: the new shares received by investors

[6] Newly issued stocks in scrip dividend schemes are transferred from distributable profit and/or retained earnings to paid-in capital, and thus do not change the value of total equity but only its composition.
[7] If the market price at the payment date deviates too much (15-20%) from the reference price, the firm can declare the scrip dividend void and all investors will receive a cash dividend.
[8] Investors only receive stock if they explicitly opt for a stock dividend, and they are deemed to have elected stock for subsequent scrip dividends until they opt out of the elective stock dividend plan.

who choose the stock option are equivalent in value to the cash dividend received by the other investors, and both types of shareholders are taxed as if they had received a cash dividend.

Elective stock or scrip dividends are related to pure stock dividends, which in turn are often defined as small stock splits (splits smaller than 25%) in US studies. However, the possibility for investors to receive a regular cash dividend makes the link between scrip dividends and stock splits less straightforward. Some US studies on stock splits incorporate pure stock dividends (e.g. Lakonishok and Lev, 1987; McNichols and Dravid, 1990; Asquith, Healy, and Palepu, 1989). Lakonishok and Lev (1987: 931) however state that "*managers may believe that stock dividends will be temporarily regarded by some investors as a substitute for cash dividends. Given, however, the substantial decrease in the frequency of such distributions, it may not be very productive to exert much effort in the investigation of this phenomenon.*" Pure stock dividends have indeed become a marginal phenomenon, with less than 0.2% of firms offering stock dividends in recent years (Kalay and Zhang, 2016).

The extent to which firms can retain cash by offering scrip dividends ultimately depends on shareholders' take-up of the stock option. This information is not publicly available, and companies and transfer agents are generally not willing to share this data (which was also experienced in the US by Berkman and Koch (2017)). Companies that are handling the administrative processes of scrip dividends, such as Computershare, were not willing to provide information, referring to privacy regulations. Contacting all the finance managers of the firms offering scrips yielded a poor response (with only 6% of firms replying). Some firms reported that the choice for stock was in the range of 20-25% (e.g., Royal Dutch Shell, WS Atkins, Derwent London plc, William Hill, Amati VCT plc), others reported a lower take-up in the range of 5-10% (e.g., Serco Group plc, Tesco). Still, it seems that the take-up is lower in the UK than in France where the amount is reported and averages 55% (David and Ginglinger, 2016). Estimating the take-up in the UK from the firm's shares outstanding is also not straightforward, as data providers such as CRSP or Datastream often do not record small changes in shares outstanding on the exact day of the event, but rather at the last day of the month, and seasoned equity offering and share repurchases (e.g. in relation to employee stock options) cloud the picture.

3. Hypotheses

Scrip dividends provide benefits for both firms and shareholders: the latter have the option between retaining an undiluted share stake or the equivalent value as a cash dividend which enables them to address their liquidity needs without large transaction costs, whereas firms are able to retain cash without having to resort to a decrease in their dividend payout policy that could be negatively perceived by the market.

Highly levered firms are more likely to need additional cash to fund current and future interest payments and debt reimbursements. Furthermore, limited access to capital encourages firms to retain cash to fund operations and investments. Therefore, we expect that more financially constrained firms are more likely to offer scrip dividends. Moreover, the credit crunch coinciding with the great recession starting in 2008 represented a negative supply shock to credit and an increase in the cost of external

funds (Ivashina and Scharfstein, 2010). Bliss, Cheng, and Denis (2015) document significant decreases in the payout to shareholders during the 2008-2009 crisis for US firms with higher marginal benefits of cash retention.[9] Given the ability of scrip dividends to act as an alternative for dividend cuts, we also expect that firms are more likely to offer scrip dividends during the financial crisis. Our first hypothesis argues that: *Financially constrained, highly levered firms, and firms with costly access to external finance are more likely to pay scrip dividends in order to retain cash (Financial Constraints Hypothesis).*

For financially constrained firms, corporate decisions that have a bearing on the firm's future debt serviceability spill over to the probability of paying elective stock or scrip dividends. For instance, mergers and acquisitions (M&As) often reduce cash holdings, increase leverage, and create a cash drain in the subsequent years. One way to address these cash issues is to offer elective stock or scrip dividends. While a scrip dividend offer may be a response to the financial consequences of a major investment, it may very well be that the firm anticipates such an investment and makes the decision to distribute scrip dividends prior to e.g. a takeover in order to retain cash and increase its debt capacity. We therefore also expect that, conditional on acquiring a target firm, firms paying scrip dividends are more likely to fund the deal by means of debt financing than by its own cash resources. This leads to our second hypothesis: *Firms are more likely to pay scrip dividends after a debt-financed M&A deal. Conditional on future M&A activity, firms paying scrip dividends are more likely to fund the deal using debt rather than own funds.*

In the wake of financial difficulties and/or increasing cash drains, firms need to manage cash balances more carefully and may therefore offer elective stock or scrip dividends. It should be noted that a shift from a cash dividend to a value-equivalent scrip dividend does not necessarily yield the cash savings that the firm anticipates because the extent to which cash is preserved depends on the take-up of the scrip dividend. Dividend cuts in contrast enable the firm to retain an amount of cash with certainty. Combining a dividend reduction with a switch from cash to scrip dividend leads to less uncertainty in terms of cash savings than a scrip dividend without a dividend reduction. Another reason why a firm would combine a dividend cut with a scrip dividend is to conceal the dividend cut to the inattentive or financially illiterate shareholder.[10] Scrip and pure stock dividends are, even among sophisticated investors or even financial managers, not very well understood (Dong et al., 2005).[11] In principle, as individual shareholders can always opt for the cash dividend, scrip dividends *in se* should not trigger a negative price reaction, unless the scrip offer induces doubts about the liquidity or financial stability of

[9] Firms are more likely retain cash when the marginal value of cash is higher (Faulkender and Wang, 2006). This is the case for financially constrained firms and firms that face more costly external finance, but also for firms with relatively volatile cash flows and firms with valuable investment opportunities (Opler, Pinkowitz, Stulz, and Williamson, 1999; Almeida, Campello, and Weisbenner, 2004).

[10] "*Children's clothing and footwear company Camkids (CAMK) has followed logistics business China Chaintek (CTEK) in cutting its dividend but dressing this up by offering a higher scrip dividend*". Interactive Investor, September 30th, 2014. http://www.iii.co.uk/articles/194940/aim-rocked-dividend-culture-clash.

[11] Surveys (unpublished) among 90 managers working in the financial industry who were following executive courses in financial management at a university of one of the authors revealed that only about one third could define a stock dividend, only 10% was aware of the scrip dividend and able to give the possible reasons for offering stock/scrip dividends.

the firm. Even when the scrip dividend is combined with a dividend cut, retail (and even institutional) investors may not react negatively when they fail to pay attention to the dividend cut. If firms believe that shareholder myopia may dampen the (negative) market reaction to a dividend cut when offering a scrip dividend, we expect to observe a positive relation between a firm's propensity to offer a scrip dividend and a dividend cut. In the case of such a concealed dividend cut, the market reaction may be less negative which is why we formulate hypothesis 3: *The propensity of paying a scrip dividend is positively related to a decrease in dividend payout and the market reaction to a dividend cut in combination with a scrip offer is less negative than a cash dividend decrease*.

Despite the virtual disappearance of pure stock dividends in the US in recent years, the literature on these dividends has offered a number of hypotheses rationalizing their popularity in the 1960s and 1970s. Kalay and Zhang (2016) show that stock dividend payouts induce learning effects among shareholders who observe over time that stock dividends precede operating performance declines. Consequently, the market reaction turns more and more negative at subsequent stock dividends. We study whether learning also arises for elective stock or scrip dividends and whether the market more quickly considers a scrip dividend (with and without dividend cuts) as a signal of possible financial difficulties. Other arguments for the use of stock dividends are for instance that they can signal managers' private information about a firm's future profitability (Grinblatt, Masulis, and Titman, 1984): stock dividends are a costly signal in case they reduce retained earnings per share in such a way – by falling below a specific threshold - that they trigger a violation of debt covenants. Hence, stock dividends should only be used by dividend payers with a sufficiently high future profitability. The attention-getting hypothesis on the other hand states that stock dividends are used by undervalued firms to draw analysts' attention in order to reassess the firm's value (Brennan and Hughes, 1991), but given that the signal in this case is low cost, it could easily also be applied by overvalued firms and hence have limited credibility. Although there is no empirical evidence that these arguments for the use of stock dividends also hold for scrip or elective stock dividends (Lasfer, 1997b), other factors can obviously still affect a firm's decision to pay scrip dividends. We briefly discuss our control variables and their expected signs.

As scrip dividends can increase management's discretion over cash flows, aggravating free cash flow problems (Jensen, 1986; Lasfer, 1997a), we include proxies for active monitoring, such as the presence of institutional blockholders. In firms with high levels of institutional ownership, active monitoring may reduce the incentive for managers to maintain too large cash holdings and divert resources to their own benefit at the expense of shareholders (Chen, Harford, and Li, 2007). If agency problems prevail and affect management's decisions to pay scrip dividends and hence exacerbate the free cash flow problem, we expect that higher levels of ownership held by active shareholders will negatively affect the propensity of paying scrip dividends if financial constraints are not binding.[12] However, the relation between institutional investors and scrip dividends could also go the other way:

[12] Ozkan (2007) and Cziraki, Renneboog, and Szilagyi (2010) show that institutional shareholders in the UK have become more active and increased their monitoring activities in recent years, with levels of cast votes levels increasing from 20% in the early 1990s to about 50% a decade later, and to more than 80% another decade later.

institutions may prefer scrip dividends because the choice between cash or stock enables them to more easily rebalance their portfolios as (even active) funds track a specific stock index and their funds' money flows affect liquidity. Thus, if firms cater to their investor clientele, strong institutional ownership concentration may induce a higher demand for scrips.[13]

Firm profitability is positively correlated with a cash dividend payout, and should thus reduce the use of scrip dividends. A higher equity market-to-book ratio (MTB) can, on the one hand, signify strong growth opportunities, which increases the need for cash retention and results in a positive relation with the probability of offering scrip dividends. On the other hand, a high MTB may be correlated with better access to external finance, which reduces the need for cash retention. The ultimate effect of the MTB ratio on the probability of paying scrip dividends is an empirical matter.

We also take into account the firm's size and age. Smaller and younger firms are usually more financially constrained and may have less access to finance, which is expected to induce a positive relation with the probability of paying scrip dividends (Hadlock and Pierce, 2010). In contrast, larger firms have more resources to cope with the time, effort, and administrative costs (related to book-keeping, preparing prospectus, etc.) required to distribute scrip dividends, making it more likely for them to offer scrip dividends.

Opler, Pinkowitz, Stulz, and Williamson (1999) document that riskier firms (in terms of cash flow volatility) retain more cash, suggesting that cash holdings act as a buffer against large cash flow fluctuations. This implies that firms with more volatile cash flows are more likely to pay scrip dividends as an additional cash saving mechanism.

The decision to pay a dividend may also be driven by the dividend premium or discount that investors put on dividend paying firms. Managers then cater to investors by omitting a dividend when investors prefer investing in non-dividend payers and by paying dividends when investor demand is high (Baker and Wurgler, 2004). In case the demand for capital gains versus dividends is unclear to the firm or if shareholders are split in their preferences, the firm can take a neutral decision and offer a scrip dividend. We therefore also control for the annual dividend premium. Lastly, we need to consider the persistence of dividend payout policies as there is a clear payout hysteresis effect, which may not only exist for the payout itself but also for the payout channel chosen.

4. Data and Methodology

Our sample consists of UK firms that have their main listing on the London Stock Exchange (LSE) and paid out a dividend - in the form of a cash or elective stock dividend - at least once in the period 2003-2014. We obtain information on elective stock dividends from OSIRIS (Bureau Van Dijk) and double check its accuracy with the information provided in the LexisNexis and Capital IQ databases. The data

[13] Different ownership groups may also have different tax-driven preferences regarding the firm's payout policy. Individuals and families, for example, prefer higher payouts and dividends over share repurchases, whereas CEOs and corporations with large concentrated ownership stakes prefer earnings retention over dividends in the UK (Geiler and Renneboog, 2015). However, as taxation of scrip dividends is similar to that of cash dividends, tax incentives should not affect the relative preference of scrip versus cash dividends.

provided in OSIRIS identifies whether a firm paid an elective stock dividend in a particular year. Our sample period starts in 2003 because elective stock dividend information is unavailable prior to this year. We collect the dividend payments in GBP for common stock, but we exclude bonus distributions.[14] Accounting data is obtained from Compustat, ownership information from OSIRIS, and stock return data from Datastream. We exclude the financial industry and utilities as they are subject to industry-specific dividend payout regulations (e.g. related to capital requirements). The industry distribution is given in Table A1 of the Online Appendix: the largest industries in our sample are Business Services (25%), Wholesale (6%), and Retail (6%). After excluding observations with missing dividend, accounting, or ownership variables, our final sample consists of 4,739 dividend payments and 2,756 firm-year observations for 452 firms. The dividend-paying firm-years amount to 2,652, out of which 483 (131 firms) only pay scrip dividends and 2,095 (394 firms) only pay cash dividends.

Our main analysis consists of a Heckman probit model to condition on being a dividend-payer. Our first stage model is formulated as follows:

$$Prob(Div\ Payer_{it}) = \alpha_{it} + \beta_1 FC_{i,t-1} + \beta_2 Crisis_t + \beta_3 Control\ Vars_{i,t-1} + \beta_4 Div\ Payer_{i,t-1} + \beta_5 X + \varepsilon$$

where the dependent variable is an indicator variable capturing whether firm *i* pays a dividend in year *t* or not. FC_{t-1} represents one of our four financial constraints proxies: first, we use lagged market leverage to proxy for the firm's debt capacity and debt payments as a higher leverage ratio requires more cash to service the firm's debt. Second, we capture the firm's access to external finance by the lagged Hadlock and Pierce (2010) index, which is constructed by means of the firm's size, age, leverage, and operating income, because smaller and younger firms and firms with lower operating income and higher leverage are more likely to be limited in their access to external finance.[15,16] Third, we use the lagged cash-to-assets ratio to measure the size of the cash holdings as several studies have identified cash holdings as a proxy for firms' financial constraints (e.g. Faulkender and Wang, 2006; Denis and Sibilkov, 2010). On the one hand, a high cash-to-assets ratio may indicate that the firm has sufficient cash available to fund its activities, while on the other, it may signify that the firm is holding on to its cash because it is financially constrained and/or expects difficulties in attracting external financing (as in Almeida et al. (2004) and Berg (2018)). Fourth, we create an index ranging from 3 to 9, which is constructed by taking each of the previous financial constraints proxies and sorting firms into terciles.

[14] We only retain firms that pay elective stock or cash dividends in a given year and do not include firms that use a mix of cash and scrip as they may have different incentives for paying dividends (e.g. a bonus issue or special dividend by means of cash). Those mixed dividend offers make up less than 3% of our sample.

[15] Following Hadlock and Pierce (2010), we construct this index as -0.357(ln(*size*))-0.025(*age since listing*)+1.747(*leverage*)-0.592(*operating income*), with *age since listing* winsorized at 37 years and *size* winsorized at $4.5 billion, converted in GBP.

[16] In Table A5 of the Online Appendix, we repeat our main results using the alternative financial constraints index suggested in Hadlock and Pierce (2010) which is only based on firm age and size to avoid endogeneity concerns (SA index). We find that results using this SA index are in line with those for the HP index based on size, age, leverage, and operating income that we use in our main analysis. We opt to use the definition of the HP index based on size, age, leverage, and operating income as size and age are also related to scrip dividends through channels different from financial constraints. Using an index based on only age and size may have confounding effects in our research set-up as e.g. larger and more established firms are on the one hand better suited to carry the administrative costs that come with issuing scrip dividends, but on the other hand they are also less likely to be financially constrained (see section 5.4).

Firms in the lowest tercile for each of the previous three proxies score 3 on our FC index, whereas firms in the highest terciles score 9. In addition, we create an indicator $Crisis_t$ for the period 2008 to 2012 in order to capture the effect of the banks' credit crunch, limiting firms' access to finance and financial flexibility.[17]

Our identifying variable in the first stage of the Heckman model is an indicator for whether the firm was a dividend payer in the previous year ($Div\ Payer_{t-1}$), as a firm's dividend policy in year t-1 is unlikely to directly affect the scrip dividend choice in year t. Financially constrained firms generally avoid dividend cuts and dividend omissions, as they would rather cut investments than cut dividends to avoid negative market reactions (Brav et al., 2005; Daniel, Denis, and Naveen, 2010). Whether or not the firm paid a dividend in year t-1 is therefore unlikely to be directly related to the firm's financial constraints in year t, although it is strongly related to the firm's dividend decision in year t due to the persistence of dividend policies.

$Control\ Vars_{t-1}$ is a set of firm-level control variables: (lagged MTB, return on assets (ROA), firm age, size, ownership variables (by type of shareholders), and risk (standard deviation of cash flows). X stands for the industry fixed effects.

The second stage model is specified as follows:

$$Prob(Scrip\ Payer_{it} \mid Div\ Payer_{it}) = \alpha_{it} + \beta_1 FC_{i,t-1} + \beta_2 Crisis_t + \beta_3\ Control\ Vars_{i,t-1} + \beta_4 X + \varepsilon$$

where the dependent variable is an indicator variable capturing whether firm *i* is a scrip dividend payer in year *t*, conditional on paying a dividend in year *t*. The independent variables are similar to those in the first-stage equation (but the dividend payer variable is not included in the second stage). In both stages, the standard errors are clustered at the industry-year level.

5. Results

5.1 Descriptive Statistics

Panel A of Table 1 shows the annual percentage of LSE-listed firms paying scrip dividends for the period 2004-2014. The first column reveals that the percentage of firms paying scrip dividends consistently increases over time, from 0.4% of all firms in 2004, to 35.4% in 2014.[18] This increase of scrip-paying firms goes hand in hand with the decrease in firms only paying cash dividends (second column). These descriptives are similar to a study by the UK finance group Captima, who reported that 31% of FTSE100 firms paid scrip dividends in 2012.[19] Based on the cash retention hypothesis, we expect a higher percentage of firms paying scrip dividends in the years marked by a higher threshold in attracting debt financing - a credit crunch. We do indeed observe that the percentage of firms that switch from paying cash to paying scrip dividends increased by 4% when the financial crisis struck in 2008,

[17] The Recession Indicator for the UK is equal to one between November 2007 and July 2009 and between September 2011 and June 2012. However, as the effects of the credit crunch were likely to endure after 2009, we take the full period from 2008 to 2012 as our recession period. https://research.stlouisfed.org/fred2/series/GBRRECDM.

[18] Our sample includes all firms that pay a dividend at least once in our sample period. Note that the sum of columns 1 to 3 does not add up to 100% as some firms do not pay dividends in a particular year.

[19] Source: http://www.captima.co.uk/Pubs/EquityCapitalMarkets/files/assets/basic-html/page11.html.

and augmented even more sharply (by 10%) around the peak of the crisis in 2009. After the crisis (e.g. in 2013), only 1.2% of listed firms shifted from cash to scrip. Column 5 of Table 1 shows that very few firms switch back from paying scrip dividends to only cash, suggesting that the policy of paying a scrip dividend is rather persistent. This in itself is not that surprising, as scrip dividends offer benefits to the firm (in the form of cash retention) but also enable shareholders to receive regular cash dividends if they do not like the option to be paid in stock. Moreover, elective stock dividends in the UK are generally part of a multiple-year dividend distribution plan that needs to be approved only once by shareholders at an annual general meeting (this is in contrast to an optional stock dividend in, for example, France where the decision to pay a scrip dividend needs to be approved annually (David and Ginglinger, 2016)).[20]

If financially constrained firms pay scrip dividends with the intention to distract investors' attention from payout reductions, the surge in firms starting to pay scrip dividends around the crisis period in Table 1 may coincide with an increase in firms that cut their dividends in crisis periods (Bliss et al., 2015). In Panel B, we show the relation between changes in dividend payout and the dividend channel. Table 2 shows summary statistics for the variables used in our multivariate tests. Our median sample firm has a market leverage ratio (on total assets) of 14%. The median firm's size amounts to GBP 136 million, the age since listing to 16 years, and the market-to-book ratio to 1.74. The median ROA is 10%, the standard deviation of cash flows is 0.04, and institutions are the largest shareholder category. These firm characteristics are in line with US evidence on DRIPs showing that DRIP-payers are generally fairly large firms with a high fraction of institutional ownership.

[Insert Tables 1 and 2 about here]

5.2 Financial Constraints and the Propensity to Pay Scrip Dividends

We examine the choice of dividend channel in Table 3 by means of Heckman probit selection models that condition on the payment of a dividend. We use four proxies for financial constraints (market leverage, the HP (Hadlock and Pierce) index, the cash-to-assets ratio, and the FC (financial constraints) index) and include them in separate regressions in order to avoid multicollinearity. We also include a financial crisis period indicator in order to control for the fact that attracting external financing may then have been more difficult.[21] As expected, our results in Panel A point out that financially constrained firms (proxied by leverage, the HP index, and the FC index) are less likely to pay dividends (columns (1), (3) and (7)), only cash holdings are not related to paying a dividend (column (5)). Conditional on paying a dividend (the second stage specifications), we find that more financially constrained firms are 2% to 11% more likely to pay scrip dividends relative to cash dividends. Note that, in terms of size, the

[20] Royal Dutch Shell PLC for instance started a three-year scrip dividend plan that was approved in the annual general meeting of 2015 and needs re-approval in 2018.

[21] The inclusion of a crisis period dummy in this specification does not prevent the use of year fixed effects, but makes the interpretation of the crisis period variable less intuitive (which is why we omit year fixed effects). Our conclusions do not change when we include year fixed effects.

coefficient on the cash-to-assets ratio is smaller than the previous two proxies. This is because the cash-to-assets ratio can be positively and negatively related to financial constraints: on the one hand, a higher cash ratio may indicate that a firm has excess cash that it can spend on investment projects. On the other hand, it may also indicate that the firm is financially constrained and that it holds onto cash as precautionary savings (Almeida et al., 2004; Berg, 2018). Our results seem to be consistent with the precautionary savings motive for cash holdings, but we will investigate this issue in more detail in Table 6. Consistent with Bliss et al. (2015) who find that US firms are more likely to reduce dividends in crisis periods in order to maintain their cash levels, we find that firms are 6 to 7% more likely to retain cash in crisis periods by paying scrip dividends.

In terms of control variables, we document that high growth companies (those with higher MTB) are less likely to pay a dividend, and are, conditional on distributing a dividend, less likely to pay a scrip dividend. The economic significance of these coefficients is however rather small. We confirm that higher profitability encourages firms to pay more dividends (in line with Denis and Osobov (2010), but profitability is not related to the propensity to pay scrip dividends. This implies that scrip dividends are driven by financial constraints and not by profitability. Consistent with the results in Lasfer (1997a), scrip dividends are more likely to be paid by larger and older firms, which may seem at first sight somewhat counterintuitive as older and larger firms are less likely to be financially constrained. We attribute these results to the administrative costs of paying scrip dividends: larger firms can benefit from economies of scale when dealing with the costs of writing a prospectus, bookkeeping, etc. and thus benefit relatively more from paying scrip dividends than smaller firms. We also document that operational risk (standard deviation of operational cash flows) does not affect dividend payout nor the channel choice.

We also disclose that ownership concentration is related to the choice of dividend channel. In line with US evidence on DRIP-paying firms (Berkman and Koch, 2017), scrip dividends are more likely when institutional shareholders dominate the shareholder structure. This suggests that institutional investors appreciate the choice between cash and stock, possibly because the choice embedded in scrip dividends may make rebalancing portfolios easier, or because active monitoring by institutional shareholders may reduce management's incentives to divert cash by paying scrip dividends, limiting the free cash flow problem. We find similar but somewhat weaker effects for firms whose shares are mainly held by families and individuals, as both prefer scrip dividends over cash dividends. This may be because scrip dividends offer benefits for shareholders seeking cash for liquidity reasons as well as for those looking to maintain control over the company. Finally, we find no evidence that firms cater to the preferences of shareholders; the correlation between the dividend premium and dividend payout is insignificant.[22]

[22] The Inverse Mill's Ratio is consistently significant, supporting the choice for the Heckman selection model. In Table A2 of the Appendix, we repeat our analysis using a logit model to estimate the propensity of paying a scrip dividend for a sample of dividend-paying firms. Although we confirm the findings of Table 3 with stronger and more significant coefficients for the financial constraints variables, we report the more conservative results based on the two-stage Heckman selection model. As a robustness test, we repeat the analysis of Table 3 while clustering the standard errors at the firm level in Table A3 of the Online Appendix, and again cannot reject our hypothesis.

Our results in Panel A confirm that scrip dividends were more likely to be used following the financial crisis in 2008. Access to external finance was significantly reduced as financial institutions around the world tightened their lending standards, withdrew lines of credit, and increased loan spreads (Ivashina and Scharfstein, 2010). Importantly, the 2008 financial crisis was unanticipated, allowing us to reduce any endogeneity concerns by testing our financial constraints hypothesis using the crisis as an exogenous shock to credit supply. The availability of external finance was sharply reduced, such that already constrained firms should face higher incentives to preserve cash by paying scrip dividends. Our estimation is similar to a difference-in-difference approach in which we compare the effect of financial constraints on the propensity of paying scrip dividends in the crisis period (treatment group) relative to the non-crisis period (control group). We follow Duchin et al. (2010) and use lagged financial constraints measures which are less likely to be correlated with unobserved changes in the propensity of paying scrip dividends during the crisis period. It is not straightforward to interpret results from a difference-in-difference analysis in a non-linear model such as the Heckman model (Ai and Norton, 2003). In Panel B, we therefore estimate marginal effects from our baseline specification in Panel A, evaluating the size and significance of the difference in the marginal effects for each of our four financial constraints proxies in the crisis period relative to non-crisis periods (instead of estimating marginal effects at the mean as in Panel A).[23]

The results in Panel B indicate that the effect of financial constrains on the propensity of paying a scrip dividend is significantly stronger during the crisis period than during non-crisis periods. As before, three out of our four financial constraints proxies confirm our hypothesis: the effect of leverage increases by 3.8% during the crisis period, the effect of the HP index increases by 2.3%, and the effect of the FC index increases by 0.7%. Using the 2008 crisis as an exogenous shock to credit supply helps mitigate endogeneity concerns and strengthens our results showing that financial constraints are strongly positively related to the use of scrip dividends.

[Insert Table 3 about here]

In Table 4, we apply a similar setup as in Panel A of Table 3, but take a different perspective: we now examine the decision to switch dividend channel. In the first stage, we estimate the probability that a cash dividend is paid, while in the second stage, we estimate the probability that a scrip dividend (in contrast to a cash dividend) is paid out in the following year. For stage one, we show in Table 4 that constrained firms pay out less cash as each of the four financial constraints variables are negatively correlated with a cash dividend payout (in year t-1). The significance and sign of the control variables (not shown) are similar to the ones reported for Table 3. The results from the second stage regressions, conditional on the firm having been a cash dividend payer in the previous year, show that more constrained firms (firms with higher leverage, and higher Hadlock and Pierce and Financial Constraints

[23] Marginal effects for the remaining control variables are also estimated in the crisis period relative to non-crisis periods, but they are not shown in the table to save space.

indices) are more likely to start paying scrip dividends.[24] This confirms the cash retention hypothesis, as these firms want to retain cash in the firm e.g. in order to avoid financial distress and to finance their operations and investments (see also analyses below). The cash holdings (the cash-to-assets ratio) is not significant (column (6)). So, either the cash holdings are not a good proxy for financial constraints or there is a more complex relation with dividend payout, an issue that we address in the next section.

[Insert Table 4 about here]

5.3 The Role of Cash Holdings in Financially Constrained Firms

In recent years, some studies have focused on the role of cash holdings as a proxy for firms' financial constraints (Faulkender and Wang, 2006; Denis and Sibilkov, 2010, Berg, 2018). On the one hand, a high cash-to-assets ratio may indicate that the firm has sufficient cash available to fund its activities. On the other hand, the precautionary savings argument argues that reduced access to external financing or decreasing cash flows will make the firm to hoard its cash because it expects that its financial constraints will become binding (Almeida et al, 2004). We address this ambiguity by testing the effect of cash holdings on the propensity to pay scrip dividends for subsamples of high- and low-leverage firms. If financially constrained firms do indeed hold onto cash because of a precautionary cash savings motive, we expect to find a positive relation between the level of cash holdings and the use of scrip dividends. In this setup we expect this to occur only for high-leverage firms and not for those with low leverage. Column (2) of Table 5 shows that cash holdings are only related to paying scrip dividends for highly levered firms and not for the complementary subsample of firms with low leverage (column (1)). This suggests the dual interpretation of cash holdings – measuring financial constraints or excess funds - also applies in the context of dividend payout channel choice. In columns (3) and (4), we analyze the switch from cash to scrip dividends. Consistent with the results in columns (1) and (2), we find statistically significant effects for the sample for high leverage firms, but not for the sample of low leverage firms.

[Insert Table 5 about here]

5.4 The Dividend Channel Choice and Firm Size and Age

Younger and smaller firms are more likely to be constrained as they may have more costly access to external financing. Hadlock and Pierce (2010) even argue that these two characteristics are the only exogenous factors that can reliably be used to measure a firm's financial constraints. In Tables 3 and 4, we have found, in line with earlier evidence by Lasfer (1997a), that larger and older firms are more likely to pay scrip dividends. At first sight, these results seem to contradict the cash retention hypothesis, as they imply that larger and older firms, which are less likely to be financially constrained, are more

[24] As a robustness test, we repeat our analysis estimating the propensity of switching from cash to scrip dividends for a sample of cash-paying firms at t-1 using a regular logit model in Table A4 of the Online Appendix. The results confirm the results from the two-stage Heckman model as more financially constrained firms are more likely to start paying scrip dividends.

likely to pay scrip dividends. However, distributing scrip dividends comes with administrative fees that may be too costly for small firms: larger and older firms can benefit from economies of scale when dealing with the costs of writing a prospectus, bookkeeping, etc. and can thus benefit relatively more from paying scrip dividends than smaller firms (Lasfer, 1997a; Lasfer, 1997b).[25] We investigate these issues in Table 6: in Panel A, we concentrate on a subsample of young firms, where "young" relates to age since listing below the sample median of 16 years, whereas in Panel B, we focus on a subsample of small firms, where "small" is defined as total assets smaller than the sample median of GBP 136 million.[26] For relatively young firms (Panel A), we note that firms with higher market leverage are 18% more likely to pay scrip dividends (column (1)), which is a stronger effect than we found for the full sample (11% in Table 3). In columns (3) and (4), we find also find a positive correlation for the cash-to-assets ratio and the FC index, which effects (2.5% and 4.0%, respectively) are again higher than what we found for the full sample (1.6% and 2.5%, respectively). The coefficients for the HP index are not statistically significant, although they have the correct sign. This lack of significance is not surprising, given that firm size and age are important sources of variation in the HP index.

[Insert Table 6 about here]

5.5 Scrip Dividends and Firm Investments

Major investments usually have a big impact on cash and access to capital, which is why we study the role of M&As in the decision to distribute scrip dividends. The vast majority of M&As are cash offers, frequently financed by means of leverage (Faccio and Masulis, 2005; Martynova and Renneboog, 2011). Debt-financed M&As increase an acquiring firm's future debt payments and drain its future cash flows, which may entail increased cash needs in the years following the takeover. In columns (5) to (8) in Panel A of Table 7, we document that, consistent with the cash retention hypothesis, firms are more likely to pay scrip dividends if they have recently announced a debt-financed M&A deal. Interestingly, this does not hold for firms that had recently announced an M&A deal financed with their own funds (columns (1) to (4)) as they may not have to deal with increased future debt payments. This suggests that the latter firms have sufficient cash reserves to finance large investments and have fewer incentives to retain cash by paying scrip dividends.

In Panel B, we restrict our sample to dividend paying firms that announced an M&A in the three months following a dividend announcement. Takeovers are often negotiated with the target's management in the weeks or months before a deal is publicly announced. An acquiring firm's management has to decide whether to fund a future M&A deal using debt, equity, or own funds (Martynova and Renneboog, 2009). If the acquirer's management is anticipating a debt-financed M&A

[25] A survey among 84 LSE-listed firms even found that administrative costs were the main reason for managers not to pay scrip dividends (Lasfer, 1997b).

[26] As a robustness test, we redefine the subsamples of "young" and "small" firms, which are now falling in the lowest age or size terciles. The results remain qualitatively the same and are reported in Table A6 of the Online Appendix.

deal in the near future, it may decide to offer scrip dividends – even before the deal is publicly announced – in order to retain cash and increase its debt capacity. The results in Panel B show that, conditional on acquiring a target, scrip paying acquiring firms are more likely to fund a deal using debt financing (columns (5) to (8)) rather than equity or own funds (columns (1) to (4)): acquiring firms that distributed a scrip dividend in the three months before making an M&A announcement are 14 to 20% more likely to announce a debt-financed M&A rather than an own funds-financed M&A. These analyses confirm the relation between the use of scrip dividends and cash preservation.

[Insert Table 7 about here]

5.6 Scrip Dividends and Dividend Cuts

Management is generally reluctant to cut dividends in order to avoid negative market reactions. Scrip dividends can be used as an alternative to dividend cuts as both payout choices enable a firm to save cash. However, firms paying scrip dividends can only retain cash to the extent that investors elect to receive stock rather than cash dividends. Whereas dividend cuts give the firm ex ante certainty concerning the amount of cash retained, scrip dividends do not as the take-up of the stock is unknown at the dividend announcement. Cash-constrained firms may want to combine a decrease in payout with a scrip dividend payment to maximize the amount of cash ploughed back into the firm. In fact, that's exactly what financial analysts proposed when the Canadian energy provider Husky Energy Inc. decided to start paying stock dividends rather than cash dividends: "From our perceptive, a stock dividend has no tangible benefits for shareholders relative to no dividend at all. (…) Husky should have considered a dividend cut combined with an incentivized — but voluntary — dividend reinvestment plan to retain cash."[27] The results in Table 8 show that elective stock dividends are used in combination with, rather than as an alternative to, dividend cuts. Columns (1) to (4) demonstrate that firms decreasing their dividend payout are 1.5% more likely to also distribute a scrip dividend. Columns (5) to (8) reveal that there is no significant effect for firms that increase their payout. Importantly, we find here that our main results remain valid after controlling for changes in the dividend payout policy: more financially constrained firms and firms with more costly access to finance are still 2 to 15% more likely to pay scrip dividends.

[Insert Table 8 about here]

Financially constrained firms may attempt to disguise a dividend cut with a scrip dividend announcement, as scrip dividends are generally not well understood by common investors (Dong et al., 2005). If the announcement of a scrip dividend combined with a dividend cut does not trigger negative returns, it is possible that the offered choice between a stock and a cash dividend has distracted investors

[27] C. Pellegrini, Financial Post, Nov 2nd 2015. http://business.financialpost.com/investing/market-moves/husky-energy-inc-shares-rally-despite-analyst-warnings-over-dividend-plan

from interpreting the dividend cut as negative news. However, if the market is not fooled, market reactions may be more negative for the combination of scrip dividends and dividend cuts, as both signal cash constraints and financial difficulties. In Panel B of Table 8, we demonstrate that the average market reaction to a scrip dividend is almost identical to that of a cash dividend in case of a dividend increase, as both trigger a positive market reaction of 1.3%. While a cash to scrip change triggers an abnormal market reaction of 1.4%, a return to cash from a scrip payment cause a return of 2.4%. When a scrip dividend is combined with a dividend decrease, the market reacts more negatively in case of a scrip dividend (-1.7%). This evidence suggests that investors are not fooled as they do perceive a scrip dividend cut as bad news.

5.7 Dividend Cuts, Dividend Channel Choice, and Financial Constraints

In the previous subsection, we have reported that when firms tend to combine dividend cuts with scrip dividend distributions, these dividend policy decisions are perceived negatively by the market. In Table A7 of the Online Appendix, we investigate whether these effects differ for more or less financially constrained firms, distinguishing firms with a below- versus above-median leverage ratio (Panel A), HP index (Panel B), cash-to-assets ratio (Panel C), or FC index (Panel D). The results in Panel A point out that market reactions to scrip dividend cuts are significantly more negative than scrip dividend increases in highly levered firms, but not in firms with below-median leverage. This suggests that cuts in the scrip dividend do indeed signal financial distress in financially constrained firms. In addition, we confirm that dividend increases by means of the scrip channel by financially constrained firms are perceived positively by the market. This suggests that investors value the firm's attempt to retain cash to fund debt payments while still increasing its dividend distributions. The results in Panel B are largely consistent with those in Panel A, as highly constrained firms earn 1.83% higher returns when announcing a scrip dividend increase relative to less constrained firms, and a decrease in a scrip dividend triggers a 10.5% more negative return in a highly levered firm than a decrease in a less levered one. As before, we find less significant results for the cash-to-assets ratio in Panel C, which may not surprise given the dual nature of cash holdings in relation to financial constraints. Lastly, the results in Panel D are again similar to those in Panels A and B, with highly constrained firms earning 1.39% higher returns around scrip dividend increases relative to less constrained firms.

5.8 US Dividend Reinvestment Plans and Financial Constraints

As a robustness test, we investigate whether the financial constraints hypothesis also holds in a US context. Although the US does not offer a pure scrip dividend in which shareholders need to decide at every payout whether or not to opt for cash or newly issued shares, a similar alternative exists in the form of a dividend reinvestment plan (DRIP). These DRIP schemes allow investors to reinvest their dividends in company shares, sometimes at a discount, and should therefore also enable firms to retain cash.

In contrast to a typical UK scrip dividend, US DRIP-paying firms can choose to source the shares to be distributed to investors from (i) the firm's treasury shares, (ii) a new equity issue, or (iii) an open market purchase. For the purpose of this study, we are mainly interested in DRIP schemes that source shares from the firm's treasury or from a new equity issue. Both have similar consequences for firms and investors relative to UK scrip dividends: they enable financially constrained firms to retain cash to the extent that investors choose to reinvest, and they give investors the choice between cash or avoiding the dilution of their equity stake. DRIP schemes sourcing shares from secondary market purchases, in contrast, offer no scope for cash retention, and do not have a dilution effect for investors choosing the cash dividend.

Distinguishing these types of DRIP schemes is not straightforward, as firms are not obliged to report the source of the shares to the SEC or to investors. However, in the US, new shares distributed through a DRIP scheme have to be registered with the SEC by filing the form S-3D, which reports the number of shares to be registered, a proposed maximum offer price per share, and a proposed maximum aggregate offer price. Once the registration becomes effective, firms can sell the registered shares through DRIP schemes over the subsequent years.[28] We therefore identify DRIP-payers that issue new shares by collecting all S-3D forms from the SEC's EDGAR system. This method does not allow us to perfectly identify in which years firms offered DRIPs, but it is reasonable to assume that firms offer DRIP schemes in the years following the filing of a form S-3D: DRIPs are typically multi-year schemes and, like UK scrip dividends, have a high persistence rate. To test the accuracy of our methodology, we go through each of the S-3D forms and examine whether firms indeed intend to issue new shares. For each of the S-3D forms in our sample, firms explicitly mention that the shares distributed through the DRIP scheme will be newly issued shares, treasury shares, or a combination of the two. The vast majority of these includes a clause that either prohibits open market purchases for reinvestments over a specified threshold (e.g. $10,000), or that only allows open market purchases in case the firm's newly registered shares fall short in covering the plan's needs. Panel A in Table 9 reports the annual percentage of US listed firms that offer a new-issue DRIP scheme to their investors for the years 2000 to 2015. Over the whole sample period, 3% of firms offered this type of DRIPs, equivalent to an average of 627 firm-years. There is considerable variation over time however, with the percentage of DRIP-payers increasing from 1-2% in the early 2000s to 4% in the 2010s.[29] As for the UK sample, we see an increase in the use of DRIP schemes following the financial crisis in 2008.[30]

[28] Once the registered shares are close to being exhausted, firms can file a new S-3D form to register more shares for distribution under DRIP schemes.

[29] Note that the percentage of DRIP-payers in our sample is considerably lower than that in e.g. Berkman and Koch (2017), who report that 40% of US dividend-paying firms offer DRIPs (including open-market DRIPs). Our data is in line with other studies investigating new-issue DRIPs, which report that about 20% of DRIPs involve newly issued shares. Given that half of our US sample consists of dividend-paying firms, we can calculate that if 40% of these are likely to offer DRIPs (Berkman and Koch, 2017) and 20% of DRIP-payers issue new shares (Bond and Zheng, 2016), about 4% of our sample should consist of new-issue DRIP-payers (50% x 40% x 20%), which is very close to what we report in Table 9.

[30] We again use the Recession Indicator obtained from the Federal Reserve to identify crisis periods. Whereas the UK suffered from recession periods in 2008, 2009, 2011, and 2012, the US recession years were 2008, 2009, 2012, 2013, and 2015. Source: https://fred.stlouisfed.org/series/USARECM

When comparing firm characteristics in Panel B, we find that US DRIP-paying firms are similar to UK scrip-paying firms in terms of financial constraints and ownership, although the former have slightly higher market-to-book ratios, are less profitable, older and larger, and less likely to be dividend payers. These firm features are in line with existing studies for US DRIPs, which show that DRIP-paying firms tend to be large firms with high levels of institutional ownership (Berkman and Koch, 2017). In Table 10, we test the financial constraints hypothesis for the US sample using the same Heckman probit model as in Section 5.2. As before, we test the likelihood of offering a DRIP scheme, conditional on paying a dividend. Our results are in line with the results in the UK sample: firms with higher leverage ratios, a higher HP index, and a higher FC index are less likely to pay out a dividend (columns (1), (3), and (7)); conditional on paying a dividend, they are up to 1.4% more likely to offer a DRIP to their shareholders (columns (2), (4), and (8)). These results are again echoed by the crisis period dummy, capturing periods when access to external financing is more costly or difficult. In crisis periods, firms are 3% less likely to pay dividends, and are more likely to offer DRIPs. As before, the results for the cash-to-assets ratio are mixed: although we found evidence for precautionary savings in the UK sample, US firms do not appear to precautionarily retain cash when they are financially constrained. We find in columns (5) and (6) that a higher cash ratio is positively related to paying a dividend and negatively related to offering a DRIP, indicating that financially constrained US firms have lower cash-to-assets ratio.[31]

[Insert Tables 9 and 10 about here]

6. Conclusion

Payout policy is an important component of a firm's ability to maintain financial flexibility. Given the market's heavy penalization of reductions in the dividend payout level, financially constrained firms must find ways to retain cash when cash reserves are insufficient to cover future investment needs. In this context, elective stock or scrip dividends provide a way for financially constrained firms to preserve cash by offering shareholders the choice between receiving a cash dividend or the equivalent value in newly issued company shares. Shareholders who choose new shares do not receive cash but avoid a dilution of their ownership stake following the issue of the new company shares, whereas shareholders who prefer cash experience dilution.

By means of a broad range of proxies for financial constraints and access to finance for a UK sample of LSE-listed firms, we show that financially constrained firms use scrip dividends to maintain their financial flexibility. In periods with reduced access to external financing, firms are also more likely to introduce scrip dividends. Using the financial crisis in 2008 as an exogenous shock to external credit supply to mitigate endogeneity concerns, we confirm that financial constraints are strongly positively

[31] This is indeed echoed by firms' average cash-to-assets ratios during crisis periods when financial constraints are more likely: average cash-to-assets ratios were 1.5% lower during the financial crisis for US firms, whereas they were 1.6% higher for UK firms.

related to the use of scrip dividends. The relation between financial constraints and scrip dividends is stronger for younger and smaller firms, which may have limited access to external finance. We further show that scrip dividends are positively related to increased future cash needs: scrip dividends are more likely to be used by firms that have recently done or intend to do a debt-financed M&A, as such an investment increases the cash drain related to servicing the debt.

When we investigate the relation between scrip dividends and dividend cuts, we document that scrip dividends are more likely to be used in combination with a reduction in payout. This suggests that scrip dividends are complements to dividend cuts rather than substitutes, although we do not find that the market is fooled by combining scrips and cuts: the market reactions are significantly negative for scrip dividend reductions, especially when the firm had already been paying scrip dividends before.

To test the robustness of our results, we investigate elective stock dividends in the US in the form of DRIPs. Similar to UK-style scrip dividends, DRIPs that involve to new share issues or treasury shares are offered by more financially constrained firms.

Overall, this study provides evidence that the use of scrip dividends strongly supports the cash retention hypothesis.

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APPENDIX

Variable Definitions

Financial Constraints Proxies	
Market Leverage	The firm's total liabilities, divided by the market value of assets. *Source: Osiris and Datastream.*
HP Index	Index based on Hadlock and Pierce (2010), constructed as -0.357(ln(*size*))-0.025(*age_since_listing*)+1.747(*leverage*)-0.592(*operating income*), with *age_since_listing* winsorized at 37 years and *size* winsorized at $4.5 billion, converted to GBP. *Source: own calculations and Hadlock and Pierce (2010).*
Cash/TA	The firm's total cash holdings, divided by the book value of assets. *Source: Osiris and Datastream.*
Cash/TA Terciles	The firm's cash-to-assets ratio, sorted in terciles. *Source: Osiris and Datastream.*
FC Index	Index ranging from 3 to 9, constructed by sorting the firm's market leverage, HP index, and cash-to-assets ratio in terciles and summing the number of the terciles related to each financial constraints proxy. Firms in the lowest tercile for each proxy score 3 on the FC index, whereas firms in the highest tercile score 9. *Source: own calculations.*
Crisis Period	Crisis indicator based on the Recession Indicator reported by the OECD. For the UK, it is equal to one for the years 2008-2012. *Source: https://research.stlouisfed.org/fred2/series/GBRRECDM*
SA Index	Index based on Hadlock and Pierce (2010), constructed as -0.737(ln(*size*))+0.043*(ln(*size*)^2)-0.040*(*age_since_listing*), where *age since listing* is winsorized at 37 years and *size* is winsorized at $4.5 billion, converted to GBP. *Source: own calculations and Hadlock and Pierce (2010).*
Dividend-Level Variables	
Scrip Dividend	A dummy equal to one if the firm only pays scrip dividends in year t, and zero otherwise. *Source: Osiris.*
Cash Dividend	A dummy equal to one if the firm only pays cash dividends in year t. *Source: Osiris.*
Cash to Scrip	A dummy equal to one if the firm only pays cash dividends in year t-1, and only pays scrip dividends in year t. *Source: Osiris.*
Scrip to Cash	A dummy equal to one if the firm only pays scrip dividends in year t-1, and only pays cash dividends in year t. *Source: Osiris.*
Scrip to Scrip	A dummy equal to one if the firm only pays scrip dividends in years t and t-1. *Source: Osiris.*
Cash to Cash	A dummy equal to one if the firm only pays cash dividends in years t and t-1. *Source: Osiris.*
Dividend Decrease	A dummy equal to one if the firm's dividend payout value decreases by more than 5%. *Source: Osiris.*
Stable Dividend	A dummy equal to one if the firm's dividend payout value increases or decreases by less than 5%. *Source: Osiris.*
Dividend Increase	A dummy equal to one if the firm's dividend payout value increases by more than 5%. *Source: Osiris.*
Firm-Level Variables	
MTB	The firm's market value of equity, divided by the book value of equity. *Source: Osiris and Datastream.*
ROA	The firm's EBITDA, divided by the book value of assets. *Source: Osiris and Datastream.*
Age	The firm's age since the public listing. *Source: Osiris.*
Total Assets (000s)	Log of the firm's total assets (reported in thousands of GBP). *Source: Osiris and Datastream.*

St. Dev. Of Cash Flows	The standard deviation of the firm's operating cash flows over the previous five years. *Source: Osiris and Datastream.*
Institutional Ownership	A dummy equal to one if institutional investors make up the largest ownership category of the firm. *Source: Amadeus.*
Corporate Ownership	A dummy equal to one if corporate shareholders make up the largest ownership category of the firm. *Source: Amadeus.*
Family Ownership	A dummy equal to one if families or individuals make up the largest ownership category of the firm. *Source: Amadeus.*
Dividend Premium	Annual dividend premium for the UK, calculated as in Baker and Wurgler (2004). *Source: own calculations.*
Dividend Payer	A dummy equal to one if the firm paid a dividend in that year. *Source: Osiris.*
M&A-Level Variables	
Own-Funds M&A	A dummy equal to one if the firm engaged in an M&A deal financed with own (cash) funds. *Source: SDC.*
Debt-Financed M&A	A dummy equal to one if the firm engaged in an M&A deal financed with debt. *Source: SDC.*
Cross-Border Deal	A dummy equal to one if the deal is cross-border. Source: SDC.
Public Target	A dummy equal to one if the firm acquired a publicly listed target. *Source: SDC.*
Tender Offer	A dummy equal to one if the deal is a tender offer deal. *Source: SDC.*
Diversifying Deal	A dummy equal to one if the target and acquirer are in different 2-digit SIC industries. *Source: SDC.*
Toehold	A dummy equal to one if the acquirer held a toehold in the target prior to making a takeover offer. *Source: SDC.*
Deal Value	The log of the total deal value. *Source: SDC.*
US-Level Variables	
DRIP	A dummy equal to one if the firm registered a form S-3D with the SEC in year t. *Source: EDGAR.*

Figure 1: Scrip Dividend Process for Royal Dutch Shell PLC

This figure illustrates the scrip dividend offer process, from the date of announcement to the payment date for Royal Dutch Shell PLC's dividend in the first quarter of 2016.

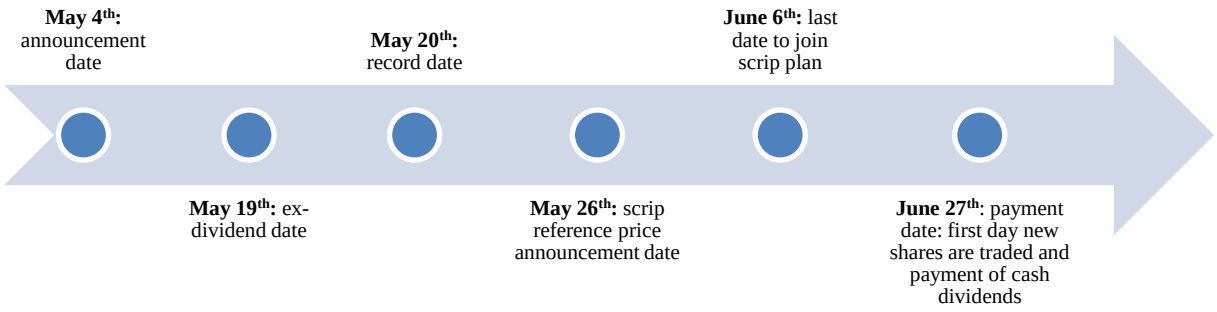

Table 1: Dividend Payout Channels by Year and Changes in Payout Levels

Panel A shows the annual frequency of scrip and cash dividends for a sample of LSE-listed firms from 2004 to 2014, with crisis years indicated in bold (the data from 2003 are dropped as we also show changes in the dividend channel choice). Panel B shows the frequency of changes in the firms' dividend payout policy (increase, stable, or decrease) and the channel choice (cash or scrip). Dividend increases are defined as an increase in dividend value of more than 5%, dividend decreases represent a negative change in dividend value, and the remainder of the cases are stable dividends (the change is between 0 and 5%).

Panel A: Annual Frequency of Dividend Payout Channels

Year	Scrip	Cash	Cash to Scrip	Scrip to Cash
2004	0.000	0.925	0.000	0.000
2005	0.004	0.940	0.004	0.000
2006	0.011	0.923	0.004	0.000
2007	0.035	0.898	0.014	0.000
2008	**0.087**	**0.852**	**0.040**	**0.000**
2009	**0.154**	**0.705**	**0.098**	**0.004**
2010	**0.243**	**0.696**	**0.034**	**0.000**
2011	**0.270**	**0.670**	**0.025**	**0.006**
2012	**0.295**	**0.660**	**0.019**	**0.003**
2013	0.303	0.650	0.012	0.003
2014	0.354	0.615	0.023	0.000
Total	**0.175**	**0.760**	**0.028**	**0.002**

Panel B: Changes in Payout Levels

	Dividend Increase$_t$	Stable Dividend$_t$	Dividend Decrease$_t$
Cash to Scrip Dividend$_t$	0.887	0.085	0.028
Cash to Cash Dividend$_t$	0.906	0.059	0.035

Table 2: Summary Statistics

This table shows descriptive statistics for our sample of firm-year observations for LSE-listed firms from 2003 to 2014. Total Assets is shown in thousands of GBP. Variable definitions are given in the Appendix.

Independent Variables	**N**	**Mean**	**25th Pct**	**Median**	**75th Pct**	**SD**	**Min**	**Max**
Financial Constraints Proxies								
Market Leverage	2,756	0.175	0.018	0.135	0.278	0.174	0	0.942
HP Index	2,756	-1.973	-2.505	-1.968	-1.438	0.712	-3.658	0.175
Cash/TA	2,756	0.139	0.037	0.088	0.181	0.155	0.005	0.990
FC Index	2,756	5.433	5	5	6	1.116	3	9
Crisis Period	2,756	0.547	0	1	1	0.498	0	1
Firm Characteristics								
MTB	2,756	1.739	1.026	1.740	3.101	1.998	0.406	8.051
ROA	2,756	0.106	0.062	0.099	0.144	0.062	0.003	0.240
Age	2,756	16.44	10	16	23	7.985	2	34
Total Assets (000s)	2,756	1,414,758	40,347	135,947	687,716	5,146,623	516	74,321,408
St. Dev. Of Cash Flows	2,756	0.064	0.026	0.040	0.066	0.113	0	1.918
Ownership								
Institutional Ownership	2,756	0.813	1	1	1	0.390	0	1
Corporate Ownership	2,756	0.0512	0	0	0	0.220	0	1
Family Ownership	2,756	0.122	0	0	0	0.328	0	1
Other Controls								
Dividend Premium	2,756	0.171	0.136	0.182	0.204	0.092	0.028	0.376
Dividend Payer	2,756	0.888	1	1	1	0.316	0	1

Table 3: The propensity to pay scrip dividends and financial constraints.

Panel A shows the marginal effects for the first and second-stage estimations of a Heckman selection model, estimating the effect of various measures of financial constraints on the propensity to pay scrip dividends. The dependent variable in Columns (2), (4), (6), and (8) is a dummy variable capturing whether the firm pays only scrip dividends in year t. The independent variables are proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy (2008-2012), the lagged MTB ratio, ROA, firm age, size, and dummies capturing which shareholder type is the largest (institutions, corporations, or families), the standard deviation of cash flows, and the dividend premium. The dependent variable in the first-stage Heckman selection models reported in Columns (1), (3), (5), and (7) indicates whether the firm is a dividend payer in year t or not, and the independent variables are the same control variables as in the second stage plus a dummy variable indicating dividend payout persistence. All specifications include industry fixed effects, and the standard errors clustered at the industry-year level. Panel B shows marginal effects for the four financial constraints proxies (market leverage, HP index, cash-to-assets ratio, and the FC index) in the second stage of the Heckman model reported in Panel A, evaluating the marginal effect of financial constraints in crisis years (2008-2012) relative to non-crisis years. Standard errors are in parentheses. *, **, *** stand for significance at the 10%, 5%, and 1% level, respectively.

Panel A: Scrip Dividends and Financial Constraints

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage
Dep. Var.:	Div. Payer	Scrip Div.	Div. Payer	Scrip Div.	Div. Payer	Scrip Div.	Div. Payer	Scrip Div.
Financial Constraints Proxies								
Market Leverage $_{t-1}$	-0.052***	0.112**						
	(0.0170)	(0.0472)						
HP Index $_{t-1}$			-0.031***	0.092***				
			(0.008)	(0.0232)				
Cash/TA Terciles $_{t-1}$					0.001	0.016**		
					(0.004)	(0.007)		
FC Index $_{t-1}$							-0.004*	0.025***
							(0.002)	(0.008)
Crisis Period	0.004	0.064*	0.002	0.062*	0.002	0.067*	0.001	0.067*
	(0.007)	(0.036)	(0.007)	(0.036)	(0.008)	(0.036)	(0.008)	(0.035)
Firm Characteristics								
MTB $_{t-1}$	-0.0003*	-0.0005*	-0.0002*	-0.0005*	-0.0002	-0.0005*	-0.0002	-0.0005*
	(0.0001)	(0.0003)	(0.0001)	(0.0003)	(0.0001)	(0.0003)	(0.0001)	(0.0003)
ROA $_{t-1}$	0.067**	-0.049	0.061**	0.0096	0.078**	-0.140	0.076**	-0.105
	(0.027)	(0.104)	(0.026)	(0.096)	(0.031)	(0.109)	(0.031)	(0.109)
Age $_{-t-1}$	-0.002	0.130***	-0.009	0.161***	-0.001	0.128***	-0.002	0.138***
	(0.005)	(0.013)	(0.006)	(0.017)	(0.005)	(0.012)	(0.005)	(0.013)
Size $_{t-1}$	-0.001	0.019***	-0.011***	0.046***	-0.003	0.023***	-0.003*	0.025***
	(0.002)	(0.004)	(0.003)	(0.007)	(0.002)	(0.004)	(0.002)	(0.004)
St. Dev. of Cash	-0.014	0.069	-0.014	0.066	-0.012	0.080	-0.013	0.088
Flows$_{t-1}$	(0.015)	(0.063)	(0.014)	(0.065)	(0.015)	(0.063)	(0.015)	(0.060)
Ownership								
Institutional Own. $_{t-1}$	-0.029*	0.175***	-0.026	0.176***	-0.032*	0.177***	-0.033**	0.171***
	(0.016)	(0.045)	(0.016)	(0.045)	(0.017)	(0.045)	(0.017)	(0.046)
Corporate Own. $_{t-1}$	-0.024	0.058	-0.021	0.057	-0.032*	0.066	-0.031*	0.056
	(0.016)	(0.050)	(0.016)	(0.051)	(0.017)	(0.051)	(0.017)	(0.052)
Family Own. $_{t-1}$	-0.027*	0.087*	-0.023	0.082*	-0.031*	0.087*	-0.030*	0.077
	(0.016)	(0.048)	(0.017)	(0.049)	(0.017)	(0.049)	(0.017)	(0.050)
Dividend Premium$_t$	0.047	0.204	0.055	0.207	0.044	0.198	0.052	0.207
	(0.038)	(0.237)	(0.041)	(0.237)	(0.043)	(0.239)	(0.045)	(0.238)
Dividend Payer$_{t-1}$	0.087***		0.086***		0.091***		0.090***	
	(0.008)		(0.008)		(0.009)		(0.010)	
Inverse Mills Ratio		-0.487*		-0.573*		-0.486*		-0.569*
		(0.301)		(0.301)		(0.294)		(0.293)
N	2,756	2,756	2,756	2,756	2,756	2,756	2,756	2,756
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis

Panel B: Effect of Financial Constraints in Crisis Periods vs. Non-Crisis Periods

	Market Leverage	HP Index	Cash/TA Terciles	FC Index
Crisis (2008-2012)	0.201***	0.123***	0.016	0.033***
Non-Crisis	0.163***	0.100***	0.013	0.026***
Difference	*0.038***	*0.023***	*0.003*	*0.007***

Table 4: The propensity of switching from cash to scrip dividends and financial constraints.

This table shows the marginal effects for the first and second-stage estimations of a Heckman Probit selection model, estimating the effect of various measures of financial constraints on the propensity of switching from cash to scrip dividends. The dependent variable in Columns (1), (3), (5), and (7) is a dummy capturing whether the firm switches from all cash dividends in year t-1 to all scrip dividends in year t. The independent variables are proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy (2008-2012), the lagged market-to-book ratio, ROA, firm age, firm size, and dummies for the largest ownership group (institutional, corporate, or family), the standard deviation of cash flows, and the dividend premium. The dependent variable in the first-stage Heckman selection models reported in Columns (2), (4), (6), and (8) is whether the firm is an all cash dividend payer in year t-1, and the independent variables are the twice-lagged control variables as in the second stage, plus a dummy capturing whether the firm paid a dividend in year t-2. All specifications include industry fixed effects, and standard errors are clustered by industry and year. Standard errors are presented in parentheses. *, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage
Dep. Var.:	Cash Payer $_{t-1}$	Cash to Scrip	Cash Payer $_{t-1}$	Cash to Scrip	Cash Payer $_{t-1}$	Cash to Scrip	Cash Payer $_{t-1}$	Cash to Scrip
Financial Constraints Proxies								
Market Leverage $_{t-2}$	-0.180***							
	(0.044)							
Market Leverage $_{t-1}$		0.068*						
		(0.039)						
HP Index $_{t-2}$			-0.122***					
			(0.026)					
HP Index $_{t-1}$				0.058**				
				(0.026)				
Cash/TA Terciles $_{t-2}$					-0.033**			
					(0.017)			
Cash/TA Terciles $_{t-1}$						0.017		
						(0.012)		
FC Index $_{t-2}$							-0.018***	
							(0.006)	
FC Index $_{t-1}$								0.009*
								(0.005)
Crisis Period		0.064***		0.060**		0.070***		0.071***
		(0.015)		(0.025)		(0.016)		(0.016)
Inverse Mills Ratio		-0.337		-0.414*		-0.142		-0.132
		(0.234)		(0.253)		(0.216)		(0.216)
N	2,579	2,579	2,332	2,332	2,594	2,594	2,594	2,594
Control Vars.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis

Table 5: Scrip dividends and switching payout channel in high- and low-leverage firms.
This table shows the marginal effects for a logit model, estimating the effect of the cash/assets ratio on the propensity of paying scrip, cash, or switching from cash to scrip dividends in year t. The dependent variable is a dummy capturing whether the firm pays scrip dividends (columns (1) and (2)), or switches from cash to scrip dividends in year t (columns (3) and (4)). The independent variables are the lagged cash/assets ratio, a crisis period dummy (2008-2012), the lagged market-to-book ratio, ROA, firm age, firm size, and dummies for the largest ownership group (institutional, corporate, or family), the standard deviation of cash flows, and the dividend premium. All specifications include industry fixed effects. Robust standard errors are presented in parentheses and are clustered at the industry-year level. *, **, *** stand for significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Dep. Var.:	Scrip Dividend	Scrip Dividend	Cash to Scrip	Cash to Scrip
Sample	Low Leverage Div Payers $_{t-1}$	Hi Leverage Div Payers $_{t-1}$	Low Leverage Cash Div Payers $_{t-1}$	Hi Leverage Cash Div Payers $_{t-1}$
Financial Constraints Proxies				
Cash/TA Terciles $_{t-1}$	-0.0745	0.191**	0.010	0.121***
	(0.059)	(0.097)	(0.043)	(0.042)
Crisis Period	0.063*	0.067	0.084***	0.087***
	(0.035)	(0.046)	(0.030)	(0.027)
Firm Characteristics				
MTB $_{t-1}$	-0.0008**	-0.0005	-0.0008*	-0.0001
	(0.0003)	(0.0004)	(0.0005)	(0.0006)
ROA $_{t-1}$	0.034	-0.157	-0.034	-0.253**
	(0.099)	(0.162)	(0.098)	(0.104)
Age $_{t-1}$	0.093***	0.120***	0.015	0.026*
	(0.018)	(0.022)	(0.012)	(0.014)
Size $_{t-1}$	0.030***	0.026***	0.009	0.004
	(0.008)	(0.007)	(0.006)	(0.007)
St. Dev. Of Cash Flows $_{t-1}$	0.153*	0.290***	0.111	0.306**
	(0.080)	(0.106)	(0.068)	(0.141)
Ownership				
Institutional Ownership $_{t-1}$	0.250***	0.122*	NA	0.020
	(0.053)	(0.067)		(0.025)
Corporate Ownership $_{t-1}$	0.024	0.036	NA	0.035
	(0.104)	(0.065)		(0.033)
Family Ownership $_{t-1}$	0.144***	0.041	NA	0.019
	(0.054)	(0.079)		(0.027)
Dividend Premium $_{t}$	0.174	0.226	-0.209	-0.183
	(0.199)	(0.268)	(0.149)	(0.131)
N	1,352	1,046	827	749
Industry FE	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis

Table 6: Scrip versus cash dividends and financial constraints for young and small firms.

This table shows the marginal effects for two sets of logit models, estimating the effect of various measures of financial constraints on the propensity of paying only scrip (Columns (1) – (4)) in year t for samples of young firms (Panel A, "young" is defined as age since listing less than the sample median) and small firms (Panel B, "small" is defined as firm size less than the sample median). The dependent variable is a dummy capturing whether the firm only pays scrip or cash dividends in year t. The independent variables are proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy (2008-2012), the dividend premium, and a set of firm-level controls: the lagged market-to-book ratio, ROA, firm size (Panel A only), age since listing (Panel B only), and dummies for the largest ownership group (institutional, corporate, or family), and the standard deviation of cash flows. All specifications include industry fixed effects. Robust standard errors are presented in parentheses and are clustered at the industry-year level. *, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

Dep. Var.:	(1) Scrip Dividend	(2) Scrip Dividend	(3) Scrip Dividend	(4) Scrip Dividend
Panel A: Young Dividend Payers t-1				
Financial Constraints Proxies				
Market Leverage $_{t-1}$	0.179** (0.077)			
HP Index $_{t-1}$		0.019 (0.037)		
Cash/TA Terciles $_{t-1}$			0.025* (0.014)	
FC Index $_{t-1}$				0.040*** (0.010)
Crisis Period	0.051 (0.034)	0.054 (0.034)	0.054 (0.034)	0.054 (0.033)
N	1,073	1,073	1,073	1,073
Control Vars.	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis
Panel B: Small Dividend Payers t-1				
Financial Constraints Proxies				
Market Leverage $_{t-1}$	0.373*** (0.064)			
HP Index $_{t-1}$		0.076** (0.033)		
Cash/TA Terciles $_{t-1}$			-0.021 (0.014)	
FC Index $_{t-1}$				0.031*** (0.010)
Crisis Period	0.046** (0.023)	0.048** (0.023)	0.055** (0.023)	0.051** (0.023)
N	984	984	984	984
Control Vars.	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis

Table 7: Scrip dividends and pre-dividend M&A activity.

This table shows estimations for two sets of logit models, estimating the correlation between the likelihood of paying a scrip dividend and the firm's past M&A activity behaviour (Panel A), and estimating the correlation between the likelihood of engaging in a debt- or own-funds financed M&A (conditional on doing an M&A) and the firm's past scrip dividend policy (Panel B). In Panel A, the dependent variable is a dummy capturing whether the firm pays a scrip dividend. The independent variables are a dummy whether the firm engages in an M&A in the 90 days before a dividend payment (M&As funded with own cash in Columns (1) to (4), debt-financed M&As in Columns (5) to (8)), proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy (2008-2012), and a set of firm-level controls: the lagged market-to-book ratio, ROA, firm age, firm size, and dummies for the largest ownership group (institutional, corporate, or family), the standard deviation of cash flows, and the dividend premium. In Panel B, the dependent variable is a dummy capturing whether the firm engages in an own-funds financed M&A (Columns (1) to (4)) or a debt-financed M&A (Columns (5) to (8)). The independent variables are a dummy capturing whether the firm paid a scrip dividend in the 90 days preceding the M&A announcement, a set of firm-level controls as in Panel A, and a set of deal-level controls. Deal controls include dummies for cross-border deals, target firm public status, tender offers, diversifying deals, toeholds, and the deal's value. All specifications include industry fixed effects. Standard errors are presented in parentheses, are adjusted for heteroscedasticity, and are clustered at the industry-year level. *, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

Panel A: Pre-Dividend M&A Activity and the Likelihood of Paying a Scrip Dividend

Dep. Var.: P (Scrip Dividend)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
M&A Pre-Dividend (Own Funds)	0.070	0.074	0.068	0.075				
	(0.077)	(0.076)	(0.076)	(0.076)				
M&A Pre-Dividend (Debt)					0.171**	0.175**	0.172**	0.169**
					(0.069)	(0.069)	(0.069)	(0.069)
Financial Constraints Proxies								
Market Leverage $_{t-1}$	0.157***				0.157***			
	(0.051)				(0.051)			
HP Index $_{t-1}$		0.106***				0.106***		
		(0.028)				(0.028)		
Cash/TA Terciles $_{t-1}$			0.018**				0.018**	
			(0.009)				(0.009)	
FC Index $_{t-1}$				0.028***				0.027***
				(0.007)				(0.007)
Crisis Period	0.079***	0.078***	0.084***	0.084***	0.079***	0.079***	0.084***	0.084***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
N	4,739	4,739	4,739	4,739	4,739	4,739	4,739	4,739
Firm-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis

Panel B: Scrip Dividends and Post-Dividend Likelihood a Takeover

Dep. Var.:	*P(Own-Funds M&A)*				*P(Debt-Financed M&A)*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Scrip Dividend	0.148	0.153	0.142	0.140	0.132*	0.136	0.155**	0.167**
	(0.108)	(0.105)	(0.106)	(0.110)	(0.078)	(0.085)	(0.062)	(0.070)
Financial Constraints Proxies								
Market Leverage $_{t-1}$	0.191				0.216			
	(0.273)				(0.186)			
HP Index $_{t-1}$		0.288*				0.014		
		(0.148)				(0.112)		
Cash/TA Terciles $_{t-1}$			-0.017				-0.142***	
			(0.051)				(0.034)	
FC Index $_{t-1}$				0.059				-0.091
				(0.042)				(0.059)
Crisis Period	0.094	0.073	0.113	0.125*	0.055	0.095	0.084	0.146
	(0.083)	(0.079)	(0.069)	(0.068)	(0.083)	(0.090)	(0.083)	(0.100)
N	154	154	154	154	121	121	121	121
Firm-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deal-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis

Table 8: Dividend Changes and Scrip Dividends

Panel A shows the marginal effects for a logit model, estimating the correlation between dividend decreases or increases and the likelihood of paying a scrip dividend for dividend-paying firms. The dependent variable is a dummy capturing whether the firm pays a scrip dividend. The independent variables are a dummy for dividend decreases (Columns (1) to (4)) or increases (Columns (5) to (8)), proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy (2008-2012), the lagged market-to-book ratio, ROA, firm age, firm size, and dummies for the largest ownership group (institutional, corporate, or family), the standard deviation of cash flows, and the dividend premium. All specifications include industry fixed effects. Robust standard errors are presented in parentheses and are clustered at the industry-year level. Panel B shows the cumulative average abnormal returns over the three days [-1,+1] around the final end-of-year dividend announcement. A distinction is made between subsamples based on the (switch in) dividend channel and the change in dividend. A switch in dividend channel is identified relative to the previous interim dividend payment, or if not available, the previous year's end-of-year dividend.*, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

Panel A: Dividend Changes and Likelihood of Paying a Scrip Dividend

Dep. Var.: P(Scrip Div.)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dividend Decrease	0.014**	0.013**	0.015**	0.015**				
	(0.006)	(0.006)	(0.006)	(0.006)				
Dividend Increase					-0.005	-0.004	-0.006	-0.006
					(0.006)	(0.006)	(0.006)	(0.006)
Financial Constraints Proxies								
Market Leverage $_{t-1}$	0.156***				0.156***			
	(0.051)				(0.051)			
HP Index $_{t-1}$		0.105***				0.105***		
		(0.028)				(0.028)		
Cash/TA Terciles $_{t-1}$			0.018**				0.018**	
			(0.009)				(0.009)	
FC Index $_{t-1}$				0.027***				0.027***
				(0.007)				(0.007)
Crisis Period	0.078***	0.078***	0.083***	0.083***	0.079***	0.078***	0.084***	0.083***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
N	4,739	4,739	4,739	4,739	4,739	4,739	4,739	4,739
Control Vars.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis

Panel B: Market Reactions [-1;1] to Final End-of-Year Dividend

	$Cash_t$	$Scrip_t$	Cash to $Scrip_t$	Scrip to $Cash_t$	Scrip to $Scrip_t$	Cash to $Cash_t$
$Decrease_t$	-1.16%	-1.71%	6.00%*	NA	-3.55%*	-1.16%
N	74	15	2	0	12	74
$Increase_t$	1.31%***	1.33%***	1.35%*	2.44%*	1.33%***	1.30%***
N	1904	443	70	28	368	1876
Difference	*2.47%****	*3.04%**	*4.66%*	*NA*	*4.88%****	*2.46%****
Std. Err.	*(0.008)*	*(0.016)*	*(0.047)*		*(0.017)*	*(0.008)*
Total	**1.22%*** **	**1.23%*** **	**1.50%** **	**2.44%* **	**1.18%*** **	**1.20%*** **
N	**1978**	**458**	**78**	**28**	**380**	**1950**

Table 9: DRIP Frequency by Year and Summary Statistics (US)

Panel A shows the frequency of US firms using DRIPs by year. Crisis years are indicated in bold. Panel B shows descriptive statistics for the sample of firm-year observations for listed US firms from 2000 to 2015. Total Assets is shown in millions of USD. Continuous variables are winsorized at the 99% level and variable definitions are given in the Appendix.

Panel A: DRIP Frequency by Year

Year							
2000	0.8%	2004	1.9%	**2008**	**3.8%**	2012	4.0%
2001	1.3%	2005	2.3%	**2009**	**3.7%**	2013	3.7%
2002	1.9%	2006	2.8%	**2010**	**3.9%**	2014	3.8%
2003	1.9%	2007	3.0%	2011	3.7%	2015	4.0%
						Total	**3.0%**

Panel B: Summary Statistics

Independent Variables	**N**	**Mean**	**25th Pct**	**Median**	**75th Pct**	**SD**	**Min**	**Max**
Financial Constraints Proxies								
Market Leverage	29,844	0.153	0.005	0.109	0.241	0.163	0	0.723
HP Index	29,844	-2.097	-2.939	-2.379	-1.768	1.602	-3.869	9.929
Cash/TA	29,844	0.102	0.021	0.061	0.132	0.127	0	0.764
FC Index	29,844	5.496	5	5	6	1.271	3	9
Crisis Period	29,844	0.182	0	0	0	0.386	0	1
Firm Characteristics								
MTB	29,844	2.665	1.175	1.841	3.040	2.845	-0.010	18.96
ROA	29,844	0.079	0.040	0.085	0.130	0.106	-0.498	0.347
Age	29,844	21.39	9	17	30	17.01	0	82
Total Assets ($ mil.)	29,844	6.731	5.657	7.055	8.423	1.628	2.596	8.437
St. Dev. Of Cash Flows	29,844	0.078	0.039	0.061	0.095	0.067	0.009	0.493
Ownership								
Institutional Ownership	29,844	0.855	1	1	1	0.352	0	1
Family Ownership	29,844	0.036	0	0	0	0.188	0	1
Other Controls								
Dividend Premium	29,844	0.102	0.028	0.133	0.186	0.174	-0.391	0.376
Dividend Payer	29,844	0.489	0	0	1	0.500	0	1

Table 10: The likelihood of implementing DRIP and financial constraints in US firms.

This table shows the marginal effects for the first and second-stage estimations of a Heckman Probit selection model, estimating the effect of various measures of financial constraints on the likelihood of implementing a dividend reinvestment plan (DRIP). The dependent variable in Columns (2), (4), (6), and (8) is a dummy variable capturing whether the firm implements a DRIP in year t. The independent variables are proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy, the lagged MTB ratio, ROA, firm age, size, standard deviation of cash flows, dividend premium, and dummies capturing which shareholder type is the largest (institutions or families). The dependent variable in the first-stage Heckman selection models reported in Columns (1), (3), (5), and (7) indicates whether the firm is a dividend payer in year t or not, and the independent variables are the same control variables as in the second stage plus a dummy variable indicating dividend payout persistence (did the firm pay a dividend in year t-1?). All specifications include industry fixed effects, and robust standard errors are clustered at the industry-year level. *, **, *** stand for significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.:	1st Stage Dividend Payout	2nd Stage DRIP	1st Stage Dividend Payout	2nd Stage DRIP	1st Stage Dividend Payout	2nd Stage DRIP	1st Stage Dividend Payout	2nd Stage DRIP
Financial Constraints Proxies								
Market Leverage $_{t-1}$	-0.097***	0.014**						
	(0.024)	(0.007)						
HP Index $_{t-1}$			-0.023***	0.002**				
			(0.003)	(0.0007)				
Cash/TA Terciles $_{t-1}$					0.006**	-0.003*		
					(0.003)	(0.002)		
FC Index $_{t-1}$							-0.007***	-0.0007
							(0.002)	(0.0008)
Crisis Period	-0.032*	0.005**	-0.025	0.005*	-0.032*	0.005**	-0.032**	0.005**
	(0.016)	(0.003)	(0.016)	(0.003)	(0.016)	(0.002)	(0.016)	(0.002)
Firm Characteristics								
MTB $_{t-1}$	-0.007***	0.0002	-0.006***	0.0002	-0.006**	0.0004	-0.006***	0.0001
	(0.002)	(0.0005)	(0.002)	(0.0005)	(0.002)	(0.0006)	(0.002)	(0.0005)
ROA $_{t-1}$	0.465***	-0.071***	0.421***	-0.067***	0.501***	-0.074***	0.477***	-0.076***
	(0.073)	(0.026)	(0.069)	(0.023)	(0.073)	(0.026)	(0.074)	(0.026)
Age $_{t-1}$	0.0006***	-0.0001	0.0001	-0.0004	0.0006***	-0.0001	0.0005**	-0.0002
	(0.0002)	(0.0004)	(0.0002)	(0.0005)	(0.0002)	(0.0004)	(0.0002)	(0.0004)
Size $_{t-1}$	0.010***	0.002**	0.003	0.003***	0.008***	0.002**	0.007***	0.002**
	(0.002)	(0.001)	(0.003)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
St. Dev. Of Cash Flows $_{t-1}$	-0.376***	-0.024	-0.375***	0.006	-0.331***	-0.031	-0.328***	-0.036
	(0.047)	(0.030)	(0.047)	(0.004)	(0.048)	(0.029)	(0.048)	(0.029)
Ownership								
Institutional Ownership $_{t-1}$	-0.012	-0.003	-0.016*	-0.003	-0.006	-0.003	-0.008	-0.003
	(0.008)	(0.004)	(0.009)	(0.004)	(0.009)	(0.004)	(0.009)	(0.004)
Family Ownership $_{t-1}$	0.042***	0.0002	0.042***	0.0003	0.042**	0.0006	0.042**	0.0001
	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.006)
Dividend Premium	-0.011	-0.005	-0.016	0.0003	-0.006	-0.006	-0.003	-0.005
	(0.026)	(0.006)	(0.025)	(0.0005)	(0.025)	(0.006)	(0.02)	(0.006)
Dividend Payer $_{t-1}$	0.427***		0.424***		0.429***		0.428***	
	(0.005)		(0.005)		(0.005)		(0.005)	
Inverse Mills Ratio		0.269**		0.207**		0.273**		0.254**
		(0.111)		(0.100)		(0.121)		(0.114)
N	29,721	29,721	29,721	29,721	29,721	29,721	29,721	29,721
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis

ONLINE APPENDIX

(Online Appendix) Table A1: Industry Distribution

This table shows the sample distribution by industry, defined using the 48 Fama-French industry categories.

Fama-French Industries	Freq.	Percent
Agriculture	43	1.56
Food Products	57	2.07
Candy & Soda	18	0.65
Beer & Liquor	20	0.73
Tobacco Products	19	0.69
Recreation	20	0.73
Entertainment	42	1.52
Printing and Publishing	81	2.94
Consumer Goods	73	2.65
Apparel	63	2.29
Healthcare	15	0.54
Medical Equipment	20	0.73
Pharmaceutical Products	39	1.42
Chemicals	64	2.32
Rubber and Plastic Products	67	2.43
Textiles	7	0.25
Construction Materials	88	3.19
Construction	155	5.62
Steel Works Etc.	27	0.98
Machinery	44	1.6
Electrical Equipment	18	0.65
Automobiles and Trucks	36	1.31
Aircraft	9	0.33
Precious Metals	28	1.02
Non-Metallic and Industrial Metal Mining	5	0.18
Coal	20	0.73
Petroleum and Natural Gas	28	1.02
Communication	105	3.81
Personal Services	31	1.12
Business Services	681	24.71
Computers	19	0.69
Electronic Equipment	167	6.06
Measuring and Control Equipment	45	1.63
Business Supplies	44	1.6
Shipping Containers	19	0.69
Transportation	115	4.17
Wholesale	162	5.88
Retail	166	6.02
Restaurants, Hotels, Motels	59	2.14
Other	37	1.34
Total	**2,756**	**100**

(Online Appendix) Table A2: Likelihood of paying scrip or cash dividends for various measures of financial constraints.

This table shows the marginal effects for a logit model, estimating the effect of various measures of financial constraints on the likelihood of paying only scrip (columns (1), (3), (5), and (7)) or only cash (columns (2), (4), (6), and (8)) dividends in year t for a sample of dividend paying firms in year t-1. The independent variables are proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy (2008-2012), the lagged market-to-book ratio, ROA, firm age, firm size, and dummies for the largest ownership group (institutional, corporate, or family), the standard deviation of cash flows, and the dividend premium. All specifications include industry fixed effects. Robust standard errors are presented in parentheses, and are clustered at the industry-year level. *, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

Dep. Var.:	(1) Scrip Dividend	(2) Cash Dividend	(3) Scrip Dividend	(4) Cash Dividend	(5) Scrip Dividend	(6) Cash Dividend	(7) Scrip Dividend	(8) Cash Dividend
Financial Constraints Proxies								
Market Leverage $_{t-1}$	0.169***	-0.173***						
	(0.059)	(0.057)						
HP Index $_{t-1}$			0.112***	-0.120***				
			(0.032)	(0.029)				
Cash/TA Terciles $_{t-1}$					0.018*	-0.013		
					(0.009)	(0.010)		
FC Index $_{t-1}$							0.035***	-0.026***
							(0.007)	(0.007)
Crisis Period	0.063**	-0.093***	0.062**	-0.092***	0.068***	-0.099***	0.068***	-0.099***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Firm Characteristics								
MTB $_{t-1}$	-0.0004	0.0004	-0.0004	0.0004	-0.0004	0.0005	-0.0003	0.0004
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
ROA $_{t-1}$	-0.0020	-0.036	0.060	-0.105	-0.140	0.092	-0.095	0.059
	(0.096)	(0.098)	(0.091)	(0.092)	(0.099)	(0.103)	(0.096)	(0.102)
Age $_{t-1}$	0.149***	-0.153***	0.185***	-0.192***	0.145***	-0.150***	0.162***	-0.162***
	(0.017)	(0.018)	(0.021)	(0.021)	(0.017)	(0.018)	(0.017)	(0.017)
Size $_{t-1}$	0.016***	-0.020***	0.052***	-0.059***	0.023***	-0.027***	0.025***	-0.029***
	(0.006)	(0.006)	(0.009)	(0.009)	(0.005)	(0.005)	(0.005)	(0.005)
St. Dev. Of Cash Flows $_{t-1}$	0.027	0.012	0.019	0.022	0.039	-0.003	0.057	-0.017
	(0.072)	(0.079)	(0.074)	(0.082)	(0.080)	(0.086)	(0.071)	(0.080)
Ownership								
Institutional Ownership $_{t-1}$	0.191***	-0.169***	0.191***	-0.171***	0.193***	-0.170***	0.188***	-0.167***
	(0.044)	(0.054)	(0.046)	(0.053)	(0.045)	(0.054)	(0.046)	(0.056)
Corporate Ownership $_{t-1}$	0.057	0.008	0.060	0.005	0.071	-0.004	0.057	0.008
	(0.050)	(0.063)	(0.051)	(0.062)	(0.051)	(0.064)	(0.051)	(0.066)
Family Ownership $_{t-1}$	0.085*	-0.055	0.080	-0.052	0.081	-0.050	0.069	-0.042
	(0.050)	(0.061)	(0.053)	(0.062)	(0.052)	(0.062)	(0.053)	(0.064)
Dividend Premium$_t$	0.219	-0.105	0.219	-0.106	0.210	-0.096	0.222	-0.104
	(0.151)	(0.150)	(0.151)	(0.150)	(0.151)	(0.151)	(0.149)	(0.149)
N	2,320	2,320	2,320	2,320	2,320	2,320	2,320	2,320
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis

(Online Appendix) Table A3: Likelihood of paying all scrip or all cash dividends for various measures of financial constraints.

This table shows the marginal effects for a logit model, estimating the effect of various measures of financial constraints on the likelihood of paying only scrip (columns (1), (3), (5), and (7)) or only cash dividends (columns (2), (4), (6) and (8)) in year t. The independent variables are proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis dummy (2008-2012), the lagged market-to-book ratio, ROA, firm age, firm size, and dummies for the largest ownership group (institutional, corporate, or family), the standard deviation of cash flows, and the dividend premium. All specifications include industry fixed effects. Robust standard errors are presented in parentheses, and are clustered at the firm level. *, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

Dep. Var.:	(1) Scrip Dividend	(2) Cash Dividend	(3) Scrip Dividend	(4) Cash Dividend	(5) Scrip Dividend	(6) Cash Dividend	(7) Scrip Dividend	(8) Cash Dividend
Financial Constraints Proxies								
Market Leverage $_{t-1}$	0.169*	-0.173*						
	(0.095)	(0.096)						
HP Index $_{t-1}$			0.112**	-0.120**				
			(0.050)	(0.050)				
Cash/TA Terciles $_{t-1}$					0.018	-0.013		
					(0.016)	(0.017)		
FC Index $_{t-1}$							0.035***	-0.026*
							(0.013)	(0.013)
Crisis Period	0.063***	-0.093***	0.062***	-0.092***	0.068***	-0.099***	0.068***	-0.099***
	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.016)
Firm Characteristics								
MTB $_{t-1}$	-0.0004*	0.0004*	-0.0004*	0.0005*	-0.0004*	0.0005*	-0.0004	0.0004
	(0.0002)	(0.0003)	(0.0002)	(0.0003)	(0.0002)	(0.0003)	(0.0002)	(0.0003)
ROA $_{t-1}$	-0.002	-0.036	0.060	-0.105	-0.140	0.092	-0.095	0.059
	(0.150)	(0.158)	(0.143)	(0.149)	(0.149)	(0.158)	(0.144)	(0.153)
Age $_{t-1}$	0.149***	-0.153***	0.185***	-0.192***	0.145***	-0.150***	0.162***	-0.162***
	(0.028)	(0.028)	(0.034)	(0.034)	(0.028)	(0.028)	(0.028)	(0.028)
Size $_{t-1}$	0.016*	-0.020**	0.052***	-0.059***	0.023***	-0.027***	0.025***	-0.029***
	(0.010)	(0.010)	(0.015)	(0.015)	(0.009)	(0.009)	(0.008)	(0.009)
St. Dev. Of Cash Flows $_{t-1}$	0.027	0.012	0.019	0.022	0.039	-0.003	0.057	-0.017
	(0.119)	(0.132)	(0.122)	(0.134)	(0.134)	(0.147)	(0.118)	(0.134)
Ownership								
Institutional Ownership $_{t-1}$	0.191***	-0.169**	0.191***	-0.171**	0.193***	-0.170**	0.188***	-0.167**
	(0.047)	(0.077)	(0.046)	(0.076)	(0.047)	(0.078)	(0.049)	(0.081)
Corporate Ownership $_{t-1}$	0.057	0.008	0.060	0.005	0.071	-0.004	0.057	0.008
	(0.065)	(0.092)	(0.064)	(0.091)	(0.068)	(0.094)	(0.067)	(0.096)
Family Ownership $_{t-1}$	0.085	-0.055	0.080	-0.052	0.081	-0.050	0.069	-0.042
	(0.057)	(0.084)	(0.057)	(0.084)	(0.058)	(0.086)	(0.060)	(0.088)
Dividend Premium$_t$	0.219***	-0.105*	0.219***	-0.106*	0.210***	-0.096	0.222***	-0.104
	(0.048)	(0.063)	(0.048)	(0.063)	(0.048)	(0.063)	(0.050)	(0.064)
N	2,320	2,320	2,320	2,320	2,320	2,320	2,320	2,320
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis	Crisis

(Online Appendix) Table A4: Likelihood of switching from scrip to cash dividends for various measures of financial constraints.

This table shows the marginal effects for a logit model, estimating the effect of various measures of financial constraints on the likelihood of switching from scrip to cash dividends for a sample of all-scrip dividend payers in year t-1. The dependent variable is a dummy capturing whether the firm switches from all scrip dividends in year t-1 to all cash dividends in year t. The independent variables are proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy (2008-2012), the lagged market-to-book ratio, ROA, firm age, firm size, and dummies for the largest ownership group (institutional or corporate), the standard deviation of cash flows, and the dividend premium. All specifications include industry fixed effects, robust standard errors are adjusted for heteroscedasticity and are clustered at the industry-year level. Standard errors are presented in parentheses. *, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

Dep. Var.:	(1) Scrip to Cash	(2) Scrip to Cash	(3) Scrip to Cash	(4) Scrip to Cash
Financial Constraints Proxies				
Market Leverage $_{t-1}$	-0.132 (0.081)			
HP Index $_{t-1}$		-0.055* (0.033)		
Cash/TA Terciles $_{t-1}$			-0.009 (0.018)	
FC Index $_{t-1}$				-0.009 (0.008)
Crisis Period	0.010 (0.022)	0.010 (0.020)	0.004 (0.015)	0.006 (0.016)
Firm Characteristics				
MTB $_{t-1}$	0.002 (0.008)	0.002 (0.006)	0.002 (0.004)	0.002 (0.003)
ROA $_{t-1}$	-0.917*** (0.226)	-0.856*** (0.193)	-0.551*** (0.144)	-0.582*** (0.083)
Age- $_{t-1}$	-0.019 (0.015)	-0.034* (0.020)	-0.001 (0.016)	-0.019 (0.030)
Size $_{t-1}$	-0.035*** (0.013)	-0.055*** (0.013)	-0.039** (0.018)	-0.040** (0.018)
St. Dev. Of Cash Flows $_{t-1}$	0.315 (0.327)	0.310 (0.330)	0.293 (0.375)	0.230 (0.376)
Ownership				
Institutional Ownership $_{t-1}$	-0.030 (0.023)	-0.026 (0.020)	-0.008 (0.021)	-0.009 (0.018)
Corporate Ownership $_{t-1}$	0.122*** (0.027)	0.110*** (0.022)	0.090*** (0.023)	0.096*** (0.026)
Dividend Premium$_t$	-0.153 (0.478)	-0.156 (0.441)	-0.140 (0.291)	-0.181 (0.332)
N	143	143	143	143
Industry FE	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis

(Online Appendix) Table A5: Scrip Dividends, Cash Dividends, and the HP Index (Heckman and Logit).

This table shows the marginal effects for the first and second-stage estimations of a Heckman Probit selection model (Columns (1) to (4)) and a logit model (Columns (5) and (6)), estimating the effect SA index on the propensity of paying scrip dividends (Columns (1) and (5)) or cash dividends (Columns (3), and (6)). The dependent variable in Columns (2) and (5), is a dummy capturing whether the firm pays only scrip dividends in year t, in Columns (4) and (6) it indicates whether the firm pays only cash dividends in year t. The independent variables are the SA index as a proxy for financial constraints, a crisis period dummy (2008-2012), the lagged market-to-book ratio, ROA, firm age, firm size, ownership concentration, and dummies for the largest ownership group (institutional, corporate, or family), the standard deviation of cash flows, and the dividend premium. The dependent variables in the first-stage models in Columns (1) and (3) are dummies for whether the firm pays a dividend, and the independent variables are the same control variables as in the second stage, plus a dummy capturing whether the firm paid a dividend in year t-1. All specifications include industry fixed effects, and robust standard errors are clustered at the industry-year level. Standard errors are presented in parentheses. *, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	1st Stage	2nd Stage	1st Stage	2nd Stage		
Dep. Var.:	Dividend Payout	Scrip Dividend	Dividend Payout	Cash Dividend	Scrip Dividend	Cash Dividend
SA Index $_{t-1}$	-0.007	0.133***	-0.010	-0.163***	0.099**	-0.137***
	(0.011)	(0.033)	(0.011)	(0.035)	(0.045)	(0.048)
Crisis Period	-0.0002	0.068***	-0.0001	-0.094***	0.068***	-0.099***
	(0.006)	(0.014)	(0.006)	(0.015)	(0.025)	(0.025)
MTB $_{t-1}$	-0.0001	-0.0005*	-0.0001	0.0005*	-0.0004	0.0005
	(0.0001)	(0.0003)	(0.0001)	(0.0003)	(0.0003)	(0.0003)
ROA $_{t-1}$	0.076**	-0.028	0.076**	-0.011	-0.105	0.062
	(0.035)	(0.074)	(0.035)	(0.077)	(0.098)	(0.103)
Age $_{t-1}$	-0.005	0.178***	-0.006	-0.202***	0.199***	-0.222***
	(0.006)	(0.021)	(0.006)	(0.022)	(0.026)	(0.028)
Size $_{t-1}$	-0.004	0.061***	-0.005	-0.074***	0.046***	-0.060***
	(0.003)	(0.009)	(0.003)	(0.010)	(0.011)	(0.012)
St. Dev. Of Cash	-0.014	0.144**	-0.014	-0.104	0.040	-0.002
Flows $_{t-1}$	(0.015)	(0.058)	(0.015)	(0.064)	(0.082)	(0.091)
Ownership						
Corporate	-0.028*	0.082*	-0.028*	-0.041	0.071	-0.006
Ownership $_{t-1}$	(0.016)	(0.049)	(0.015)	(0.052)	(0.051)	(0.062)
Family	-0.026	0.073	-0.026	-0.038	0.072	-0.040
Ownership $_{t-1}$	(0.016)	(0.045)	(0.016)	(0.047)	(0.053)	(0.062)
Dividend	0.059	0.209***	0.057	-0.106	0.217	-0.103
Premium$_t$	(0.039)	(0.062)	(0.037)	(0.176)	(0.152)	(0.152)
Dividend Payer$_{t-1}$	0.085***		0.085***			
	(0.008)		(0.008)			
N	2,756		2,756	2,756	2,756	2,320
Industry FE	Yes		Yes	Yes	Yes	Yes
Year FE	Crisis		Crisis	Crisis	Crisis	Crisis

(Online Appendix) Table A6: Likelihood of paying all scrip and all cash dividends for various measures of financial constraints for samples of young and small dividend payers [lowest terciles].

This table shows the marginal effects for two sets of logit models, estimating the effect of various measures of financial constraints on the likelihood of paying only scrip (Columns (1), (3), (5), and (7)) or only cash dividends (Columns (2), (4), (6), (8)) in year t for samples of young firms (Panel A, "young" is defined as age since listing in the lowest tercile) and small firms (Panel B, "small" is defined as firm size in the lowest tercile). The dependent variable is a dummy capturing whether the firm only pays scrip or cash dividends in year t. The independent variables are proxies for lagged financial constraints (market leverage, HP Index, Cash/Total Assets terciles, and the FC Index, respectively), a crisis period dummy (2008-2012), and a set of firm-level controls: the lagged market-to-book ratio, ROA, firm size, and dummies for the largest ownership group (institutional, corporate, or family), the standard deviation of cash flows, and the dividend premium. All specifications include industry fixed effects. Robust standard errors are presented in parentheses, and are clustered at the industry-year level. *, **, *** stand for significance at the 10% level, 5% level, and 1% level respectively.

Dep. Var.:	(1) Scrip Dividend	(3) Scrip Dividend	(5) Scrip Dividend	(7) Scrip Dividend
Panel A: Young Dividend Payers $_{t-1}$				
Financial Constraints Proxies				
Market Leverage $_{t-1}$	0.227** (0.089)			
HP Index $_{t-1}$		0.071 (0.047)		
Cash/TA Terciles $_{t-1}$			0.028 (0.018)	
FC Index $_{t-1}$				0.030*** (0.011)
Crisis Period	-0.140*** (0.026)	-0.145*** (0.027)	-0.145*** (0.028)	-0.137*** (0.029)
Firm-Level Controls	Yes	Yes	Yes	Yes
Observations	599	599	599	599
Panel B: Small Dividend Payers $_{t-1}$				
Financial Constraints Proxies				
Market Leverage $_{t-1}$	0.550*** (0.107)			
HP Index $_{t-1}$		0.101* (0.058)		
Cash/TA Terciles $_{t-1}$			-0.033* (0.019)	
FC Index $_{t-1}$				0.029* (0.017)
Crisis Period	0.074** (0.030)	0.078*** (0.029)	0.084*** (0.029)	0.078*** (0.028)
N	536	536	536	536
Firm-Level Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Crisis	Crisis	Crisis	Crisis

(Online Appendix) Table A7: Market Reaction [-1,+1] to Final Dividend by Dividend Channel and Financial Constraints

This table shows the average cumulative abnormal returns in the three days [-1,+1] around the final end-of-year dividend announcement, distinguishing subsamples based on the dividend channel, the increase or decrease in dividend payout, and the firm's financial constraints (above or below the sample median).

Panel A: Leverage		Cash$_t$	Scrip$_t$	**Panel C: Cash/TA**		Cash$_t$	Scrip$_t$
Leverage < Median	Decrease	-1.13%	-0.70%	Cash/TA < Median	Decrease	-2.32%*	-2.12%
	N	37	7		N	31	5
	Increase	1.53%***	1.19%***		Increase	1.70%***	1.28%***
	N	918	203		N	820	213
	Difference D-I	*2.66%***	*1.89%*		*Difference D-I*	*4.03%****	*3.39%*
Leverage > Median	Decrease	-0.24%	-2.53%	Cash/TA > Median	Decrease	0.76%	-1.34%
	N	26	7		N	32	9
	Increase	1.38%***	1.55%***		Increase	1.22%***	1.48%***
	N	710	218		N	808	208
	Difference D-I	*1.62%*	*4.07%**		*Difference D-I*	*0.47%*	*2.82%*
Difference < and > Med	*Decrease*	*0.89%*	*1.83%*	*Difference < and > Med*	*Decrease*	*3.08%*	*0.78%*
	Increase	*0.15%*	*0.36%*		*Increase*	*0.48%*	*0.20%*
Panel B: HP Index		Cash$_t$	Scrip$_t$	**Panel D: FC Index**		Cash$_t$	Scrip$_t$
HP Index < Median	Decrease	-0.76%	0.63%	FC Index < Median	Decrease	-1.31%	-1.47%
	N	21	11		N	32	6
	Increase	0.81%***	0.79%**		Increase	1.24%***	0.84%**
	N	775	287		N	922	259
	Difference D-I	*1.56%*	*0.17%*		*Difference D-I*	*2.55%**	*2.31%*
HP Index > Median	Decrease	-0.76%	-9.84%	FC Index > Median	Decrease	-0.20%	-1.73%
	N	42	3		N	31	8
	Increase	2.06***	2.63%***		Increase	1.75%***	2.23%***
	N	853	134		N	706	162
	Difference D-I	*2.82%**	*12.46%****		*Difference D-I*	*1.95%*	*3.96%**
Difference < and > Med	*Decrease*	*0.00%*	*10.46%****	*Difference < and > Med*	*Decrease*	*0.51%*	*0.26%*
	Increase	*1.26%****	*1.83%****		*Increase*	*1.11%*	*1.39%**

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