Financing Payouts [*] [†]

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Abstract

We show that 43% of firms that pay out capital also raise capital during the same year, resulting in 31% of aggregate payouts being externally financed, mostly with debt. At the same time, 41% of all net debt raised in a given year is paid out during the same year—primarily via share repurchases. The vast majority of financed payouts are the result of a persistent pattern of firms setting payouts above their free cash flow. Firms use debt-financed payouts to jointly manage their leverage and cash for tax optimization purposes, thus illustrating the need to view payout policy through the wider lens of capital structure. Debt-financed payouts increase firms' financial fragility following industry downturns and during the COVID-19 crisis in a way that internally funded payouts do not.

Key words: Payout policy, financing decisions, debt issues, capital structure, liquidity management.

JEL classification: G35; G32.

The COVID-19 crisis has brought renewed attention from the financial press and policy makers to firms that issue securities—debt in particular—to finance payouts to shareholders.[1] To be sure, neither the public attention nor externally financed payouts themselves are new. Back in 2010, a *Bloomberg* headline read, "Buybacks jump as companies borrow for stock purchases,"[2] while more recently, an IMF (2019; p. 25) report noted: "Debt has risen and is increasingly used for financial risk-taking—to fund corporate payouts to investors, … especially in the United States." In addition, the ongoing pandemic has brought to the forefront concerns that debt-financed payouts increase firms' financial fragility, some of which then require government assistance when a crisis eventually hits—airlines being a case in point (Lowenstein (2020)).

No paper to date, however, has systemically quantified the prevalence, persistence, and economic magnitude of externally financed payouts. The first goal of our study is to do just that. In addition, our paper aims to enhance our understanding of the motives that lead firms to externally finance their payouts and of the consequences of doing so—in particular, debt-financed payouts' impact on firms' capital structure and financial fragility.

We find that on average during our 1989-2019 sample period, 43% of payout payers initiate a net debt or an equity issue during the same year they pay out capital to shareholders. In addition to being widespread, payouts and firm-initiated security issues that take place during the same year (henceforth, for brevity, "financed payouts") are substantial in dollar magnitude: 31% of the aggregate capital paid out by U.S. public firms is raised by the same firms during the same year via net debt or equity issues.

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[1] See, for instance, "President Trump Joins Democrats in Calls to Block Share Buybacks" (*The Wall Street Journal*, March 22, 2020), or "Buybacks: free cash didn't always flow" (*Financial Times*, April 16, 2020).

[2] *Bloomberg*, September 20, 2010. See also "Bondholders pay price of share buybacks" (*Financial Times*, February 26, 2014), or "The new bond market: Debt investors wary as offerings fuel buybacks" (*The Wall Street Journal*, September 21, 2015).

Firms devote a larger fraction of the capital they raise to the financing of share repurchases and (far less often) special dividends than of regular dividends. This is true particularly since the mid-2000s. Hence, firms' well-known aversion to cut regular dividends (e.g., Brav et al. (2005)) cannot explain the majority of financed payouts, which take the form of share repurchases.

Over 83% of firms that finance their payouts could not sustain their payout and investment levels without raising capital externally, as their payouts are higher than their free cash flow—even when we include cash reductions and employee-initiated equity issues in an expanded definition of free cash flow. Crucially, such gaps between payouts and free cash flow are *not* the result of payout smoothing in the face of volatile profits or investment: When we measure payout gaps over five-year intervals, their prevalence increases rather than decreases, and their (annualized) aggregate magnitude remains unchanged. Thus, the vast majority of financed payouts are the result of a persistent pattern of firms setting payouts above the level they can fund internally without raising capital.

Debt is by far the most important source of payout financing: 38% of payout payers issue net debt during the same year they pay out; these net debt issues finance 30% of aggregate payouts. Perhaps even more surprisingly, each year debt issuers pay out 41% of aggregate net debt proceeds via share repurchases and dividends. By contrast, equity issues are not a meaningful source of payout financing once employee-initiated issues (typically the result of stock option exercises) are excluded, as we conservatively do throughout the paper.

The second part of the paper seeks to shed light on the likely motives behind financed payouts. We pay particular attention to financed repurchases, which cannot be explained by firms' desire to avoid dividend cuts. The fact that debt is the dominant source of payout financing points to the desire to increase leverage as a key driver of financed payouts. But if

firms want to increase their leverage, why do they choose to combine payouts with (costly) debt issues instead of simply paying out more? A unique feature of debt-financed payouts is that they allow firms to quickly increase their leverage without depleting their cash reserves—or without triggering repatriation taxes. Consistent with firms' desire to jointly manage their capital structure and cash holdings being a key driver of debt-financed payouts, firms with low leverage and low cash are more likely to debt-finance payouts, all else equal. Firms with high investment opportunities are also more likely to debt-finance payouts, thereby conserving cash for investment while at the same time preventing their leverage from falling—as would be the case if they grew by simply reinvesting their profits.

The quantitative impact of debt-financed repurchases on leverage and cash holdings is substantial. The median firm that debt-finances repurchases begins with leverage 5.0 percentage points below target; following the debt-financed repurchase, its leverage increases to just slightly above target. Interestingly, while the median firm uses debt-financed repurchases to all but hit its leverage target, 39.5% of firms overshoot it by over 5 percentage points. In addition, we show that as many as 81% of firms with debt-financed repurchases would run out of cash if they attempted to achieve the same leverage increase by simply repurchasing more without simultaneously raising debt.[3]

Taxes are one key reason why firms may seek to actively manage their capital structure (e.g., Myers (2000)). We exploit two quasi-natural experiments to offer causal evidence of the role of taxes in motivating debt-financed payouts. The tax deductibility of interest payments means that debt-financed payouts allow firms to lower their income taxes while ensuring that the tax savings

[3] Hovakimian, Opler, and Titman (2001) and Lie (2002) show that under-levered firms use share repurchases to move toward their leverage targets. Our results go one step further, showing that firm can only achieve their leverage targets by combining debt issues and share repurchases to accelerate the move toward their target leverage without using their cash reserves.

are not offset by the taxable interest income that would be generated if the debt proceeds were retained as cash. Supporting a causal role of tax minimization motives, we find that debt-financed repurchases increase when the value of interest tax deductions raises exogenously due to state tax increases, using a difference-in-differences approach (Heider and Ljungqvist (2015)).

Not only the debt tax shield, but also the desire to minimize repatriation taxes have driven debt-financed payouts until recently. Prior to the enactment of the Tax Cuts and Jobs Act (TCJA) in December 2017, U.S. firms were taxed on their worldwide income but could defer paying taxes on foreign earnings by retaining them overseas. Profitable multinationals could use debt-financed payouts to prevent both their leverage and their leverage net of cash from falling without repatriating their foreign earnings to fund payouts. The TCJA moved the U.S. toward a territorial tax system where foreign earnings are largely exempt from U.S. taxation regardless of their repatriation status, thus removing the avoidance of repatriation taxes as a motive for debt-financing payouts. Using a difference-in-differences approach, we show that firms with a higher tax cost of repatriating foreign earnings were more likely to have debt-financed payouts during the pre-TCJA years—but not since the TCJA came into force in 2018. This finding supports the hypothesis that firms' desire to minimize repatriation taxes was a causal driver of debt-financed payouts during the pre-TCJA tax regime.

In the third part of the paper, we explore the potential costs of debt-financed payouts. Specifically, we analyze the relationship between debt-financed payouts and financial fragility—and the extent to which this relationship differs for debt-financed and internally-funded payouts. We present two complementary pieces of evidence. First, we show that firms with debt-financed repurchases in 2019 suffered a deeper stock price drop during the COVID-19 stock market collapse period in early 2020 than those without. The same is *not* true, however, for firms with

internally-funded repurchases or if, as Fahlenbrach, Rageth, and Stulz (2020), we pool all repurchases together. Second, we show that firms with debt-financed repurchases tend to invest less following periods of industry distress than firms that did not debt-finance repurchases—but the opposite is true for firms with internally-funded repurchases. Both findings are driven by firms that do not have an investment-grade credit rating, as expected if they reflect the firms' financial fragility. Results for debt-financed dividends go in the same direction but are weaker.

These findings suggest that debt-financed payouts—but not internally-funded ones—are associated with an increase in financial fragility that can increase firms' cost of capital and constrain their ability to invest following unexpected shocks, with potential long-run negative consequences for the firms' productivity (Duval, Hong, and Timmer (2020)). To be sure, while the shocks we study are arguably exogenous, a firm's initial decision to conduct debt-financed payouts is not. Thus, our estimates of the relationship between debt-financed payouts and financial fragility likely capture both debt-financed payouts' treatment effect on fragility and the selection effect associated with debt-financed payouts.

Our paper makes three contributions. First, ours is the first paper to systematically analyze how firms fund their payouts. The vast payout literature has investigated in detail the determinants of the form of payouts (dividends or repurchases), their motivations, and the effect that payout decisions have on equity returns. (See DeAngelo, DeAngelo, and Skinner (2008) and Farre-Mensa, Michaely, and Schmalz (2014) for recent reviews.) Yet no paper to date has systematically examined how payouts are funded and, in particular, the extent to which firms rely on the capital markets to fund their payouts—instead assuming that the level of payouts is largely determined by free cash flow. In particular, our finding that 43% of payers finance their payouts by raising external capital indicates that many managers do not follow the textbook

advice to set payouts "low enough to avoid expensive future external financing" (Ross, Westerfield, and Jaffe (2013; p. 608)).

Second, the large prevalence, magnitude, and persistence of debt-financed payouts have direct implications for our understanding of the drivers of firms' payout and capital structure policies. We show that firms use debt-financed payouts to jointly manage their leverage and cash in a way that most firms would be unable to replicate by using payouts (or debt issues) alone, thus suggesting that capital-structure changes are not a by-product but a key objective of payout policy.[4] In particular, our findings indicate that taxes are a key driver of debt-financed payouts, in line with trade-off theories of capital structure. By contrast, the evidence rejects Myers' (1984) pecking-order prediction that "an unusually profitable firm … will end up with an unusually low debt ratio compared to its industry's average, *and it won't do much of anything about it*. It won't go out of its way to issue debt and retire equity to achieve a more normal debt ratio" (p. 589).

In recent work, Ma (2019) shows that firms use debt-financed repurchases to engage in cross-market arbitrage in response to shifts in the relative valuations of debt and equity. Our analysis of the motives behind debt-financed payouts identifies the joint management of leverage and cash for tax optimization purposes as another key driver of debt-financed payouts. To be sure, taxes are not the only reason why firms may actively manage their capital structure: Agency considerations can be another key motive (Myers (2000)). Whereas agency theories of dividends have focused mostly on the role of internally-funded dividends in paying out free cash flow and thus mitigating the agency costs associated with cash hoarding (see, e.g., DeAngelo,

[4] Prior work (including Vermaelen (1981), Denis and Denis (1993), Wruck (1994), and Danis, Rettl, and Whited (2014)) notes that firms sometimes use large debt-financed payouts (also known as leveraged recapitalizations) to rebalance their capital structure. Our study highlights that firms use debt-financed payouts on a regular basis to jointly manage their leverage and cash, and not just when they need to make large capital structure adjustments—so much so that in the average year, 41% of the aggregate proceeds of net debt issues are paid out during the same year.

DeAngelo, and Stulz (2006)), the theoretical insight that debt-financed payouts can help mitigate agency problems goes back to Jensen (1986). While undoubtedly important, the empirical identification of agency motives as a driver of debt-financed payouts poses a formidable challenge—one we leave for future research.

Third, our results highlight the importance of considering the source of payout funding when analyzing the relationship between payouts and financial fragility. In particular, our finding that this relationship is markedly different for debt-financed and internally-funded payouts informs discussions on the costs and benefits of imposing restrictions on payouts—an idea that has found support on both sides of the political spectrum.[5] At the same time, our paper suggests that an alternative to such restrictions may be to change those elements of the tax code—most notably, the tax deductibility of interest payments—that incentivize firms to use debt-financed payouts to minimize their tax bill.

1. Aggregate Payout and Capital Raising Activity

1.1. Sample selection

Our sample consists of all U.S. public firms that appear in the Compustat-CRSP merged files from 1989 to 2019.[6] We exclude firms in the year of their IPO to avoid capturing the IPO proceeds in our analyses of equity issues. As is customary, we also exclude financial firms (SIC 6) and utilities (SIC 49). The final sample consists of 11,557 unique firms and 106,407 firm-year observations for which all variables required for our analysis of financed payouts in Section 2 are available.

[5] See, e.g., "Schumer and Sanders: Limit Corporate Stock Buybacks" (*The New York Times*, February 3, 2019) and "President Trump Joins Democrats in Calls to Block Share Buybacks" (*The Wall Street Journal*, March 22, 2020).

[6] The sample starts in 1989 because it is the first full year for which data from the statement of cash flow were standardized following the adoption of the Statement of Financial Accounting Standards 95.

1.2. Variable definitions: paying out and raising capital

The literature has shown that firms tend to avoid cutting their regular dividends (and even failing to deliver an expected regular dividend increase); by contrast, share repurchases and special dividends are seen as more flexible, and so managers enjoy greater discretion in deciding whether to pay them (e.g., Jagannathan, Stephens, and Weisbach (2000), Brav et al. (2005), DeAngelo, DeAngelo, and Skinner (2008)). As a result, the motives why firms finance their regular dividends, on the one hand, and their share repurchases and special dividends, on the other hand, may be different. For this reason, throughout the paper we break down a firm's total payout into two components: (1) regular dividends, and (2) share repurchases plus special dividends. For brevity, we sometimes use the terms "dividends" and "share repurchases" to refer to regular dividends and the sum of share repurchases and special dividends, respectively.[7]

We define net debt issues as the difference between the amount of debt issued and the amount retired if this difference is positive, and zero otherwise.[8] On the equity side, we follow McKeon (2015) and break down the cash flows from equity issues into firm-initiated issues (SEOs and private placements) and equity issues initiated by a firm's employees (typically the strike price paid to the firm when employees exercise stock options).[9] An important conceptual difference exists between firm- and employee-initiated equity issues, as firms determine the timing of the former but not the latter. Thus, whenever we measure financed payouts, we conservatively focus our attention on payouts financed via net debt or firm-initiated equity

[7] In the average sample year, share repurchases account for 98% of the sum share repurchases and special dividends. Throughout the paper, we obtain very similar results if we simply break out total payouts into dividends and share repurchases.

[8] Much of the proceeds of gross debt issues are used to retire prior debt. Our focus on *net* debt issues allows us to capture those proceeds that firms can use to fund investment, cash-flow shortfalls, or—as we will show—payouts.

[9] Unlike, for instance, Fama and French (2005), our equity issuance measures do not only include issues that do not generate cash (such as stock-financed mergers, outright grants of stock to employees, or conversions of debt into equity), because we are only interested in capturing equity issues whose proceeds can be used to fund payouts.

issues; if a firm uses the proceeds of employee-initiated equity issues to fund its dividends or share repurchases, we do *not* capture this as a financed payout.

1.3. Aggregate payout and capital raising activity

Figure 1 shows that both the percentage of firms that pay out and the dollar amount paid out have increased substantially during our sample period, an increase that has largely been driven by share repurchases. (All dollar figures reported in the paper are in real dollars of year 2012 purchasing power.) As expected, Figure 1 also shows that share repurchases have been much more volatile than dividends. On the capital raising side, Figure 2 indicates that net debt issues have been by far the most important source of external funds for public firms.

As Figures 1 and 2 show, aggregate payout and capital-raising activities are both largely procyclical. Of course, this does not imply that payouts and issuances are in any way related at the firm level: Firms that pay out and those that raise capital may be different firms that are at different stages of their life cycles, as standard lifecycle theories predict (e.g., Grullon, Michaely, and Swaminathan (2002), DeAngelo, DeAngelo, and Stulz (2006)). The next section examines payout and issuance decisions *by the same firm* during the same year, in contrast to the aggregate figures presented so far.

2. How Prevalent and Large Are Financed Payouts?

In this section, we investigate the frequency and magnitude of "financed payouts," which we define as payouts made by a firm that also raises capital during the same fiscal year by initiating a net debt or an equity issue. For brevity, we will refer to payouts and security issues that take place during the same fiscal year as "simultaneous."

2.1. Prevalence and magnitude of financed payouts

Columns 1-3 in Table 1 report the annual number of firms that pay out and initiate a net debt or an equity issue in the same year, presented as a fraction of the population of U.S. public firms, the population of firms that pay out capital, and the population of firms that initiate security issues, respectively. In order to conserve space, Table 1 reports annual figures averaged over five-year intervals. Column 1 shows that, in our average sample year, 22% of all public firms pay out capital and initiate a net debt or an equity issue in the same year. This represents just under 43% of all payout payers (column 2) and 48% of all firms that initiate a net debt or an equity issue (column 3). In recent years, these fraction are even larger: During the most recent quinquennium (2015-2019), 28% of all public firms, 43% of all payout payers, and 58% of all firms initiating a security issuance finance their payouts.

In order to better visualize time trends, the solid line in the top panel in Figure 3 shows how the percentage of public firms that finance their payouts has evolved over our sample period. Two patterns stand out: Financed payouts are pro-cyclical, sharply falling during the 2001 and the 2007-2009 recessions, and they have been on an upward trend since the end of the 2001 recession.

Is the dollar magnitude of financed payouts economically important? Columns 4 and 5 in Table 1 explore this question. For each firm i and year t, we measure the dollar amount the firm raises and pays out in the same year—its financed payout—as $FinTP_{it} = \min\{TP_{it}, SI_{it}\}$, where SI_{it} denotes the proceeds of the firm's firm-initiated security issues (net debt plus equity) and TP_{it} denotes its total payout. Thus, a firm's financed payout measures how much capital the firm could have avoided raising without any change to its available funds if it had not simultaneously paid out that capital.

Column 4 in Table 1 shows that, on average over our sample period, 31% of the aggregate capital paid out by public firms is raised by the same firms during the same year. Conversely, column 5 shows that in the average year, 37% of the capital raised via firm-initiated security issues is paid out by the same firm in the same year. Perhaps even more surprisingly, from 2010 through 2019, 45% of the aggregate capital raised in the capital markets was paid out by the same firm in the same year.

The bottom panel in Figure 3 shows how the dollar amount of financed payouts has evolved during our sample period. In dollar terms, the pro-cyclicality of financed payouts is even more pronounced than when examining firm counts in Figure 3's top panel. Financed payouts peaked in 2015 at $320 billion; 2016 and 2017 still saw the second and third highest amount of financed payouts in our sample, respectively, and then financed payouts fell sharply in 2018 to $154 billion. As we will see in Section 3.3.2, a major overhaul in the U.S. corporate income tax in late 2017 likely helps explain this recent decline in financed payouts.

2.2. The role of share repurchases and dividends

In order to shed light on the motives that lead firms to finance their payouts, we begin by analyzing the extent to which this behavior can be explained by the desire to avoid cutting regular dividends—or failing to deliver an expected regular dividend increase (e.g., Brav et al. (2005)). Columns 6-9 in Table 1 show the same analyses as columns 1-2 and 4-5, but we substitute total payouts with the sum of share repurchases and special dividends; similarly, in columns 10-13, we substitute total payouts with regular dividends.

As it turns out, the annual fraction of public firms that finance their share repurchases is larger than in the case of dividends: 16% (column 6) vs. 14% (column 10), respectively, of all public firms on average over our sample period. If instead of comparing firm counts we focus on

dollar magnitudes, we continue to find that financed repurchases dominate: 24% of the aggregate proceeds of firm-initiated security issues are simultaneously paid out via share repurchases (column 9), while 21% are paid out via dividends (column 13).[10] Figure 3 shows that financed repurchases have been both more prevalent and larger in dollar magnitude than financed dividends since the late 1990s, except during recessionary years. Thus, even under the (strong) assumption that all financed dividends are motivated by managers' desire to avoid dividend cuts, this desire cannot explain the majority of financed payouts, which take the form of repurchases.

2.3. The role of debt and equity issues

Table 1 shows that financed payouts represent a large fraction of the total capital that firms pay out and raise. The drivers of this behavior likely depend on the securities issued, as payouts financed via equity and debt issues have different capital structure implications. Table 2 thus examines the extent to which firms finance their payouts via net debt (Panel A) and firm-initiated equity (Panel B) issues. For completeness, we also document how often firms simultaneously pay out and raise capital via employee-initiated equity issues (Panel C), although we do not include payouts funded with the proceeds of such issues in our definition of financed payouts.[11]

Three results stand out. First, debt is the dominant form of payout financing: Panel A shows that 19% of all public firms (column 1), representing 38% of payout payers (column 2), finance at least part of their payouts via simultaneous net debt issues. In dollar terms, this means that on average 30% of aggregate payouts are financed via net debt issues (column 4). By contrast, Panel B shows that only 4% of public firms (8% of payout payers) finance at least part of their payouts

[10] The sum of a firm's financed repurchases and financed dividends can be larger than its financed total payout. To illustrate why, consider a firm that raises \$80 of debt, repurchases \$60 worth of shares, and pays a regular dividend of \$30. For this firm, $\min\{TP, SI\} = \$80 < \min\{Rep, SI\} + \min\{Div, SI\} = \$60 + \$30 = \$90$. In particular, this means that the sum of columns 9 and 13 in Table 1 need not equal column 5.

[11] To conserve space, Table 2 shows annual figures averaged over all sample years. Table IA.1 in the Internet Appendix provides a time-series breakdown analogous to Table 1.

via firm-initiated equity issues; in dollar terms, such equity issues finance just under 3% of aggregate payouts. Columns 8 and 12 show that debt dominates the financing of both share repurchases and dividends. In addition, Figure 4 shows that the growth in financed payouts shown in Figure 3 has almost exclusively been driven by debt-financed payouts, as payouts financed via firm-initiated equity issues have remained flat over our sample period.

Most debt that is used to finance payouts is long-term debt: of the 30% of aggregate total payouts that are financed via net debt issues, 92% are financed with net issues of long-term debt (untabulated). To illustrate, in February 2015, Apple Inc. issued $6.5 billion worth of notes with maturities ranging from 2020 through 2045. The intended use of proceeds was "for general corporate purposes, including repurchases of our common stock and payment of dividends under our program to return capital to shareholders, funding for working capital, capital expenditures and acquisitions and repayment of debt" (Apple Inc. (2015), p. S-3).

Second, much of the debt firms raise is simultaneously paid out: Column 5 in Panel A shows that 41% of the annual proceeds of net debt issues are paid out during the same year by the same issuers—a larger amount via share repurchase than via dividends (column 9 vs. column 13). As it turns out, a smaller but still non-negligible amount of the proceeds of firm-initiated equity issues are also simultaneously paid out: 17% (column 5 in Panel B).

Third, Panel C shows that simultaneous payouts and employee-initiated equity issues are common, with 68% of payout payers receiving a simultaneous equity inflow via employee-initiated issues (column 2). Consistent with the notion that stock option exercises provide unplanned capital infusions that are a by-product of firms' compensation policies, as much as 81% of the proceeds of employee-initiated equity issues are simultaneously paid out (column 5).

While we conservatively do not include such employee-funded payouts in our definition of financed payouts, it is worth noting that they account for 10% of aggregate payouts (column 4).

2.4. The gap between payouts and free cash flow

Table 1 shows that 31% of the capital firms pay out is raised by the same firms during the same year via firm-initiated security issues; conversely, 37% of the capital firms raise is simultaneously paid out. To what extent are the decisions to raise and pay out capital during the same year necessarily related? To shed light on this question, we now analyze the degree to which financed payouts are conducted by firms that, given their profit and investment levels, would have been unable to fund their payouts without raising capital—both when the firms' cash flows are measured over a one-year horizon and over a longer (five-year) horizon.

2.4.1. One-year gaps

We begin by expressing firm i's total payout in year t in terms of its potential sources and uses of cash:

$$\text{Total payout } (TP_{it}) = \text{Free cash flow } (FCF_{it}) - \text{Change in cash } (CC_{it}) + \text{Firm-initiated security issues } (SI_{it}) + \text{Employee-initiated equity issues } (EE_{it}), \quad (1)$$

where free cash flow (FCF_{it}) is the sum of operating and investment cash flow (see Internet Appendix A for details). Motivated by this identity, we define a firm's (one-year) total payout gap as follows:

$$TPGap_{it} = \min\{\max\{TP_{it} - (FCF_{it} + CR_{it} + EE_{it}), 0\}, TP_{it}\}, \quad (2)$$

where $CR_{it} = -\min\{CC_{it}, 0\} \geq 0$ captures positive cash flows from any cash reductions. By adding employee-initiated equity issues to the sum of free cash flow and cash reductions, it follows from Equation (1) that whenever a payout payer has a total payout gap (i.e., $TP_{it} > FCF_{it} + CR_{it} + EE_{it}$), the firm needs to initiate a security issue to finance at least part of its payout (i.e., $SI_{it} > 0$).

To illustrate the total payout gap definition, consider a firm that pays out \$25, has free cash flow of \$25, and issues \$50 of net debt, which it uses to increase its cash reserves (i.e., $SI_{it} = CC_{it}$ = \$50). According to our financed payout definition, this firm finances its entire \$25 payout ($FinTP_{it} = \min\{TP_{it}, SI_{it}\} = \min\{25, 50\}$ = \$25). But it does not have a total payout gap, because its free cash flow is sufficient to fund its payout ($TPGap_{it} = \min\{\max\{25 - 25, 0\}, 25\}$= \$0).

Column 1 in Table 3 shows that, on average over our sample period, 84% of firms that pay out and raise capital during the same year—i.e., finance their payouts—have a total payout gap. How large are total payout gaps ($TPGap_{it}$) relative to financed payouts ($FinTP_{it}$)? We answer this question in two complementary ways: First, for each firm-year with a financed payout, we define the ratio $TPGap_{it} / FinTP_{it}$ and then calculate the annual average of these ratios for each year in our sample period. Column 2 in Table 3 shows that the average of these annual averages from 1989 through 2019 is 79%. This means that for the average firm in the average year, 79% of payouts that were financed via simultaneous security issues could not have been funded internally without the proceeds of these issues. Second, we define a dollar-weighted version of the column 2 annual averages by computing, for each year in our sample period, the aggregate ratio $\frac{\sum_i TPGap_{it}}{\sum_i FinTP_{it}}$. Column 3 shows that the average of these annual aggregate ratios over our sample period is 80%. Thus, regardless of whether we examine the prevalence or the size of total payouts gaps relative to financed payouts, we reach the same conclusion: The vast majority of financed payouts correspond to firms whose payouts are higher than their internal funds—even when internal funds include cash reductions and employee-initiated equity issues.

We reach a similar conclusion when we examine repurchase gaps in columns 4-6 of Table 3: Around 80% of financed repurchases could not have been funded internally without

simultaneously raising capital.[12] Interestingly, the corresponding fraction for financed dividends is lower, between 48% and 64% depending on the measure (columns 7-9). The remaining 36% to 52% of financed dividends correspond to firms whose internal funds were sufficient to fund their dividends and which used the capital they raised to finance their repurchases or to increase their cash reserves. These findings reinforce the notion that the desire to avoid dividend cuts cannot explain the majority of financed payouts. Consistent with this, Figure 5 shows that both total payout gaps and repurchase gaps are strongly pro-cyclical, mirroring the pro-cyclicality of financed payouts and finance repurchases shown in Figure 3.

2.4.2. Five-year gaps and the persistence of payout gaps

Are payout gaps the result of firms' smoothing their payouts relative to their free cash flow, leading to temporary mismatches between them (e.g., Leary and Michaely (2011), Lambrecht and Myers (2012))? If so, measuring payout gaps over longer time horizons should allow us to better capture intertemporal smoothing behavior and result in smaller gaps. To see whether this is the case, we define a firm's five-year total payout gap as follows:

$$TPGap_{it}^{5} = \min\left\{\max\left\{\sum_{j=0}^{4} TP_{it+j} - \sum_{j=0}^{4}\left(FCF_{it+j} + EE_{it+j}\right) - CR_{it}^{5}, 0\right\}, \sum_{j=0}^{4} TP_{it+j}\right\}, \quad (3)$$

where $CR_{it}^{5} = -\min\{\sum_{j=0}^{4} CC_{it+j}, 0\} \geq 0$ captures any positive cash flows from cumulative cash reductions over the five-year interval, and all other variables are defined as in Equation (2).

Table 4 compares the prevalence (columns 1-6) and dollar magnitude (columns 7-12) of five-year and one-year total payout gaps. Column 1 shows that, during the six five-year intervals from 1990 to 2019, on average as many as 41% of all public firms have a five-year total payout gap. This fraction almost doubles the 21% of public firms that have a one-year total payout gap on

[12] In line with the payout literature (e.g., Jagannathan, Stephens, and Weisbach (2000)), our definitions of repurchase and dividend gaps assume that firms prioritize the payment of dividends over repurchases (see Table 3).

average over the same period (column 2). In addition, the table shows that the aggregate magnitude of five-year total payout gaps is similar to the cumulative magnitude of one-year gaps over the same intervals: Five-year gaps average $476 billion over our sample period (column 7), whereas the sum of aggregate one-year gaps over the same five years averages $484 billion (column 8). We find largely similar patterns for repurchase gaps (columns 3-4 and 7-8) and for dividend gaps (columns 5-6 and 11-12).

Thus, contrary to what we would expect if payout gaps were the result of payout smoothing in the face of volatile cash flows, measuring the gaps over longer horizons actually increases their prevalence while leaving their annualized aggregate magnitude unchanged. In particular, the results in Table 4 indicate that the vast majority of payout gaps and the ensuing financed payouts are not one-off events—rather, they are the result of a *persistent* pattern of firms setting payouts above the level they can fund internally without raising external capital.

Consistent with this conclusion, in untabulated analysis, we find that 47% of all firms that finance their payouts in a given year also do so in the next year; 65% of them do so in at least one of the next two years; and 75% do so in at least one of the next three years. Even in the case of often volatile share repurchases, the persistence of payout-financing behavior is notable: 41% of all firms that finance their repurchases in a given year also do so in the next year; and 57% and 66% of them do so in at least one of the next two and three years, respectively.

3. Why Do Firms Finance their Payouts?

Our goal in this section is to shed light on the motives that lead over 35% of payout payers to disregard the textbook advice of funding payouts with free cash flow, instead persistently setting payouts at levels that they can sustain only by raising capital. Throughout the section, our main focus is on debt-financed repurchases. The reason is two-fold: Financed repurchases cannot be

explained by firms' well-known reluctance to cut their regular dividends, and debt is by the far the most important source of payout financing.

3.1. The financing costs of financed payouts

In a world without transaction costs or financing frictions in which firms can always raise capital at prices that reflect their fundamental value, financed payouts simply shift the timing of distributions without altering the present value of a firm's total net distributions (Miller and Modigliani (1961)). However, the literature suggests that most firms face a non-trivial wedge between their external and internal costs of funds. First, direct transaction costs associated with raising external funds imply that external capital is costlier than internal capital for virtually all firms (e.g., Kaplan and Zingales (1997)). These costs include underwriting spreads (in the case of bonds and stocks), loan fees (in the case of bank loans and lines of credit), and other direct issuance expenses (e.g., registration and legal fees). In addition to these direct transaction costs, asymmetric information discounts (Myers and Majluf (1984)), taxes, and deadweight bankruptcy costs can imply that for many firms, "the cost of new debt and equity may differ substantially from the opportunity cost of internal finance generated through cash flow and retained earnings" (Fazzari, Hubbard, and Petersen (1988); p. 142).

Given that firms face non-trivial costs when they rely on the capital markets to finance their payouts, they must perceive significant benefits in doing so. We explore these benefits next.

3.2. Characteristics of firms that debt-finance their payouts

We begin our investigation of the benefits of debt-financed payouts by analyzing the characteristics of the firms that engage in this behavior. Table 5 shows the results of estimating a version of the following probit model in our sample of public firms:

$$Y_{it} = \Phi\, X_{it-1} + \mu_j + \gamma_t + \varepsilon_{it} \tag{4}$$

where the vector X includes (lagged) controls for firm size, an indicator for whether the firm has an investment-grade credit rating, operating cash flow, market-to-book, leverage, and cash; μ_j denotes industry (3-digit SIC) fixed effects; and γ_t denotes year fixed effects. The dependent variable is an indicator set equal to one if the firm repurchases shares (column 1), has a debt-financed repurchase (column 2, our focus), pays a dividend (column 3), or has a debt-financed dividend (column 4), and zero otherwise. For ease of interpretation, we report conditional marginal effects evaluated at the means of the independent variables.

Columns 1 and 2 show that larger firms are more likely to repurchase shares and to conduct debt-financed repurchases.[13] The same is true for firms with an investment-grade credit rating (as opposed to those that are unrated or have a junk rating). For example, column 2 indicates that, for the average public firm, having an investment grade credit rating is associated with a 3.0 percentage point increase in the probability that the firm conducts a debt-financed repurchase, all else equal. The interpretation of all other coefficient estimates is analogous. Both a firm's size and credit rating are thought to be negatively correlated with its debt transaction costs (Altinkilic and Hansen (2000)) and other frictions associated with raising debt (Whited (1992), Hennessy and Whited (2007)). Thus, debt-financed repurchases are more common among those firms for which the cost of raising debt is likely lower. Still, 51% of all firms that debt-finance their repurchases are not in the top quartile of the firm size distribution and 72% of them do not have an investment-grade credit rating (untabulated), and so they likely face non-trivial financing frictions (Whited (1992), Hennessy and Whited (2007), Campello, Graham, and Harvey (2010)).

[13] Our analyses of dividends (in column 3) and debt-financed dividends (in column 4) tend to yield similar results to their repurchase counterparts in columns 1 and 2. As explained earlier, and in an effort to conserve space, we focus our discussion here on debt-financed repurchases.

More profitable firms are more likely to conduct debt-financed repurchases, all else equal. This result is consistent with the finding in Table 4 that financed payouts are not the result of temporary mismatches between payouts and free cash flow induced by, for instance, temporary cash flow shortfalls.

By contrast, while market-to-book is negatively associated with share repurchases, consistent with firms repurchasing shares to take advantage of potential undervaluation (e.g., Dittmar (2000)), it is positively associated with debt-financed repurchases. One likely explanation is that firms with high market-to-book, in addition to being relatively highly valued, also have higher investment opportunities. Debt-financed repurchases allow growing firms to conserve cash for investment while at the same time preventing their leverage from falling—as would be the case if the firms grew by simply reinvesting their profits.[15]

This is not to say that debt-financed repurchases are not used as part of market-timing strategies—to the contrary, Ma (2019) shows that firms use debt-financed repurchases to engage in cross-market arbitrage "when credit markets are a particularly cheap source of funding" (p. 3041). Consistent with Ma (2019), Table IA.2 in the Internet Appendix shows that firms are more likely to conduct debt-financed repurchases when the cost of debt financing in the economy is low (as measured by the economy-wide credit and term spreads (column 3), or the credit and term premia (column 4)), and also when equity valuations are low (as measured by the Shiller earnings price ratio). (All our conclusions from Table 5 remain unchanged when we include these macroeconomic controls instead of year fixed effects in Equation (4).)

[15] The following example illustrates these mechanics. Consider a firm that has a 30% leverage ratio with $30 of debt and $70 of equity, holds $15 in cash, and generates $10 in profits. The firm needs to make a $10 investment. If the firm simply reinvests its profits, its leverage will fall to 27.3% (=30/110). The firm could keep its leverage stable without raising any debt by paying out $10, but doing so will decrease its cash to $5. Alternatively, the firm could issue $3.53 of debt and pay out half of it, which will keep its leverage at 30% and its cash ratio at 15%. Raising debt and paying part of it out is the only way such a growing firm can keep both its leverage and cash ratios stable.

What other motives, beyond cross-market arbitrage, can help explain debt-financed payouts? Columns 2 and 4 in Table 5 show that debt-financed repurchases and dividends are more common among firms with low leverage and low cash holdings—whereas repurchasing firms in general tend to hold high levels of cash (column 1).[17] These findings raise the possibility that debt-financed payouts, and repurchases in particular, are used by firms that wish to increase their leverage without depleting their cash reserves. We next seek to further explore the role of debt-financed repurchases as a tool to jointly manage firms' capital structure and cash holdings.

3.3. Using financed payouts to jointly manage a firm's capital structure and cash holdings

We begin by examining the quantitative impact that debt-financed repurchases have on leverage, first, and cash holdings, next. Figure 6, Panel A compares the evolution of the deviation from target leverage for the median and mean firms that debt-finance their repurchases to how their leverage would have evolved without debt-financed repurchases. (We define the target leverage deviation as the difference between a firm's leverage and the predicted level of leverage for a firm of its size, market-to-book, profitability, asset tangibility, industry, and year.)

The solid (black) line shows that the median firm that conducts a debt-financed repurchase in year $t = 0$ was 5.0 percentage points (p.p.) below its target leverage the prior year (year $t = -1$). Median leverage climbs to 0.5 p.p. above target in year $t = 0$, and then it stays very close to the target level through year $t = 5$.

The dotted (red) line shows the counterfactual evolution of median leverage under the assumption that firms do not debt-finance repurchases in year $t = 0$ or any subsequent years. Specifically, for any firm i that has a debt-financed repurchase in year $t = 0$ and so for which

[17] By contrast, equity-financed payouts are more common among highly-leveraged firms (Table IA.3 in the Internet Appendix).

$\min\{Rep_{it}, ND_{it}\} > 0$ (where *ND* denotes the proceeds of net debt issues and *Rep* the sum of repurchases and special dividends), we counterfactually set ND_{it} equal to $ND_{it} - \min\{Rep_{it}, ND_{it}\}$ and Rep_{it} equal to $Rep_{it} - \min\{Rep_{it}, ND_{it}\}$ for year $t = 0$ and any subsequent year $t + j$ for which $\min\{Rep_{it+j}, ND_{it+j}\} > 0$.[18] Figure 6 shows that without debt-financed repurchases, median counterfactual leverage would still initially increase, as our counterfactual analysis still allows firms to either raise debt or repurchase shares—it simply undoes the effect on leverage of those debt issues that are simultaneously paid out via repurchases. However, this initial increase would fall 2.3 p.p. short of reaching the target level of leverage in year $t = 0$. In subsequent years, when our counterfactual analysis continues to undo the effect on leverage of debt-financed repurchases, median counterfactual leverage would further deviate from its target level, with counterfactual leverage 7.2 p.p. below target in year $t = 5$.

Examining the mean leverage deviation from target yields similar patterns, but shifted upward by approximately three percentage points.[19] Specifically, the dashed (blue) line shows that the mean leverage of firms that debt-finance their repurchases is 2.0 p.p. below target in year $t = -1$. Mean leverage climbs to 3.5 p.p. above target in year $t = 0$ and then falls gradually, but it remains 2.2 p.p. above target in year $t = 5$. The dash-dotted (green) line shows that without debt-financed repurchases, mean leverage would climb just enough to surpass the target level in year $t = 0$, but it would then fall well below target over the following years. Thus, Panel A in Figure 6 indicates that while the median firm uses debt-financed repurchases to increase its leverage to the target level, a substantial fraction of firms overshoots their target and this is reflected in the mean

[18] In fact, here and elsewhere in the paper, we require $\min\{Rep_{it}, ND_{it}\} > \$100{,}000$ to identify a firm as having a debt-financed repurchase to ensure that we do not capture rounding errors as financed payouts.

[19] By contrast, in untabulated results, we find that the patterns for internally funded repurchases are different: Firms with internally funded repurchases experience a *decrease* in both their mean and median target leverage deviation following the repurchases, as the firms' total payouts tend to be smaller than their profits.

deviation. To illustrate, in untabulated results we find that 39.5% of firms that debt-finance their repurchases overshoot their leverage target by over 5 p.p.

Consistent with the notion that debt-financed repurchases allow firms to increase their leverage without depleting their cash reserves, the solid (black) line in Figure 6, Panel B shows that the median firm with a debt-financed repurchase in year $t = 0$ maintains a steady cash-to-assets ratio through year $t = 5$. By contrast, the counterfactual dotted (red) line shows that the median such firm does not have enough cash to attain the same actual leverage increase shown in Panel A by only repurchasing more without simultaneously raising debt—as evidenced by the fact that if it attempted to do so, its cash holdings would become negative. We observe a similar—if anything, starker—pattern when we analyze mean instead of median cash holdings (dashed (blue) and dashed-dotted (green) lines). In fact, only 19% of firms that debt-finance their repurchases have enough cash to achieve that same leverage increase in year $t = 0$ by simply repurchasing more without simultaneously raising debt.

Figure 6 thus illustrates how firms rely on debt-financed repurchases to substantially increase their leverage—over 5 p.p. for the median firm—while maintaining a steady level of cash.

3.3.1. Debt-financed payouts and the tax benefits of debt

Capital structure theory suggests that taxes could be one key reason why firms choose to increase their leverage by debt-financing their payouts: Issuing debt allows firms to minimize their tax bill because interest payments can be deducted from taxable income (Modigliani and Miller (1963)); paying out the debt-issuance proceeds ensures that the taxable interest income that would be generated if firms retained the proceeds as cash does not offset the tax savings.[20]

[20] As noted by Azar, Kagy, and Schmalz (2016), most corporate cash is nowadays held in interest-bearing accounts and securities.

Are debt-financed repurchases motivated at least in part by firms' desire to increase their leverage to take advantage of the tax benefits of debt? We begin by offering descriptive evidence that is consistent with the notion that the tax benefits of debt faced by firms with debt-financed repurchases are substantial: The marginal corporate income tax rate faced in year $t-1$ by firms with debt-financed repurchases in year t averages 24.2%, and the median equals 34.0%. For comparison, the mean and median marginal rates faced by firms without debt-financed repurchases are significantly lower, at 19.0% and 15.4%, respectively ($p<0.001$ in both cases).[21]

In order to investigate whether there is a causal relationship between corporate tax rates and debt-financed payouts, we exploit staggered changes in state corporate income taxes as plausibly exogenous shocks to the value of interest tax deductions. Following Heider and Ljungqvist (2015), we use a difference-in-differences (diff-in-diff) approach.[22]

Table 6 examines whether firms are indeed more likely to conduct debt-financed payouts when taxes increase exogenously. Column 1 shows that a firm's probability of conducting a debt-financed repurchase increases by 0.7 p.p. (p=0.014) following a 1 p.p. tax increase in its headquarter state relative to firms not affected by a tax raise—but only, as expected, if the firm's after-interest-deduction marginal federal corporate income tax rate in year $t-1$ is positive (see column 3). There is little significant evidence that firms use debt-financed dividends to increase their leverage following state tax increases (p=0.192), which is consistent with firms seeing state

[21] The rates we report are based on the after-interest-deduction marginal federal corporate income tax rate estimates introduced by Graham (1996); we thank Prof. Graham for providing updated estimates in his website. We incorporate estimated effective state income tax rates as in Graham (2000). We observe a similar pattern if we examine debt-financed dividends instead of debt-financed repurchases.

[22] Heider and Ljungqvist (2015) study the determinants of state corporate income tax increases and discuss potential threats to the parallel trends assumption necessary for identification. In particular, they find that states are more likely to raise taxes when the local economy is weaker. To ensure that these state-level economic differences do not confound our diff-in-diff analyses, we follow their approach and control for economic conditions in a firm's home state using the growth rate in gross state product and the state unemployment rate.

tax increases—and the leverage increases they induce—as one-off events best handled via more flexible share repurchases.

The results in Table 6 thus suggest that the desire to minimize corporate income taxes is a significant driver of debt-financed repurchases. We next investigate a second tax-related motive for debt-financed payouts.

3.3.2. Debt-financed payouts and the tax cost of repatriating foreign earnings

Prior to the enactment of the Tax Cuts and Jobs Act (TCJA) in December 2017, U.S. firms were taxed on their worldwide income. However, they could defer paying taxes on foreign earnings by retaining the earnings overseas through a foreign subsidiary. Upon repatriation, foreign earnings were subject to U.S. taxation at a rate of up to 35% (34% prior to 1993), with a credit for foreign taxes paid. The repatriation typically resulted in a net U.S. tax obligation because the U.S. tax rate was usually higher than the foreign rate (Tax Policy Center (2020)).

Debt-financed payouts made it possible for profitable multinationals to prevent both their leverage and their leverage net of cash from falling without having to repatriate their foreign earnings to fund payouts—and thus without having to pay repatriation taxes. In particular, debt-financed payouts allowed firms to postpone the payment of repatriation taxes until a tax holiday like the one enacted in 2004 enabled them to repatriate their foreign earnings at a substantially reduced cost to pay down the debt.[24]

The TCJA, which became effective in 2018, moved the U.S. toward a territorial tax system where foreign earnings are largely exempt from U.S. taxation regardless of whether they are

[24] As noted by Foley et al. (2007) and Faulkender and Petersen (2012), paying down debt was an acceptable use of repatriated funds under the 2004 repatriation tax holiday, whereas directly funding payouts was not.

repatriated or not.[25] The law thus provides an ideal setting to identify whether firms' desire to minimize repatriation taxes was a causal driver of debt-financed payouts during the pre-TCJA tax regime, using a diff-in-diff framework.

To do this, we estimate a modified version of Equation (4) where we allow the impact of the pre-TCJA tax cost of repatriating foreign earnings on the likelihood to conduct debt-financed payouts to vary during the pre-TCJA period (2016-2017) and the post-TCJA period (2018-2019).[26] Column 1 in Table 7 shows that, during the pre-TCJA years, each additional percentage point increase in the tax cost of repatriating foreign earnings ratio was associated with a 7.8 p.p. marginal increase ($p<0.001$) in the average firm's probability to conduct a debt-financed repurchase, all else equal. By contrast, in the post-TCJA years, the marginal increase is an insignificant 1.7 p.p. (= (0.780 – 0.615)/10; $p=0.261$). The results for debt-financed dividends are similar but of smaller magnitude (column 2).

Consistent with the TCJA having had a causal impact on decreasing firms' reliance on debt-financed payouts, we do not find similar results in columns 3-4 when we conduct a placebo diff-in-diff test centered around the 2014-2017 time window. In addition, Figure IA.1 in the Internet Appendix shows that the tax cost of repatriating foreign earnings was a significant predictor of debt-financed repurchases from 2010 through 2017, only becoming insignificant in 2018 when the TCJA came into force (debt-financed dividends follow a similar but noisier pattern).

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[25] As a transition to the new system and to avoid a windfall for firms that had accumulated earnings abroad prior to 2018, the TCJA taxes these earnings (at lower rates) as if they were repatriated regardless of whether they actually are, thus removing any incentives to keep them overseas (Tax Policy Center (2020)).

[26] We define a firm's tax cost of repatriating foreign earnings under the pre-TJCA tax regime as follows: (*U.S. federal corporate income tax rate × foreign pre-tax earnings – income taxes payable to foreign governments*) / *total assets*. We set the cost to zero if it is negative, and we multiply it by 10 so that its range is similar to the other control variables in Equation (4). See Hanlon, Lester, and Verdi (2015) for a related approach. Our findings in Table 5 remain unchanged if we control for the tax cost of repatriating foreign earnings during the pre-TCJA years.

Taken together, the findings in Tables 5-7 and in Figure 6 indicate that firms use debt-financed payouts to jointly manage their leverage and cash holdings in a way that would be impossible to replicate if they either used internally funded payouts or retained all the proceeds of their net debt issues. In particular, the evidence highlights how firms jointly manage their payout, capital-structure, and cash polices in order to minimize their tax bill.

4. Do Debt-Financed Payouts Increase Firms' Financial Fragility?

Having discussed some of the potential benefits of debt-financed payouts in the previous section, we now turn our attention to their (non-pecuniary) costs, keeping our focus on debt-financed repurchases. One consequence of debt-financed payouts can be to increase a firm's financial fragility by making it more vulnerable to negative shocks. This section presents two distinct pieces of evidence consistent with this prediction.

To be sure, any payout mechanically increases a firm's leverage and decreases its cash holdings, thereby increasing the firm's financial fragility, all else equal. Our goal in this section is to test whether firms' reaction to unexpected negative shocks is impacted by their payout decisions, and in particular by whether the payouts are internally funded or externally financed. While the shocks we examine are arguably exogenous, firms' payout decisions are not. Therefore, our analyses in this section should be seen as descriptive, not necessarily causal evidence of the relation between firms' payout decisions—in particular, their payout funding source—and their reaction to negative shocks.

4.1. Debt-financed payouts and firms' reaction to industry downturns

We begin our investigation of the role that debt-financed payouts play in increasing financial fragility by studying whether debt-financed repurchases are associated with lower levels of

investment following industry downturns—and whether such association is different for repurchases funded with internal funds.

To that end, Table 8 estimates investment regressions of the following form:

$$I_{it} = \alpha\ Industry\ distress_{jt-1} + \Theta\ W_{it-1} + \Phi X_{it} + \Psi Z_{it-1} + \mu_i + \gamma_t + \varepsilon_{it} \quad (5)$$

where I captures investment (the sum of capital expenditures and acquisitions) scaled by beginning of year total assets; *Industry distress* is an indicator set equal to one if the firm's industry experiences an annual median stock return of less than −15%;[27] the vector W contains different combinations (further discussed below) of indicators identifying firms conducting repurchases and debt-financed repurchases, together with their interaction with the *Industry distress* indicator; the vector X contains standard investment control variables (beginning of year market-to-book, cash flow scaled by beginning of year assets, and beginning of year firm size); and the vector Z controls for beginning of year leverage and cash holdings.[28] As is standard in investment regressions (e.g., Kaplan and Zingales (1997)), we include firm (μ_i) and year (γ_t) fixed effects.

Any effect of debt-financed payouts on increasing financial fragility is likely to be most pronounced for firms without an investment-grade credit rating. Thus, columns 1-4 of Table 8 focus on such firms, which account for 72% of firm-years with debt-financed repurchases. For completeness, columns 5-8 present analogous results for firms with an investment-grade rating.

[27] See, e.g., Giannetti and Saidi (2019) for a similar approach. Results are robust to using different thresholds.

[28] The timing of the variables is as follows: Investment and cash flow are measured during fiscal year t (and are scaled by total assets at the beginning of year t); market-to-book and firm size are measured as of the beginning of year t; industry distress and all payout variables are measured during year $t-1$; and leverage, cash, and credit rating (see below) are measured as of the beginning of year $t-1$ so that they are not mechanically impacted by payout decisions during year $t-1$.

Column 1 shows that, following periods of industry distress, firms without an investment-grade rating decrease their investment (as a fraction of beginning of year assets) by 1.0 p.p. (p<0.001)—a substantial decrease given that mean and median investment are 10.1% and 5.3%, respectively. Column 2 adds an indicator variable for firm-years with share repurchases as well as its interaction with the industry distress indicator (both lagged). We find that repurchasing firms tend to have higher levels of investment the following year, both in normal times (p=0.004) and during periods of industry distress (p=0.080).

Column 3 shows that the same is not true for firms that debt-finance their repurchases. Whereas, during normal times, debt-financed repurchases are (noisily) associated with higher investment the following year (p=0.135), the opposite is true during distress periods, when debt-financed repurchases are associated with 1.0 p.p. (= −0.013 + 0.003; p<0.001) lower investment.

Column 4 includes controls for share repurchases (as in column 2) and debt-financed repurchases (as in column 3) at the same time. As a result, the coefficient on repurchases captures the association between internally-funded repurchases and future investment,[29] while the sum of the coefficients on repurchases and debt-financed repurchases captures the association between debt-financed repurchases and future investment. We find that firms with internally funded repurchases tend to invest more the next year than those with no repurchases—even more so, up to 0.9 p.p., during periods of industry distress (= 0.005 + 0.005; p<0.001). However, this association is reversed when repurchases are debt-financed: Following periods of distress, the investment of firms that had debt-financed repurchases is 0.6 p.p. lower (= 0.005 + 0.005 − 0.017 + 0.001; p=0.036) than that of firms with no repurchases.

[29] Here and in Section 4.2., by internally-financed repurchases we mean all repurchases that are not debt-financed. In addition to free-cash-flow funded repurchases, these also include those funded with the proceeds of employee stock option exercises and with firm-initiated equity issues—although the latter are rare, accounting for just under 3% of all repurchased dollars (Table 2).

The evidence in columns 1-4 of Table 8 is thus consistent with the notion that debt-financed repurchases can increase firms' financial fragility, leading them to reduce investment following periods of industry distress.[30] One potential explanation for this result is our finding in Figure 6 that debt-financed repurchases bring the average firm's leverage above its target level.[31] Further reinforcing the role that financial fragility plays in explaining our findings, columns 5-8 show that we do not find similar results when focusing on firms with an investment-grade credit rating.

Crucially, the association between debt-financed repurchases and financial fragility is *not* mechanically driven by the fact that all repurchases increase leverage, all else equal. If this were the case, we would find a similar association for internally funded repurchases, and we do not—if anything, that association goes in the opposite direction. The source of funding of repurchases thus plays a key role in mediating the relationship between repurchases and fragility.

4.2. Debt-financed payouts and firms' reaction to the COVID-19 crisis

The COVID-19 crisis provides an ideal setting to offer complementary evidence on the role that the source of funding of repurchases plays in shaping their relationship with financial fragility. Following Fahlenbrach, Rageth, and Stulz (2020; FRS), Table 9 examines the association between payout decisions in 2019 and firms' stock price reaction during the early stages of the COVID-19 crisis. Our contribution relative to FRS is that, motivated by our previous findings, we distinguish between internally and debt-financed payouts.

We do so by estimating a version of the following regression:

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[30] Table IA.4 in the Internet Appendix shows somewhat smaller and noisier results for debt-financed regular dividends, perhaps reflecting the fact that dividend payers tend to be more financially robust (e.g., Fazzari, Hubbard, and Petersen (1988)).

[31] Relatedly, Acharya and Plantin (2020) develop a model in which a low monetary policy rate can "induce entrepreneurs to lever up so as to increase payouts to equity, … thereby lowering productivity and discouraging investment" (p. 1).

$$R_i = \alpha\ Repurchasing\ firm_i + \beta\ Debt\text{-}financed\ repurchase_i + \Phi X_i + \mu_j + \varepsilon_i \quad (6)$$

As in FRS, *R* captures the natural logarithm of a firm's cumulative stock return in excess of the risk-free rate from February 3, 2020, to March 23, 2020 (included)—for brevity, the collapse period.[32] *Repurchasing firm* and *Debt-finance repurchase* identify firms that conducted repurchases and debt-financed repurchases, respectively, during the fiscal year that ended in calendar year 2019 (for 75% of the sample firms, this fiscal year ended on December 31, 2019). For comparability with FRS, *X* includes the following controls from the asset pricing literature, all measured during (or at the end of) 2019: equity beta, book-to-market ratio, natural logarithm of market value, momentum, and gross profitability scaled by assets. μ_j denotes industry (3-digit SIC) fixed effects. Analogously as in Table 8, we present results for firms that do not have an investment-grade credit rating (our focus, columns 1-3) and for firms that do (columns 4-6).

Column 1 shows that, among non-investment-grade firms, there is no significant difference between the collapse period stock returns of firms with and without share repurchases in 2019 (p=0.455)—a finding in line with FRS. By contrast, when we focus on *debt-financed* repurchases in column 2, a different picture emerges: Firms with debt-financed repurchases in 2019 experience 5.1 p.p. lower excess returns during the collapse period than those without debt-financed repurchases (p=0.012).

In column 3, we estimate the full version of Equation (6) by including controls for both share repurchases (as in column 1) and debt-financed repurchases (as in column 2). Analogously as in Table 8, the coefficient on repurchases captures the association between internally-funded repurchases and collapse period stock returns, while the sum of the coefficients on repurchases

[32] As FRS explain, on March 24, the market learned that approval of a $2 trillion stimulus package by the U.S. Congress was likely, and it responded with the best one-day performance since 2008.

and debt-financed repurchases captures the association between debt-financed repurchases and collapse returns. We find that while firms with internally funded repurchases have virtually the same returns during the collapse period as non-repurchasing firms (p=0.905), firms with debt-financed repurchases experience 4.9 p.p. lower returns than those with no repurchases (= 0.002 − 0.052; p=0.041).[33]

Taken together, the evidence in Tables 8 and 9 is consistent with the notion that debt-financed repurchases—but not those funded with internal funds—are associated with an increase in firms' financial fragility that can constrain their ability to invest and increase their cost of equity capital following unexpected shocks. To be sure, this association is not necessarily causal: Unobserved differences between the kinds of firms that select to conduct debt-financed repurchases and those that do not might be the causal driver of the observed differences in the firms' financial fragility. But regardless of whether our findings capture a treatment effect or a selection effect, they suggest that the source of payout financing matters when it comes to understanding the empirical relationship between payouts and financial fragility.

5. Conclusions

This paper is the first to systematically study the extent to which public firms rely on the capital markets to finance their payouts. In the average year, 43% of firms that pay out capital also raise capital during the same year, resulting in 31% of all payout dollars being externally financed. At the same time, 37% of all capital raised in a given year is paid out by the same firms during the same year—primarily via share repurchases. The vast majority of firms engaging in this payout-financing behavior do not generate enough free cash flow—not even after accounting

[33] As was the case in Table 8, we do not observe the same patterns when we focus on firms with an investment-grade rating (see columns 4-6 in Table 9) and the results are substantially weaker when analyzing debt-financed dividends (see Table IA.5 in the Internet Appendix).

for cash reductions and the proceeds of employee stock-option exercises—to fund their payouts without initiating simultaneous security issues. This gap between payouts and free cash flow remains—if anything, becomes more widespread—when measuring firms' sources and uses of funds over five-year intervals, thus underscoring the persistence of financed payouts.

Debt is by far the main source of funds used to finance payouts. We show that a key—but by no means the only—driver of debt-financed payouts is firms' desire to increase their leverage without depleting (or increasing) their cash holdings. Using debt-financed payouts to jointly managing their capital structure and cash holdings allows firms to minimize corporate income taxes and, prior to the Tax Cuts and Jobs Act of 2017, repatriation taxes.

Debt-financed payouts are not without costs, however, as they appear to increase firms' financial fragility, particularly in the case of firms without an investment-grade credit rating. For such firms, debt-financed repurchases—but not repurchases financed internally—are associated with lower investment levels following industry downturns and a deeper stock price decline during the COVID-19 crisis. While our identification strategy does not allow us to conclusively conclude that this association is causal, our results strongly suggest that the source of payout financing matters when it comes to understanding the consequences of payouts—a finding that could inform current policy proposals aimed at restricting payouts.

Overall, our findings leave little doubt that the relation between payouts, cash, and capital structure is far from mechanical when one considers not just the choice of how much to pay out, but also of how to fund payouts. Our paper thus highlights the importance of studying these policies jointly as interdependent elements of the financial ecosystem. In particular, this joint analysis is key in order to understand the extent to which payout, liquidity, or capital structure

considerations are the primary target of corporate financial management. We leave the answer to this question—which likely differs across firms and time periods—for future research.

References

Acharya, Viral V., and Guillaume Plantin, 2020, Monetary easing, leveraged payouts and lack of investment, Working paper, New York University.

Adrian, Tobias, Richard K. Crump, and Emanuel Moench, 2013, Pricing the term structure with linear regressions, *Journal of Financial Economics* 110, 110-138.

Altinkiliç, Oya, and Robert S. Hansen, 2000, Are there economies of scale in underwriting fees? Evidence of rising external financing costs, *Review of Financial Studies* 13, 191-218.

Apple Inc., 2015, Prospectus Supplement dated February 2. Available at: https://www.sec.gov/Archives/edgar/data/320193/000119312515031599/d861669d424b2.htm.

Azar, José A., Jean-François Kagy, Martin C. Schmalz, 2016, Can Changes in the Cost of Carry Explain the Dynamics of Corporate "Cash" Holdings? *Review of Financial Studies* 29, 2194-2240.

Brav, Alon, John Graham, Campbell Harvey, and Roni Michaely, 2005, Payout policy in the 21st century, *Journal of Financial Economics* 77, 483-527.

Campello, Murillo, John R. Graham, and Campbell R. Harvey, 2010, The real effects of financial constraints: Evidence from a financial crisis, *Journal of Financial Economics* 97, 470-487.

DeAngelo, Harry, Linda DeAngelo, and Douglas J. Skinner, 2008, Corporate payout policy, *Foundations and Trends in Finance* 3, 95-287.

DeAngelo, Harry, Linda DeAngelo, and René Stulz, 2006, Dividend policy and the earned/contributed capital mix: A test of the life-cycle theory, *Journal of Financial Economics* 81, 227-254.

Danis, Andras, Daniel Rettl, and Toni Whited, 2014, Refinancing, Profitability, and Capital Structure, *Journal of Financial Economics* 114, 424-443.

Denis, David J., and Diane K. Denis, 1993, Managerial discretion, organizational structure, and corporate performance: A study of leveraged recapitalizations, *Journal of Accounting and Economics* 16, 209-236.

Dittmar, Amy, 2000, Why do firms repurchase stock? *Journal of Business* 73, 331-355.

Duval, Romain, Gee Hee Hong, and Yannick Timmer, 2020, Financial frictions and the great productivity slowdown, *Review of Financial Studies* 33, 475-503.

Farre-Mensa, Joan, Roni Michaely, and Martin Schmalz, 2014, Payout policy, in *Annual Review of Financial Economics* Vol. 6, eds. Andrew W. Lo and Robert C. Merton, Palo Alto: Annual Reviews.

Faulkender, Michael, and Mitchell Petersen, 2012, Investment and capital constraints: Repatriations under the American Jobs Creation Act, *Review of Financial Studies* 25, 3351-3388.

Fazzari, Steven R., Glenn Hubbard, and Bruce C. Petersen, 1988, Financing constraints and corporate investment, *Brookings Papers on Economic Activity* 1, 141-195.

Foley, C. Fritz, Jay C. Hartzell, Sheridan Titman, and Garry Twite, 2007, Why do firms hold so much cash? A tax-based explanation, *Journal of Financial Economics* 86, 579-607.

Giannetti, Mariassunta, and Farzad Saidi, 2019, Shock propagation and banking structure, *Review of Financial Studies* 32, 2499-2540.

Gilchrist, Simon, and Egon Zakrajšek, 2012, Credit spreads and business cycle fluctuations, *American Economic Review* 102, 1692-1720.

Graham, John R., 1996, Debt and the marginal tax rate, *Journal of Financial Economics* 41, 41-73.

Graham, John R., 2000, How big are the tax benefits of debt? *Journal of Finance* 55, 1901-1941.

Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan, 2002, Are dividend changes a sign of firm maturity? *Journal of Business* 75, 387-424.

Hanlon, Michelle, Rebecca Lester, and Rodrigo Verdi, 2015, The effect of repatriation tax costs on U.S. multinational investment, *Journal of Financial Economics* 116, 179-196.

Heider, Florian, and Alexander Ljungqvist, 2015, As certain as debt and taxes: Estimating the tax sensitivity of leverage from exogenous state tax changes, *Journal of Financial Economics* 118, 684-712.

Hennessy, Christopher, and Toni Whited, 2007, How costly is external financing? Evidence from a structural estimation, *Journal of Finance* 62, 1705-1745.

Hovakimian, Armen, Tim Opler, and Sheridan Titman, 2001, The debt-equity choice, *Journal of Financial and Quantitative Analysis* 36, 1-24.

Jagannathan, Murali, Clifford P. Stephens, and Michael S. Weisbach, 2000, Financial flexibility and the choice between dividends and stock repurchases, *Journal of Financial Economics* 57, 355-384.

Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance and takeovers, *American Economic Review* 76, 323-329.

Kaplan, Steven N., and Luigi Zingales, 1997, Do investment-cash flow sensitivities provide useful measures of financing constraints? *Quarterly Journal of Economics* 112, 169-215.

Lambrecht, Bart and Stewart C. Myers, 2012, A Lintner model of payout and managerial rents, *Journal of Finance* 67, 1761-1810.

Leary, Mark T., and Roni Michaely, 2011, Determinants of dividend smoothing: Empirical evidence, *Review of Financial Studies* 24, 3197-3249.

Lie, Eric, 2002, Do firms undertake self-tender offers to optimize capital structure? *Journal of Business* 75, 609-639.

Lowenstein, Roger, 2020, Op-Ed: Airlines don't deserve another taxpayer-financed bailout, *Los Angeles Times,* October 19. https://www.latimes.com/opinion/story/2020-10-19/airlines-bailout-coronavirus-stimulus-bill.

Ma, Yueran, 2019, Non-financial firms as cross-market arbitrageurs, *Journal of Finance* 74, 3041-3087.

McKeon, Stephen, 2015, Employee option exercise and equity issuance motives, Working paper, University of Oregon.

Miller, Merton H., and Franco Modigliani, 1961, Dividend policy, growth, and the valuation of shares, *Journal of Business* 34, 411-433.

Modigliani, Francesco, and Merton H. Miller, 1963, Corporate income taxes and the cost of capital: A correction, *American Economic Review* 53, 433-443.

Myers, Stewart C., 1984, The capital structure puzzle, *Journal of Finance* 39, 574-592.

Myers, Stewart C., 2000, Capital Structure, *Journal of Economic Perspectives* 15, 81-102.

Myers, Stewart C., and Nicholas Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.

Ross, Stephen A., Randolph W. Westerfield, and Jeffrey Jaffe, 2013, Corporate Finance, 10th Edition, New York, NY: McGraw-Hill/Irwin.

Tax Policy Center, 2020, Key elements of the U.S. tax system. Available at: https://www.taxpolicycenter.org/briefing-book/what-tcja-repatriation-tax-and-how-does-it-work.

Vermaelen, Theo, 1981, Common stock repurchases and market signaling, *Journal of Financial Economics* 9, 139-183.

Wruck, Karen H., 1994, Financial policy, internal control, and performance: Sealed Air Corporation's leveraged special dividend, *Journal of Financial Economics* 36, 157-192.

Figure 1. Aggregate payout activity.

For each year from 1989 to 2019, the top graph shows the percentage of U.S. public firms that are payout payers, i.e., pay a dividend or repurchase shares (solid line) as well as the percentage that repurchase shares or pay a special dividend (dotted line) and that pay a regular dividend (dashed line). The solid line in the bottom graph shows each year's aggregate total payout (i.e., the sum of dividends and share repurchases paid by all U.S. public firms that year) as well as its breakdown into share repurchases plus special dividends (dotted line) and regular dividends (dashed line). The grey bars identify NBER recessions. Dollar magnitudes are in billions of dollars of 2012 purchasing power.

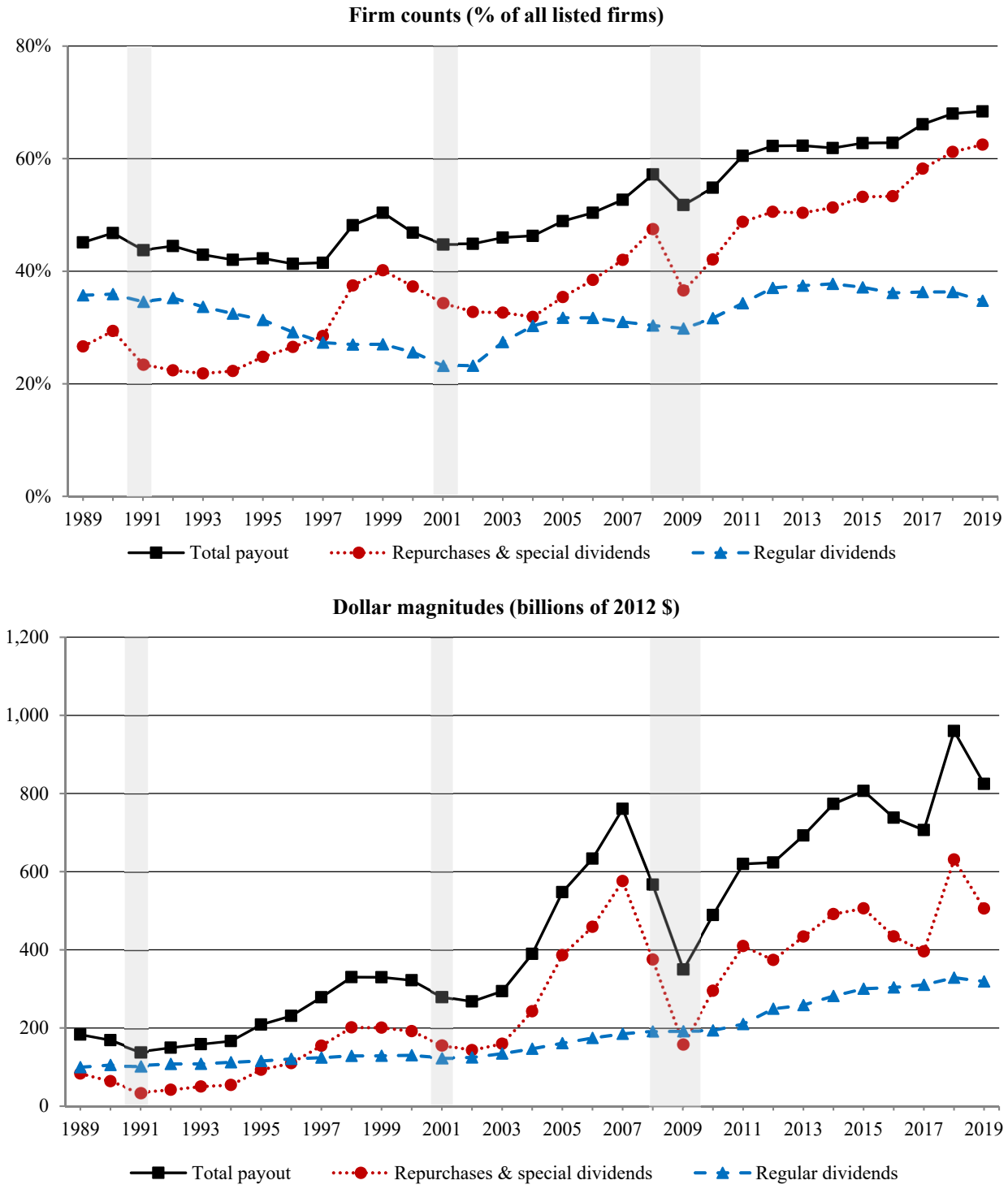
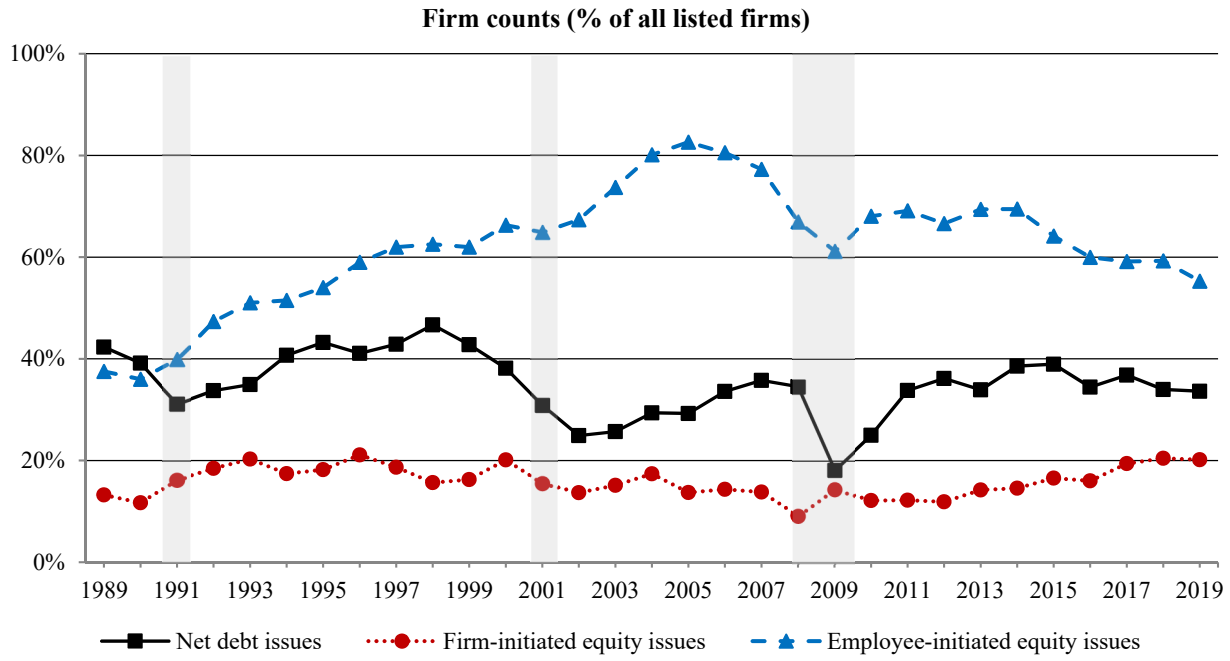


Figure 2. Aggregate capital-raising activity.

For each year from 1989 to 2019, the top graph shows the percentage of U.S. public firms with positive net debt issues (solid line), firm-initiated equity issues (dotted line), and employee-initiated equity issues (dashed line). We define positive net debt issues as debt issues net of debt repurchases if this difference is positive, and zero otherwise. Following McKeon (2015), we identify a firm as initiating an equity issue during a quarter if the ratio of the equity raised during that quarter to the firm's end-of-period market equity is above 2.5%; otherwise, we classify the issue as employee initiated. The bottom graph shows the aggregate dollar amount raised via net debt issues (solid line), firm-initiated equity issues (dotted line), and employee-initiated equity issues (dashed line) by all U.S. public firms each year. The grey bars identify NBER recessions. Dollar magnitudes are in billions of dollars of 2012 purchasing power.



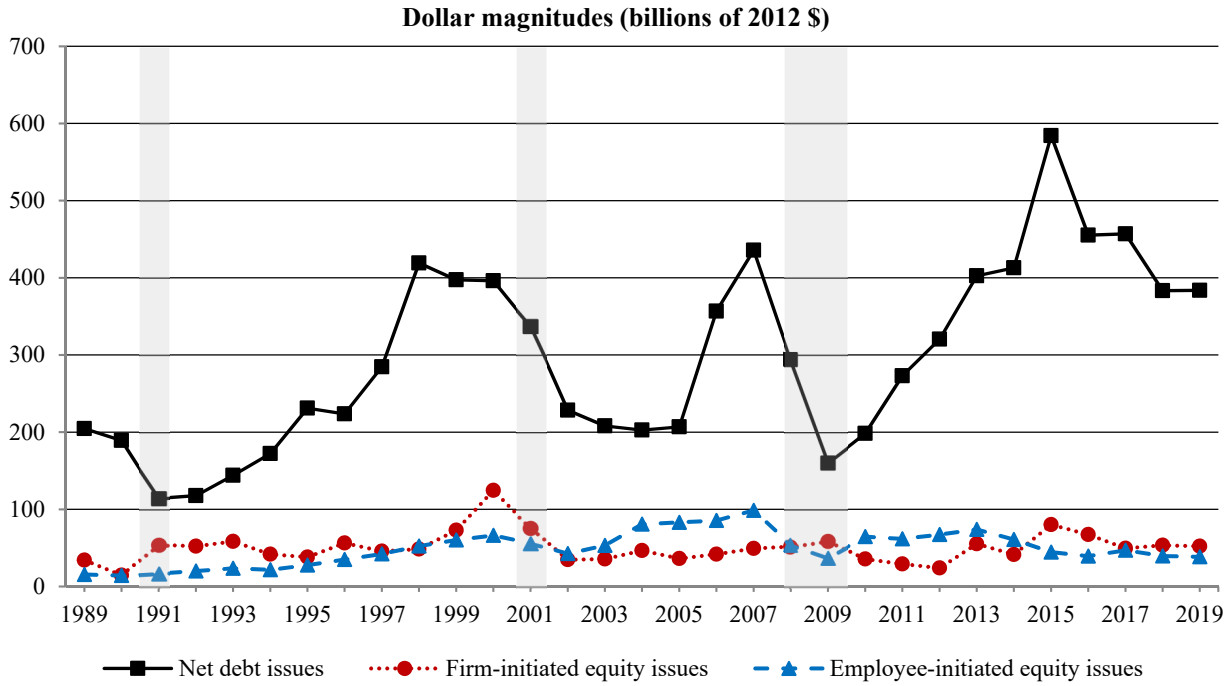


Figure 3. Prevalence and aggregate magnitude of financed payouts.
For each year t from 1989 to 2019, the solid line in the top graph plots the percentage of U.S. public firms that simultaneously pay out capital and initiate a net debt or equity issue. The solid line in the bottom graph plots the dollar magnitude of such financed payouts aggregated across all public U.S. firms; i.e., the aggregate sum of $\min\{TP_{it}, SI_{it}\}$, where TP denotes total payout and SI denotes the sum of net debt issues and firm-initiated equity issues. The dotted lines show analogous plots for financed repurchases and special dividends, while the dashed lines show analogous plots for financed regular dividends. Recall that, as noted in Table 1, the sum of financed repurchases plus financed regular dividends need not equal total financed payouts. The grey bars identify NBER recessions. Dollar magnitudes are in billions of dollars of 2012 purchasing power.

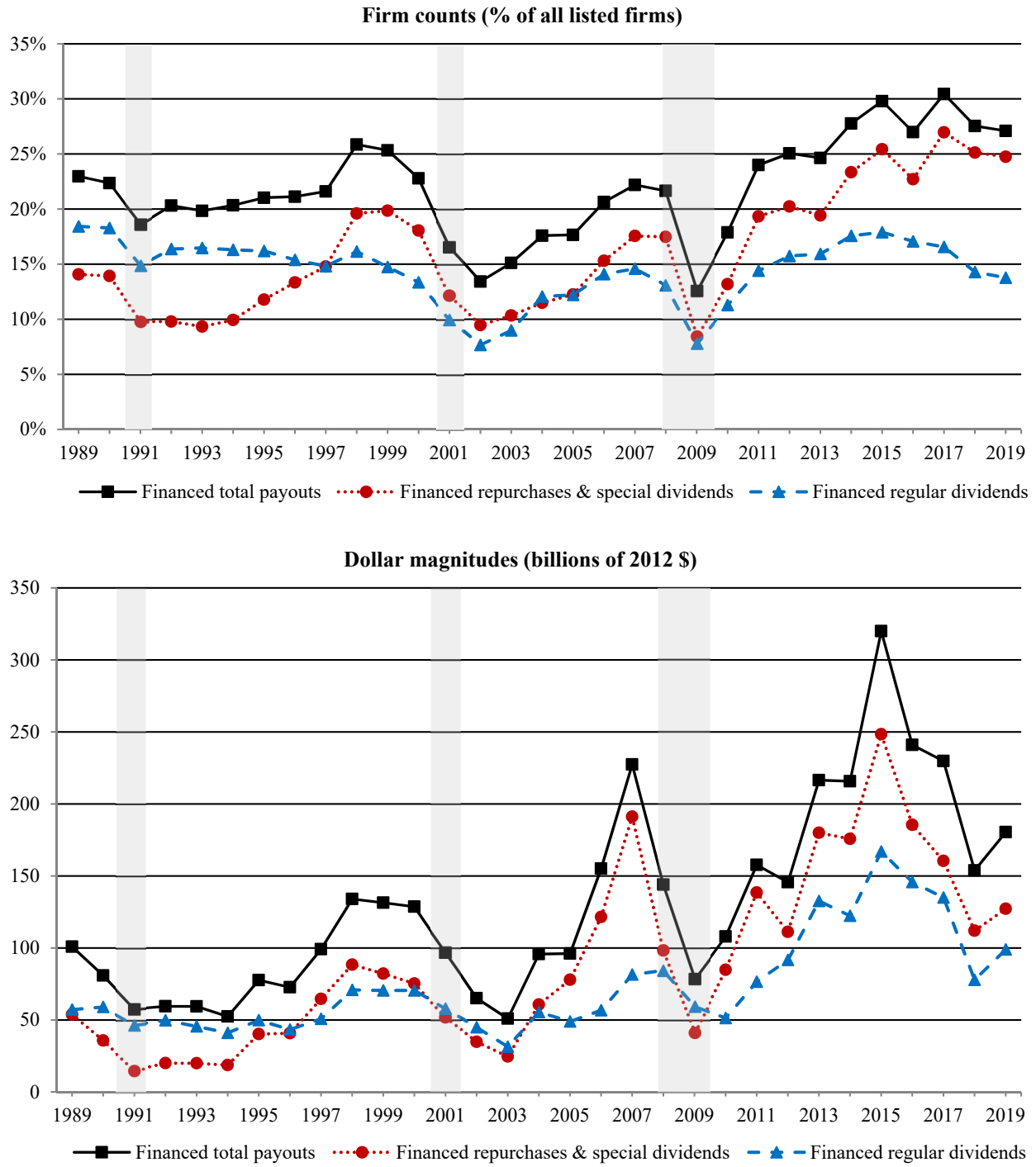


Figure 4. Prevalence and aggregate magnitude of financed payouts—breaking down the role of debt and equity.

For each year *t* from 1989 to 2019, the top graph plots the percentage of U.S. public firms that simultaneously pay out capital and initiate a net debt issue (solid line), a firm-initiated equity issued (dotted line), or an employee-initiated equity issue (dashed line). The solid line in the bottom graph plots the dollar magnitude of debt-financed payouts aggregated across all public U.S. firms; i.e., the aggregate sum of min$\{TP_{it}, ND_{it}\}$, where *TP* denotes total payout and *ND* denotes the proceeds of net debt issues. Analogously, the dotted and dashed lines in the bottom graph show the aggregate dollar magnitudes of payouts financed via firm-initiated and employee-initiated equity issues, respectively. Recall that payouts financed via employee-initiated equity issues are *not* included in our baseline definition of financed payouts, and so they are not included in Figure 2. The grey bars identify NBER recessions. Dollar magnitudes are in billions of dollars of 2012 purchasing power.

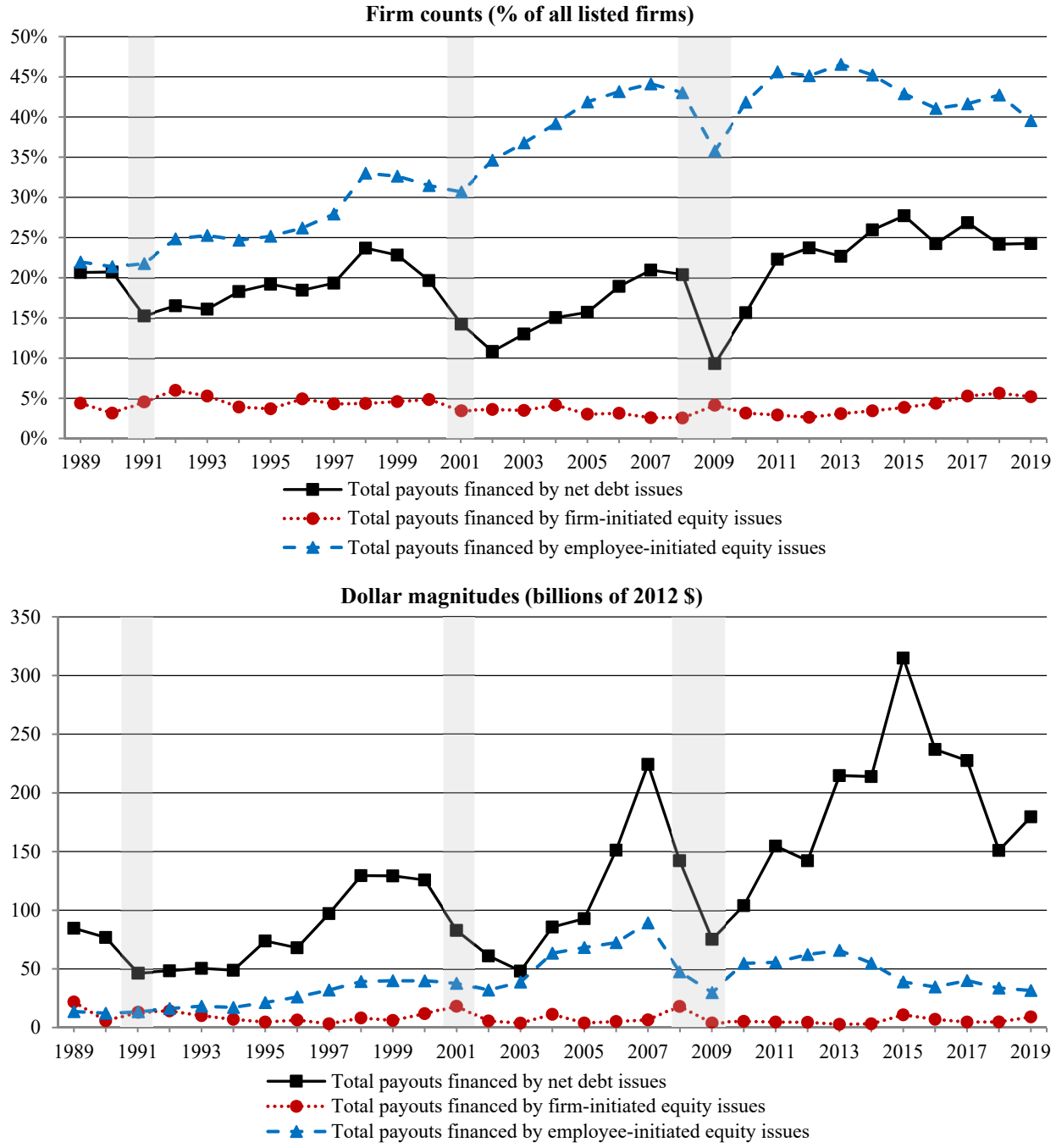


Figure 5. Prevalence and aggregate magnitude of the gap between payouts and internal funds.

For each year t from 1989 to 2019, the solid lines in the top and bottom graphs plot the prevalence and aggregate magnitude, respectively, of total payout gaps. A firm's (one-year) total payout gap is defined as $TPGap_{it} = \min\{\max\{TP_{it} - (FCF_{it} + EE_{it} + CR_{it}), 0\}, TP_{it}\}$, where: TP is total payout; FCF is free cash flow, the sum of operating and investment cash flow; $CR \geq 0$ is cash reduction; and EE denotes employee-initiated equity issues (see Internet Appendix A for details). The dotted lines in the top and bottom graphs show analogous plots for (one-year) repurchase gaps, defined as $RepGap_{it} = \min\{\max\{Rep_{it} - (FCF_{it} + EE_{it} + CR_{it} - Div_{it}), 0\}, Rep_{it}\}$ (where Rep denotes the sum of share repurchases and special dividends and Div denotes regular dividends), while the dashed lines focus on (one-year) dividend gaps, defined as $DivGap_{it} = \min\{\max\{Div_{it} - (FCF_{it} + EE_{it} + CR_{it}), 0\}, Div_{it}\}$. The grey bars identify NBER recessions. Dollar magnitudes are in billions of dollars of 2012 purchasing power.

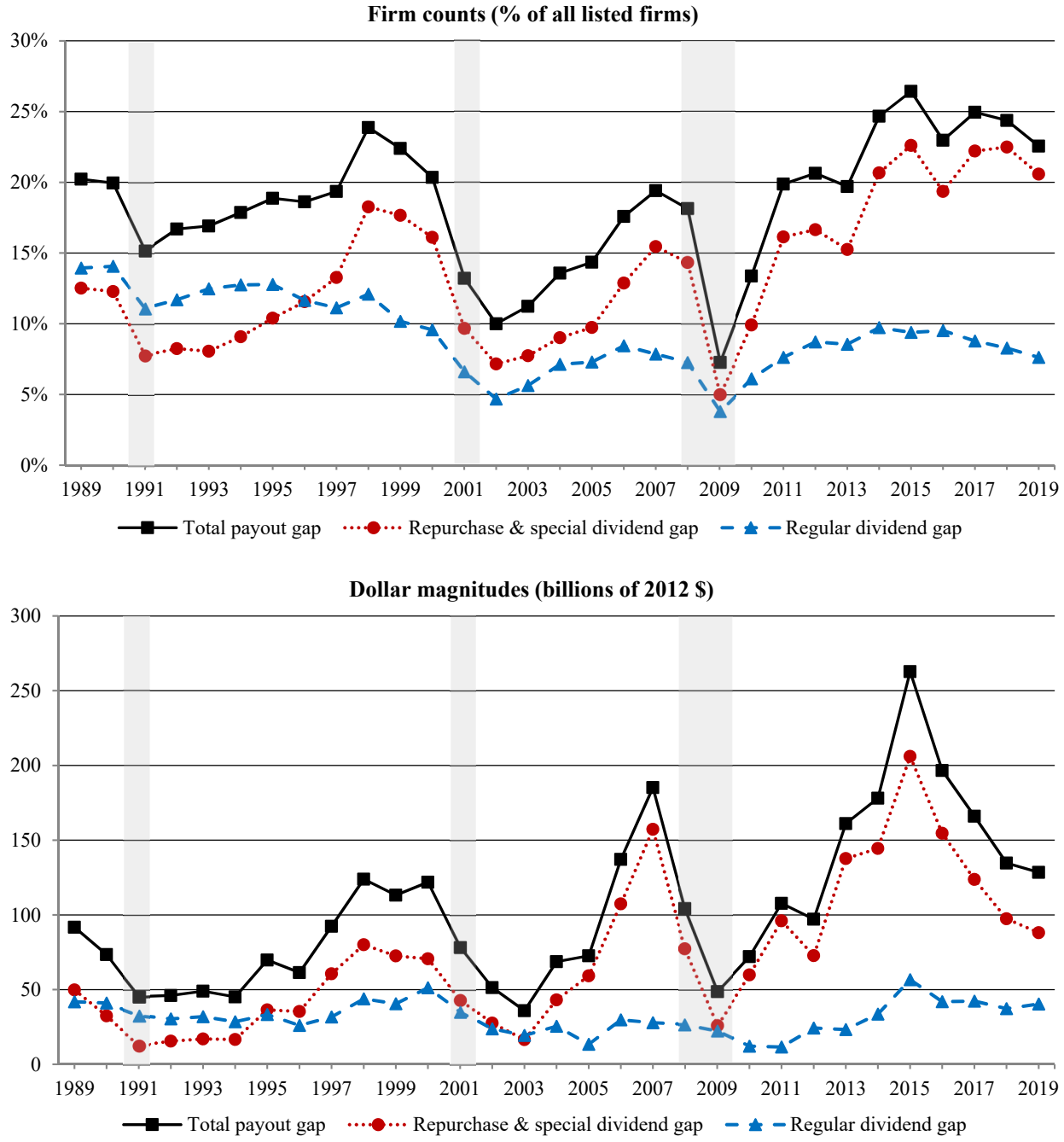
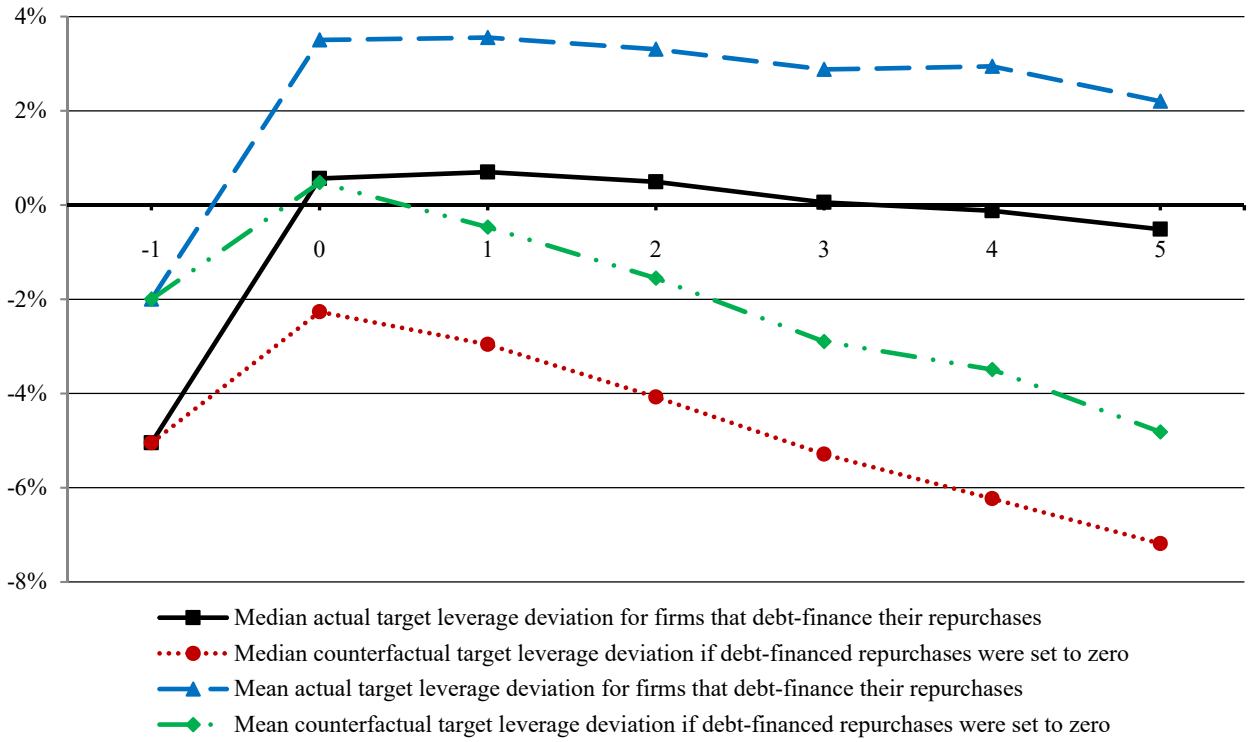


Figure 6. Relationship between debt-financed repurchases, leverage, and cash.
This figure investigates the impact of debt-financed repurchases on firms' leverage and cash holdings. Specifically, the solid and dashed lines in Panel A show the evolution from year $t = -1$ to year $t = 5$ of the median and mean target leverage deviation, respectively, for firms that debt-finance their repurchases in year $t = 0$; i.e., for firms for which $\min\{Rep_{it}, ND_{it}\} >> 0$ in year $t = 0$. (*ND* denotes the proceeds of net debt issues and *Rep* is the sum of share repurchases and special dividends; >> 0 means > \$100,000). The target leverage deviation is defined as the difference between a firm's leverage and the predicted level of leverage for a firm of its size, market-to-book, profitability, asset tangibility, industry, and year.) The dotted and dash-dotted lines in Panel A show how the same firms' median and mean target leverage deviation, respectively, would have evolved had the firms not debt-financed their repurchases in year $t = 0$ or any subsequent year. Specifically, for any firm for which $\min\{Rep_{it}, ND_{it}\} >> 0$ in year $t = 0$, we counterfactually set ND_{it} equal to $ND_{it} - \min\{Rep_{it}, ND_{it}\}$ and Rep_{it} equal to $Rep_{it} - \min\{Rep_{it}, ND_{it}\}$ for year $t = 0$ and any subsequent year $t + j$ for which $\min\{Rep_{it+j}, ND_{it+j}\} >> 0$. (This counterfactual exercise leaves total assets and cash unchanged and still allows firms to raise debt or pay out capital—it simply undoes the effect on leverage of those debt issues that are simultaneously paid out via repurchases.) The solid and dashed lines in Panel B show the evolution of median and mean cash-to-assets, respectively, for the same set of firms that debt-finance their repurchases in year $t = 0$. The dotted and dash-dotted lines in Panel B show how median and mean cash, respectively, would have evolved had these firms tried to attain the same actual leverage increases shown in Panel A without raising any debt and instead making larger repurchases in year $t = 0$ as well as any subsequent year $t + j$ for which $\min\{Rep_{it+j}, ND_{it+j}\} >> 0$. Specifically, if a firm with a debt-financed repurchase $\min\{Rep_{it}, ND_{it}\} >> 0$ were to counterfactually set its net debt issues to zero, it would need to increase its repurchases to $Rep_{it} + ND_{it}(TA_{it} - D_{it})/D_{it}$, where TA_{it} and D_{it} are the firm's total assets and debt at the end of year t, respectively, to attain the same leverage increase. Doing so would lead 81.3% of firms that debt-finance their repurchases to have negative cash holdings already in year $t = 0$. To facilitate the comparison of actual and counterfactual cash in Panel B, we scale both actual and counterfactual cash in year t by actual total assets in year t. (Scaling counterfactual cash by counterfactual total assets leads to even more pronounced results.) The difference between both median and mean actual and counterfactual target leverage deviation (in Panel A) and cash holdings (in Panel B) is statistically significant at the 1% level in years $t = 0$ through $t = 5$.

Panel A. Target leverage deviation with and without debt-financed repurchases.



Panel B. Cash holdings with and without debt-financed repurchases.

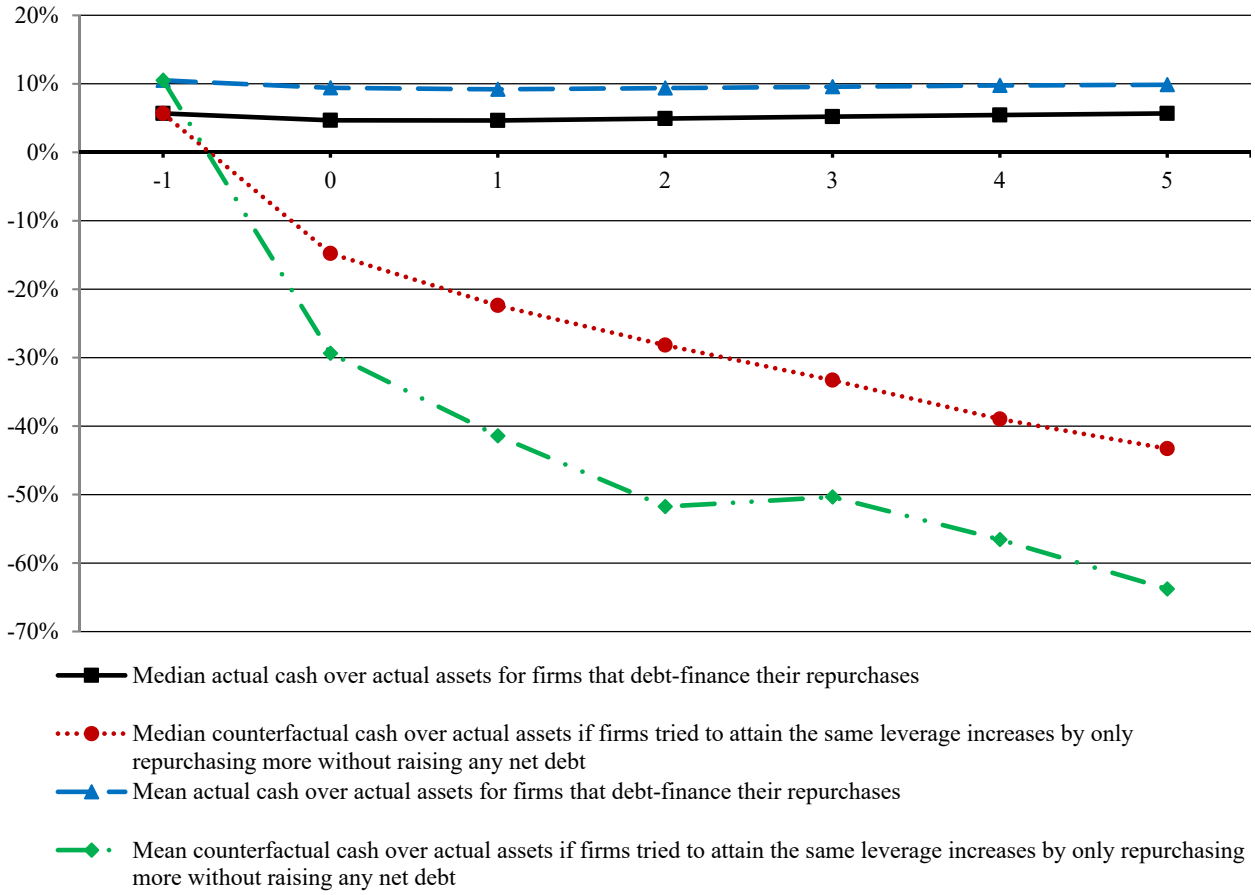


Table 1. Simultaneous payouts and security issues: financed payouts.

This table examines the extent to which firms finance their payouts, i.e., they pay out and raise capital during the same fiscal year. We conservatively focus only on instances in which firms proactively raise capital by considering only firm-initiated security issues (*SI*); *SI* is thus defined as the sum of the proceeds of net debt issues and firm-initiated equity issues. Columns 1-5 examine total payouts (*TP*); columns 6-9 focus on the sum of share repurchases and special dividends (*Rep*); and columns 10-13 focus on regular dividends (*Div*). All firm counts we report throughout the paper require variables to be greater than $100,000 to be considered positive.

	Total payout (*TP*)					**Repurchases & special dividends (*Rep*)**				**Regular dividends (*Div*)**			
	Firm counts			*$ magnitudes*		*Firm counts*		*$ magnitudes*		*Firm counts*		*$ magnitudes*	
				Aggregate sum of min{*TP*, *SI*} over …				Aggregate sum of min{*Rep*, *SI*} over …				Aggregate sum of min{*Div*, *SI*} over …	
Annual figures averaged over …	% public firms that pay out capital & issue securities	% *TP* payers that also issue securities	% security issuers that also pay out capital	aggreg. sum of *TP*	aggreg. sum of security issues (*SI*)	% public firms that repurchase or pay special div. & issue securities	% *Rep* firms that also issue securities	aggreg. sum of *Rep*	aggreg. sum of security issues (*SI*)	% public firms that pay reg. dividend & issue securities	% *Div* payers that also issue securities	aggreg. sum of *Div*	aggreg. sum of security issues (*SI*)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1989-1994	20.7%	46.9%	43.6%	42.2%	34.2%	11.1%	45.5%	47.6%	13.2%	16.8%	48.5%	47.2%	25.3%
1995-1999	23.0%	51.4%	42.6%	37.0%	28.3%	15.9%	50.3%	41.4%	17.1%	15.5%	54.6%	46.0%	15.9%
2000-2004	17.1%	37.3%	41.4%	28.2%	26.4%	12.3%	36.1%	27.5%	14.9%	10.4%	40.1%	39.6%	16.0%
2005-2009	18.9%	36.3%	47.8%	24.0%	40.5%	14.2%	35.2%	26.4%	29.8%	12.4%	39.9%	36.4%	20.5%
2010-2014	23.9%	39.4%	55.9%	26.0%	47.1%	19.1%	39.0%	33.9%	38.5%	15.0%	41.8%	38.9%	26.0%
2015-2019	28.4%	43.3%	58.5%	28.6%	43.3%	25.0%	43.5%	35.0%	31.9%	15.9%	44.0%	40.4%	24.0%
all years	22.0%	42.6%	48.2%	31.3%	36.6%	16.1%	41.7%	35.7%	23.9%	14.4%	44.9%	41.6%	21.4%

Table 2. Financed payouts—breaking down the role of debt and equity.

This table examines the type of security that firms issue when they pay out and raise capital during the same fiscal year. Panel A focuses on net debt issues (*ND*); Panel B examines firm-initiated equity issues (*FE*); and Panel C focuses on employee-initiated equity issues (*EE*). Recall that payouts financed via employee-initiated equity issues are *not* included in our definition of financed payouts, and so they are not included in Table 1. Columns 1-5 examine total payouts (*TP*); columns 6-9 focus on the sum of share repurchases and special dividends (*Rep*); and columns 10-13 focus on regular dividends (*Div*). To conserve space, we show annual figures averaged over all sample years (1989-2019). Table IA.1 in the Internet Appendix provides a time-series breakdown analogous to Table 1.

	Total payout (*TP*)					**Repurchases & special dividends (*Rep*)**				**Regular dividends (*Div*)**			
	Firm counts			*$ magnitudes*		*Firm counts*		*$ magnitudes*		*Firm counts*		*$ magnitudes*	
Annual figures averaged over …	% public firms that pay out capital & issue securities	% *TP* payers that also issue securities (*ND*, *FE*, or *EE*)	% security issuers that also pay out capital	For *S* = *ND*, *FE*, or *EE*, aggregate sum of min{*TP*, *S*} over … aggreg. sum of *TP*	aggreg. sum of *S*	% public firms that repurchase or pay special div. & issue securities	% *Rep* firms payers that also issue securities (*ND*, *FE*, or *EE*)	For *S* = *ND*, *FE*, or *EE*, aggregate sum of min{*Rep*, *S*} over … aggreg. sum of *Rep*	aggreg. sum of *S*	% public firms that pay reg. dividend & issue securities	% *Div* payers that also issue securities (*ND*, *FE*, or *EE*)	For *S* = *ND*, *FE*, or *EE*, aggregate sum of min{*Div*, *S*} over … aggreg. sum of *Div*	aggreg. sum of *S*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Panel A. Net debt issues (*ND*).													
all years	19.4%	37.9%	55.5%	29.7%	40.8%	14.3%	37.6%	34.0%	26.6%	13.1%	40.9%	40.0%	24.3%
Panel B. Firm-initiated equity issues (*FE*).													
all years	4.0%	8.0%	25.2%	2.9%	17.3%	2.4%	6.8%	3.0%	8.9%	2.3%	7.4%	3.4%	10.4%
Panel C. Employee-initiated equity issues (*EE*).													
all years	35.3%	68.3%	56.6%	10.0%	81.4%	27.6%	71.5%	14.6%	64.8%	21.3%	66.9%	17.2%	61.6%

Table 3. Do firms that finance their payouts have sufficient internal funds to fund their payouts? Analysis of payout gaps.

This table examines whether firms that finance their payouts have sufficient internal funds to fund their payouts or whether they have a payout gap and so they could not fund their payouts without raising external capital, all else equal. In columns 1-3, we define a firm's (one-year) total payout gap as $TPGap_{it} = \min\{\max\{TP_{it} - (FCF_{it} + CR_{it} + EE_{it}), 0\}, TP_{it}\}$, where: *TP* is total payout; *FCF* is free cash flow, the sum of operating and investment cash flow; $CR \geq 0$ is cash reduction; and *EE* denotes employee-initiated equity issues (see Internet Appendix A for details). Analogously, in columns 4-6, we define a firm's (one-year) repurchase gap as $RepGap_{it} = \min\{\max\{Rep_{it} - (FCF_{it} + CR_{it} + EE_{it} - Div_{it}), 0\}, Rep_{it}\}$, where *Rep* denotes the sum of share repurchases and special dividends and *Div* denotes regular dividends; in columns 7-9, we define a firm's (one-year) dividend gap as $DivGap_{it} = \min\{\max\{Div_{it} - (FCF_{it} + CR_{it} + EE_{it}), 0\}, Div_{it}\}$. Thus, the repurchase gap definition identifies firms whose free cash flow, cash reductions, and employee-initiated equity issues are not enough to fund repurchases after paying dividends, thereby reflecting the notion that firms prioritize the funding of dividends over share repurchases (Brav et al. (2005)). Financed payouts are defined as in Table 1.

	Total payouts (*TP*)			**Repurchases & special dividends (*Rep*)**			**Regular dividends (*Div*)**		
	Firm counts	*$ magnitudes*		*Firm counts*	*$ magnitudes*		*Firm counts*	*$ magnitudes*	
Annual figures averaged over ...	% of all firms financing their total payouts that have a *TP* gap	Ratio of *TP* gap to financed total payout, average across all firms financing their total payouts	Aggregate sum of *TP* gaps over aggregate sum of financed total payouts	% of all firms financing their repurchases or spec. div. that have a *Rep* gap	Ratio of *Rep* gap to financed repurchase, average across all firms financing their repurchases	Aggregate sum of *Rep* gaps over aggregate sum of financed repurchases	% of all firms financing their reg. dividends that have a *Div* gap	Ratio of *Div* gap to financed dividend, average across all firms financing their dividends	Aggregate sum of *Div* gaps over aggregate sum of financed dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1989-1994	85.7%	82.0%	84.4%	86.4%	83.6%	86.7%	75.4%	70.8%	68.9%
1995-1999	89.6%	86.4%	89.3%	89.4%	86.3%	90.1%	74.7%	70.8%	61.8%
2000-2004	79.0%	75.5%	79.4%	79.5%	76.0%	79.0%	64.2%	60.6%	58.9%
2005-2009	79.1%	74.1%	76.1%	78.6%	73.7%	77.8%	55.6%	51.8%	36.8%
2010-2014	81.8%	76.1%	71.8%	81.6%	75.9%	72.9%	54.3%	50.2%	22.2%
2015-2019	85.5%	80.3%	79.0%	85.8%	81.3%	80.0%	54.9%	50.2%	36.6%
all years	83.5%	79.2%	80.1%	83.6%	79.6%	81.3%	63.6%	59.4%	48.2%

Table 4. Are payout gaps the result of short-term payout smoothing? Analysis of five-year payout gaps.

This table examines whether payout gaps are the result of firms smoothing their payouts relative to their free cash flow. To that end, we define payout gaps over five-year intervals by aggregating firms' sources and uses of funds over five years, and we compare the prevalence (columns 1-6) and dollar magnitude (columns 7-12) of five-year payout gaps to those of one-year gaps. Specifically, in columns 1 and 7, we define a firm's five-year total payout gap as $TPGap_{it}^{5} = \min\{\max\{\sum_{j=0}^{4} TP_{it+j} - \sum_{j=0}^{4}(FCF_{it+j} + EE_{it+j}) - CR_{it}^{5}, 0\}, \sum_{j=0}^{4} TP_{it+j}\}$, where $CR^{5} \geq 0$ is cumulative cash reduction over the five-year interval and all other variables are defined as in Table 3. Analogously, a firm's five-year repurchase gap is defined as $RepGap_{it}^{5} = \min\left\{\max\left\{\sum_{j=0}^{4} Rep_{it+j} - \sum_{j=0}^{4}(FCF_{it+j} + EE_{it+j} - Div_{it+j}) - CR_{it}^{5}, 0\right\}, \sum_{j=0}^{4} Rep_{it+j}\right\}$ (columns 3 and 9), while its dividend gap is defined as $DivGap_{it}^{5} = \min\{\max\{\sum_{j=0}^{4} Div_{it+j} - \sum_{j=0}^{4}(FCF_{it+j} + EE_{it+j}) - CR_{it}, 0\}, \sum_{j=0}^{4} Div_{it+j}\}$ (columns 5 and 11). In column 2, for each year, we calculate the percentage of all public firms with a one-year total payout gap (defined as in Table 3) that year, and then we average those annual percentages over the five years in each five-year interval. In column 8, we calculate each year's aggregate dollar amount of one-year total payout gaps, and then we sum those annual aggregate amounts over the five years in each firm-year interval. The calculations for one-year repurchase gaps (columns 4 and 10) and one-year dividend gaps (columns 6 and 12) are analogous. The sample period begins in 1990 so that it encompasses six complete five-year intervals. When calculating one-year payout gaps, for each five-year interval, we restrict the sample to firms that remain in the sample during all five years in that interval. We do this to maintain a constant sample when comparing one-year and five-year payout gaps, as the definition of five-year gap requires data to be available for all five years in a five-year interval.

	Total payouts		**Repurchases & special dividends**		**Regular dividends**		**Total payouts**		**Repurchases & special dividends**		**Regular dividends**	
	% of all listed firms with a …						In each five-year interval, aggregate $ billion amount of …					
	five-year total payout gap	one-year total payout gap	five-year repurchase gap	one-year repurchase gap	five-year dividend gap	one-year dividend gap	five-year total payout gaps	the sum of one-year total payout gaps	five-year repurchase gaps	the sum of one-year repurchase gaps	five-year dividend gaps	the sum of one-year dividend gaps
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1990-1994	36.3%	20.4%	28.5%	10.8%	22.1%	15.1%	231.6	252.1	84.8	91.0	146.8	161.1
1995-1999	50.0%	24.6%	44.0%	17.1%	23.2%	14.5%	415.3	412.1	268.6	250.6	146.7	161.5
2000-2004	31.0%	15.2%	27.6%	11.2%	11.0%	7.8%	260.8	337.0	167.3	187.7	93.5	149.3
2005-2009	33.9%	17.3%	30.8%	13.2%	10.9%	7.7%	414.4	507.3	350.9	395.8	63.4	111.5
2010-2014	43.5%	21.1%	39.6%	17.1%	15.2%	8.9%	602.9	584.6	519.4	483.2	83.5	101.3
2015-2019	50.8%	25.9%	48.7%	23.1%	15.7%	9.4%	933.2	809.9	750.3	610.4	182.8	199.5
All intervals (average)	40.9%	20.8%	36.5%	15.4%	16.4%	10.6%	476.4	483.8	356.9	336.5	119.5	147.4

Table 5. Characteristics of firms that finance their payouts with debt.

This table examines the characteristics of payout payers and of firms that finance their payouts via net debt issues. Columns 1 and 3 report the results of a probit model estimated within the full sample of public firms where the dependent variable is an indicator set equal to one if the firm repurchases shares or pays a special dividend (in column 1) or if the firm pays a regular dividend (in column 3). In column 2, we estimate a probit model where the dependent variable is an indicator that identifies firms with debt-financed repurchases; i.e., firms for which min{Rep_{it}, *Net debt* $issues_{it}$} > \$100,000, where *Rep* denotes the sum of share repurchases and special dividends. Column 4 reports the results of an analogous probit model focusing on debt-financed regular dividends. All independent variables are defined in Internet Appendix A, and they are lagged (thus, for stock variables such as size, they are measured as of the end of the prior year or, equivalently, as of the beginning of the current one). All columns include industry (three-digit SIC) and year fixed effects. For ease of interpretation, we report conditional marginal effects evaluated at the means of the independent variables. Robust standard errors clustered at the firm level are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Dependent variable:	**Repurchase?**	**Debt-financed repurchase?**	**Dividend?**	**Debt-financed dividend?**
	(1)	(2)	(3)	(4)
Firm size (beginning of year)	0.078***	0.028***	0.077***	0.026***
	0.002	*0.001*	*0.003*	*0.001*
Investment-grade rating (beginning of year)	0.089***	0.030***	0.314***	0.055***
	0.013	*0.005*	*0.021*	*0.006*
Operating cash flow (lagged)	0.629***	0.153***	0.427***	0.111***
	0.025	*0.012*	*0.037*	*0.012*
Market-to-book (beginning of year)	-0.007***	0.005***	0.000	0.004***
	0.002	*0.001*	*0.003*	*0.001*
Leverage (beginning of year)	-0.327***	-0.093***	-0.300***	-0.080***
	0.016	*0.007*	*0.023*	*0.008*
Cash (beginning of year)	0.069***	-0.215***	-0.226***	-0.236***
	0.017	*0.010*	*0.025*	*0.011*
No. observations	104,225	103,914	103,653	103,371
No. firms	11,369	11,300	11,297	11,234
% observations with dep. var. = 1	37.0%	14.2%	31.8%	13.3%

Table 6. Do firms use debt-financed payouts to increase their leverage in response to state-level tax increases?

This table examines whether firms use debt-financed payouts to increase their leverage in response to increases in state corporate income taxes in their headquarter state. Following Heider and Ljungqvist (2015), our identification strategy relies on a difference-in-differences approach that exploits the staggered nature of state corporate income tax increases. In columns 1 and 3, the dependent variable is an indicator set equal to one for firms with a debt-financed repurchase or special dividend (defined as in column 2 of Table 4); in columns 2 and 4, the dependent variable is an indicator set equal to one for firms with a debt-financed regular dividend (defined as in column 4 of Table 4). For each firm-year, the variable "tax increase at $t-1$ (in %)" measures corporate income tax increases in the firm's headquarter state that took effect during the prior year (like Heider and Ljungqvist (2015), we allow firms to respond to tax changes with a one-year lag); specifically, this variable is equal to zero if the state did not enact a corporate income tax increase, it is equal to 0.01 if it enacted a one percentage point tax increase, etc. The remaining independent variables follow Heider and Ljungqvist (2015) and are defined in Internet Appendix A. In columns 1 and 2, we screen out those firms with zero after-interest-deduction marginal federal corporate income tax rate in year $t-1$ (according to Graham's (1996) estimates) because only firms with profits to shield from tax have an incentive to increase their leverage when taxes increase. In columns 3 and 4, we report the results of placebo tests that include only those firm-years with zero marginal tax rate in year $t-1$. In all columns, we estimate probit models with industry (three-digit SIC) and year fixed effects. For ease of interpretation, we report conditional marginal effects evaluated at the means of the independent variables. Robust standard errors clustered at the state level are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Dependent variable:	**Debt-financed repurchase?**	**Debt-financed dividend?**	**Debt-financed repurchase?**	**Debt-financed dividend?**
Effective marginal tax rate at t−1:	Positive		Zero (placebo)	
	(1)	(2)	(3)	(4)
Tax increase at $t-1$ (in %)	0.733**	0.816	-5.876	-0.826*
	0.297	*0.625*	*3.809*	*0.472*
Lagged change in …				
ROA	0.050***	0.032***	0.005	0.001
	0.010	*0.006*	*0.010*	*0.011*
firm size	0.017***	0.005	0.023***	0.036***
	0.004	*0.004*	*0.005*	*0.010*
tangibility	0.066***	0.077***	0.035	0.027
	0.024	*0.021*	*0.025*	*0.029*
market-to-book	0.006***	0.009***	0.003	0.004***
	0.001	*0.001*	*0.002*	*0.001*
default spread	-1.678***	-0.819*	-0.194	1.020
	0.553	*0.489*	*1.634*	*1.787*
GSP growth rate	0.003	0.039	0.102	-0.117
	0.082	*0.042*	*0.130*	*0.124*
state unemployment rate	-0.206	-0.153	0.126	0.623*
	0.203	*0.196*	*0.443*	*0.343*
No. observations	86,632	86,195	6,313	6,317
No. firms	9,595	9,536	2,941	2,980
% observations with dep. var. = 1	15.9%	14.9%	4.5%	6.1%

Table 7. Did the Tax Cuts and Jobs Act of 2017 decrease firms' reliance on use debt-financed payouts to avoid paying repatriation taxes?

This table uses a diff-in-diff approach to examine whether the Tax Cuts and Jobs Act of 2017 (TCJA) decreased firms' reliance on debt-financed payouts as a tool to avoid paying repatriation taxes. In columns 1 and 3, the dependent variable is an indicator set equal to one for firms with a debt-financed repurchase or special dividend (defined as in column 2 of Table 4); in columns 2 and 4, the dependent variable is an indicator set equal to one for firms with a debt-financed regular dividend (defined as in column 4 of Table 4). In columns 1 and 2, the sample focuses on a four-year window around 2018 (the year the TCJA came into effect), with the *Post TJCA* indicator set equal to one for years 2018-2019, and to zero for years 2016-2017. Columns 3 and 4 report an analogous placebo analysis over the 2014-2017 four-year window, with the *Post 2015* indicator set equal to one for years 2016-2017, and to zero for years 2014-2015. All independent variables are defined as in Table 4 and described in Internet Appendix A. In all columns, we estimate probit models with industry (three-digit SIC) and year fixed effects (the year fixed effects subsume the non-interacted *Post TCJA* and *Post 2015* indicators). For ease of interpretation, we report conditional marginal effects evaluated at the means of the independent variables. Robust standard errors clustered at the firm level are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Dependent variable:	**Debt-financed repurchase?**	**Debt-financed dividend?**	**Debt-financed repurchase?**	**Debt-financed dividend?**
Sample period:	2016 - 2019		2014 - 2017 (placebo)	
	(1)	(2)	(3)	(4)
Tax cost repatriating foreign earnings (lagged)	0.780***	0.419***	0.789***	0.427***
	0.129	*0.083*	*0.118*	*0.086*
Tax cost repatriating (lagged) × Post TCJA	-0.615***	-0.365***		
	0.173	*0.096*		
Tax cost repatriating (lagged) × Post 2015			-0.048	0.102
			0.141	*0.085*
Firm size (beginning of year)	0.036***	0.016***	0.042***	0.022***
	0.003	*0.003*	*0.004*	*0.003*
Investment-grade rating (beginning of year)	0.026	0.091***	0.043**	0.104***
	0.017	*0.018*	*0.017*	*0.019*
Operating cash flow (lagged)	0.132***	0.177***	0.238***	0.212***
	0.034	*0.040*	*0.048*	*0.050*
Market-to-book (beginning of year)	0.019***	0.007***	0.008**	0.006*
	0.003	*0.003*	*0.004*	*0.003*
Leverage (beginning of year)	-0.004	-0.017	-0.051**	-0.040**
	0.026	*0.017*	*0.025*	*0.019*
Cash (beginning of year)	-0.338***	-0.210***	-0.334***	-0.245***
	0.032	*0.027*	*0.035*	*0.030*
No. observations	9,428	9,251	9,619	9,508
No. firms	2,907	2,850	2,941	2,909
% observations with dep. var. = 1	23.0%	15.4%	23.2%	17.2%
Tax cost repatriating + Tax cost repatriating × Post TCJA = 0 (*p* value)	0.261	0.555	0.000	0.000

Table 8. Do debt-financed repurchases increase firms' exposure to negative shocks? Industry downturns and investment.

This table examines whether debt-financed repurchases or special dividends are associated with lower levels of investment during industry downturns (for brevity, we write "repurchases" to refer to the sum of repurchases and special dividends). The dependent variable in all columns is investment (the sum of CAPEX and acquisitions) scaled by beginning-of-year total assets. Columns 1-4 restrict the analysis to firms that either have a high-yield credit rating (BB+ or lower) or are unrated, while columns 5-8 focus on firms with an investment-grade credit rating. Industry distress is an indicator set equal to one if the firm operates in a three-digit SIC industry where the median firm experienced an annual stock price return below −15%. The timing of the variables is as follows: Investment and net income plus depreciation are measured during fiscal year *t* (and are scaled by total assets at the beginning of year *t*); market-to-book and firm size are measured as of the beginning of year *t*; industry distress, repurchases, debt-financed repurchases, and their interactions are measured during year *t*−1; and leverage, cash, and credit rating are measured as of the beginning of year *t*−1 to ensure that they are not mechanically impacted by repurchasing decisions during year *t*−1. All variables are defined in Internet Appendix A. All columns include firm and year fixed effects. Robust standard errors clustered at the industry (three-digit SIC) level are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Dependent variable:	**Investment: (CAPEX + acquisitions) / beginning of year assets**							
Access to capital (beginning of year, lagged):	High-yield rating or unrated				Investment-grade rating firms			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Industry distress (lagged)	-0.010***	-0.010***	-0.008***	-0.010***	-0.005	-0.004	-0.004	-0.004
	0.002	*0.002*	*0.002*	*0.002*	*0.003*	*0.006*	*0.003*	*0.006*
Ind. distress × repurchasing firm (lagged)		-0.001		0.005*		-0.001		0.000
		0.002		*0.002*		*0.005*		*0.006*
Repurchasing firm (lagged)		0.005***		0.005**		0.002		0.003
		0.002		*0.002*		*0.003*		*0.003*
Ind. distress × debt-financed repurchase (lagged)			-0.013***	-0.017***			-0.002	-0.002
			0.004	*0.004*			*0.004*	*0.005*
Debt-financed repurchase (lagged)			0.003	0.001			-0.001	-0.002
			0.002	*0.002*			*0.002*	*0.003*
Market-to-book (beginning of year)	0.013***	0.013***	0.013***	0.013***	0.005	0.005	0.005	0.005
	0.002	*0.002*	*0.002*	*0.002*	*0.003*	*0.003*	*0.003*	*0.003*
Cash flow / beginning of year assets	0.056***	0.056***	0.056***	0.056***	0.239***	0.238***	0.239***	0.237***
	0.012	*0.012*	*0.012*	*0.012*	*0.050*	*0.050*	*0.050*	*0.050*
Firm size (beginning of year)	-0.020***	-0.021***	-0.020***	-0.020***	-0.031***	-0.032***	-0.031***	-0.031***
	0.003	*0.003*	*0.003*	*0.003*	*0.004*	*0.004*	*0.004*	*0.004*
Leverage (beginning of year, lagged)	-0.085***	-0.083***	-0.084***	-0.084***	-0.077***	-0.076***	-0.079***	-0.078***
	0.008	*0.008*	*0.008*	*0.009*	*0.014*	*0.015*	*0.015*	*0.015*
Cash (beginning of year, lagged)	0.027***	0.026***	0.027***	0.026***	0.043	0.042	0.043	0.041
	0.004	*0.004*	*0.004*	*0.004*	*0.030*	*0.030*	*0.030*	*0.030*
No. observations	84,671	84,671	84,671	84,671	10,641	10,641	10,641	10,641
No. firms	9,992	9,992	9,992	9,992	874	874	874	874
F test: all coefficients = 0	20.0***	23.1***	19.4***	23.7***	20.1***	19.6***	19.6***	18.8***
Distress × repurchasing firm + Repurchasing firm = 0 (*p* value)		0.080		0.000		0.865		0.554
Distress × debt-fin. repurchase + Debt-fin. repurchase = 0 (*p* value)			0.000	0.000			0.358	0.296
Distress × repurch. firm + Repurch. firm + Distress × debt-fin. repurch. + Debt-fin. repurch. = 0 (*p* value)				0.036				0.811

Table 9. Do debt-financed repurchases increase firms' exposure to negative shocks? Stock price reaction to the COVID-19 crisis.
This table examines whether debt-financed repurchases or special dividends are associated with a deeper stock price decline during the COVID-19 crisis (for brevity, we write "repurchases" to refer to the sum of repurchases and special dividends). Following Fahlenbrach, Rageth, and Stulz (2020), the dependent variable in all columns is the natural logarithm of a firm's cumulative stock return in excess of the risk-free rate from February 3, 2020, to March 23, 2020 (included). Columns 1-3 restrict the analysis to firms that either have a high-yield credit rating or are unrated, while columns 4-6 focus on firms with an investment-grade credit rating. We identify a firm as a repurchasing firm if the firm repurchased shares or paid a special dividend during the fiscal year that ended in calendar year 2019 (for 75.1% of the sample firms, this fiscal year ended on December 31, 2019); and analogously for debt-financed repurchases. We measure a firm's credit rating as of the beginning of the fiscal year that ended in calendar year 2019 to ensure that it is not mechanically impacted by repurchasing decisions during that fiscal year. For comparability with Fahlenbrach, Rageth, and Stulz (2020), we include the following controls from the asset pricing literature: the firm's equity beta during calendar year 2019, the book-to-market ratio and the natural logarithm of the market value of the firm's equity as of the end of calendar year 2019, the firm's excess stock return during calendar year 2019 (i.e., its momentum in 2019), and gross profitability during the fiscal year that ended in calendar year 2019 scaled by end-of-fiscal-year assets. All variables are defined in Internet Appendix A. All columns include industry (three-digit SIC) fixed effects. Robust standard errors are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Dependent variable:	**Cumulative excess return between February 3, 2020, to March 23, 2020**					
Access to capital (at beginning of 2019):	High-yield rating or unrated			Investment-grade rating		
	(1)	(2)	(3)	(4)	(5)	(6)
Repurchasing firm in 2019	-0.014		0.002	0.029		0.037
	0.019		*0.020*	*0.056*		*0.058*
Debt-financed repurchase in 2019		-0.051**	-0.052**		-0.020	-0.025
		0.020	*0.021*		*0.031*	*0.032*
Equity beta in 2019	-0.077***	-0.076***	-0.076***	-0.106	-0.100	-0.107
	0.019	*0.019*	*0.019*	*0.081*	*0.079*	*0.081*
Book-to-market at end of 2019	0.012	0.011	0.011	-0.117	-0.130	-0.119
	0.015	*0.015*	*0.015*	*0.101*	*0.096*	*0.100*
Ln(market value of equity) at end of 2019	0.023***	0.024***	0.024***	0.052***	0.051***	0.052***
	0.005	*0.005*	*0.005*	*0.019*	*0.019*	*0.020*
Momentum in 2019	-0.004	-0.005	-0.005	0.118	0.111	0.112
	0.013	*0.013*	*0.013*	*0.104*	*0.105*	*0.106*
Profitability in 2019	0.019	0.015	0.015	0.078	0.066	0.064
	0.033	*0.033*	*0.033*	*0.147*	*0.146*	*0.147*
No. observations (and firms)	2,125	2,125	2,125	287	287	287
F test: all coefficients = 0	4.6***	5.3***	4.5***	3.3***	3.5***	3.1***
Repurchasing firm + Debt-financed repurchase = 0 (*p* value)			0.041			0.835

INTERNET APPENDIX

(NOT INTENDED FOR PUBLICATION)

Internet Appendix A. Variable Definitions.

Measuring financed payouts and payout gaps (all tables and figures)

Repurchases & special dividends (often abbreviated as repurchases, or *Rep*) is the sum of share repurchases (Compustat data item *prstkc*) and special dividends. We identify special dividends using CRSP, as those with distribution codes (CRSP data item *distcd*) equal to 1202, 1214, 1215, 1218, 1219, 1262, 1263, 1264, 1268, 1272, 1273, 1274, 1278, 1279, 1280, 1282, 1292, 1294, 1312, 1314, 1362, 1368, 1372, 1392, 1705, 1712, 1713, 1772, 1812, 1813, 1814, or 1872; in those rare instances where the sum of CRSP-reported special dividends is larger than cash dividends reported in Compustat (Compustat data item *dv*), we set special dividends equal to *dv*.

Regular dividends (often abbreviated as dividends, or *Div*) is cash dividends (Compustat data item *dv*) minus special dividends (defined above).

Total payout (often abbreviated as *TP*) is the sum of repurchases & special dividends (defined above) and regular dividends (also defined above).

Net debt issues (often abbreviated as *ND*) is long-term debt issues minus long-term debt reduction plus the change in current debt (Compustat data items *dltis* − *dltr* + *dlcch*).

Firm-initiated equity issues (often abbreviated as *FE*) follows McKeon (2015). Using Compustat quarterly data on equity issues (Compustat data item *sstky*), we identify an equity issue as firm-initiated if the dollar value of equity raised during the quarter scaled by the firm's market value of equity (Compustat data items *prccq* × *cshoq* + *pstkq*) is equal to or greater than 0.025.

Employee-initiated equity issues (often abbreviated as *EE*) is defined as equity issues (Compustat data item *sstk*) minus firm-initiated equity issues (defined above).

Firm-initiated security issues (often abbreviated as *SI*) is the sum of net debt issues (defined above) and firm-initiated security issues (also defined above).

Free cash flow (often abbreviated as *FCF*) is operating cash flow (Compustat data items *oancf* + *exre* + *txbcof*) plus net investment cash flow (Compustat data item *ivncf*). Note that net investment cash flow is typically negative because capital expenditures and acquisitions are negative cash flows, but it can be positive if such negative flows are offset by asset sales. To ensure that all cash flows are accounted for, we add to our measure of free cash flow other financing activities (Compustat data item *fiao*).

Change in cash (often abbreviated as *CC*) is the change in cash and cash equivalents (Compustat data item *chech*).

Cash reduction (often abbreviated as *CR*) is defined as max{−change in cash, 0}, where the change in cash is defined above.

Variables in Tables 5 and 7

Firm size is the natural logarithm of real total assets (Compustat data item *at*, deflated to 2012 dollars using the annual GDP deflator).

Investment-grade credit rating is an indicator equal to one if the firm has an investment-grade grade credit rating according to Standard & Poor's (i.e., a rating equal to BBB− or better), and zero otherwise. Credit rating data through February 2017 come from Compustat (Compustat data item *splticrm*); thereafter, the data come from Capital IQ.

Operating cash flow is defined as Compustat data items *oancf* + *exre* + *txbcof* scaled by total assets (Compustat data item *at*).

Market-to-book is defined as Compustat data items (*prcc_f* × *csho* + *pstkl* + *dltt* + *dlc* − *txditc*) / *at*.

Leverage is book leverage, defined as Compustat data items (*dltt* + *dlc*) / *at*.

Cash is defined as Compustat data items *che* / *at*.

Tax cost of repatriating foreign earnings is the product of a firm's foreign earnings (Compustat data item *pifo*) times the U.S. statutory corporate income tax rate minus the firm's foreign tax credit (*txfo*), scaled by total assets (*at*) and multiplied by 10, if this quantity is positive, and zero otherwise. See Hanlon, Lester, and Verdi (2015) for a related approach.

Variables in Table 6

ROA is Compustat data items *oibdp / at*.

Firm size is the natural logarithm of real total assets (Compustat data item *at*, deflated to 2012 dollars using the annual GDP deflator).

Tangibility is Compustat data items *ppent / at*.

Market-to-book is defined as Compustat data items (*prcc_f* × *csho* + *pstkl* + *dltt* + *dlc* − *txditc*) / *at*.

Default spread is the difference in yields between Moody's seasoned Baa and Aaa bonds, both available monthly from FRED. All spreads and growth rates are measured such that one percentage point is 0.01.

GSP growth rate data come from the Bureau of Economic Analysis (https://apps.bea.gov/iTable/iTable.cfm?reqid=70&step=1#reqid=70&step=1, Annual GDP by state). We calculate real GSP growth rates using the annual GDP deflator.

State unemployment rate data come from the Bureau of Labor Statistics (https://www.bls.gov/data/#unemployment, Local Area Unemployment Statistics (LAUS)).

Variables in Table 8

Investment: (CAPEX + acquisitions) / beginning of year assets is defined as Compustat data items (*capx* + *aqc*)/ lagged *at*.

Industry distress is an indicator set equal to one if the firm operates in a three-digit SIC industry where the median firm experienced an annual stock price return below −15%. Stock price returns are measured using monthly data from CRSP (CRSP data item *ret*).

Market-to-book is defined as Compustat data items (*prcc_f* × *csho* + *pstkl* + *dltt* + *dlc* − *txditc*) / *at*.

Cash flow / beginning of year assets is defined as Compustat data items (*ib* + *dp*)/ lagged *at*.

Firm size is the natural logarithm of real total assets (Compustat data item *at*, deflated to 2012 dollars using the annual GDP deflator).

Leverage is book leverage, defined as Compustat data items (*dltt* + *dlc*) / *at*.

Cash is defined as Compustat data items *che* / *at*.

Variables in Table 9

Cumulative excess return between February 3, 2020, to March 23, 2020 is measured using daily stock return data from Compustat (Compustat Security Daily). For each trading day *t* from February 3, 2020, to March 23, 2020, we calculate a firm's *i* daily stock return as $P_{it} / P_{it\text{-}1} - 1$, where P_{it} is Compustat data items *prccd* × (*trfd / ajexdi*) (we set *trfd* equal to 1 when missing). We calculate the daily excess return as the difference between the firm's daily stock return and the risk-free rate for that day, obtained from WRDS (Fama-French Factors – Daily Frequency). We then add up the natural logarithm of one plus the daily excess returns (henceforth, daily log excess returns) from February 3, 2020, to March 23, 2020 (included).

Equity beta in 2019 is the slope parameter of a regression of daily log excess returns on daily log market returns from January 1, 2019, to December 31, 2019. Data on daily market returns are from WRDS (Fama-French Factors – Daily Frequency)

Book-to-market at end of 2019 is defined as Compustat data item *ceq* × 10^6 for the fiscal year that ended in calendar year 2019 (for 75.1% of the sample firms, this fiscal year ended on December 31, 2019) divided by the firm's market value of equity as of the end of calendar year 2019 (Compustat Security Daily data items *prccd* × *cshoc*).

Ln(market value of equity) at end of 2019 is the natural logarithm of the firm's market value of equity as of the end of calendar year 2019 (Compustat Security Daily data items *prccd* × *cshoc*).

Momentum in 2019 is the exponential of the sum of daily log excess returns from January 1, 2019, to December 31, 2019.

Profitability in 2019 is Compsutat data items (*sale* − *cogs*) / *at* for the fiscal year that ended in calendar year 2019.

<u>Variables that control for debt- and equity-market conditions in Table IA.2</u>

Credit spread is the difference in yields between Moody's seasoned Baa bonds and ten-year Treasury notes, both available monthly from FRED.

Excess bond premium is the difference between a measure of the actual credit spread and the spread that would be predicted by a model that captures systematic movements in individual firms' default risk. The variable was introduced by Gilchrist and Zakrajsek (2012), and it is available at https://www.federalreserve.gov/econresdata/notes/feds-notes/2016/recession-risk-and-the-excess-bond-premium-20160408.html.

Term spread is the difference in yields between ten-year Treasury bonds and three-month Treasury bills, both available monthly from FRED.

Term premium is the difference between the actual term spread and the predicted spread given investors' implied expectations of the future path of short-term Treasury yields. The variable was introduced by Adrian, Crump, and Moench (2013), and it is available at https://www.newyorkfed.org/research/data_indicators/term_premia.html.

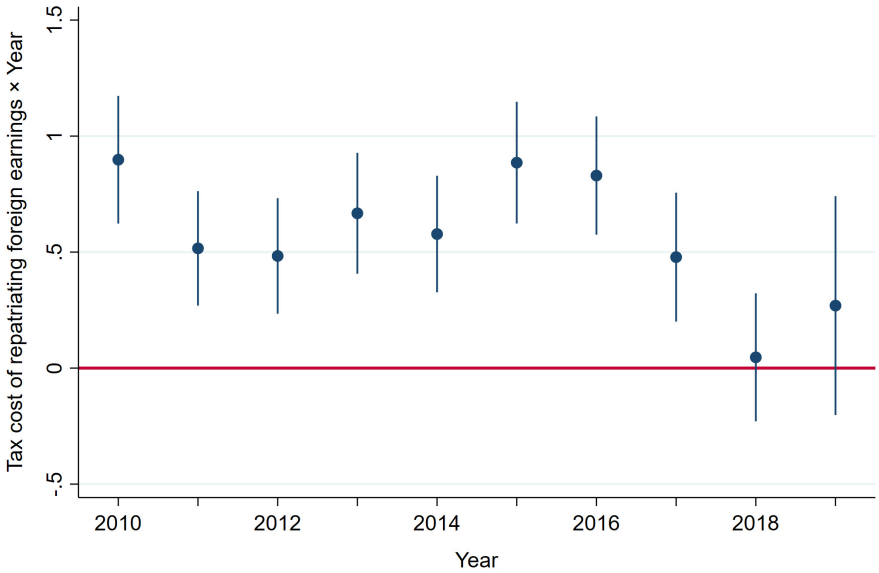
Shiller earnings price ratio (E10/P) is the inverse of the cyclically adjusted price earnings ratio (P/E10 or CAPE), available at Prof. Shiller's website (http://www.econ.yale.edu/~shiller/data.htm).

Output gap is measured as the difference between the natural logarithm of real (annualized) GDP and the natural logarithm of real (annualized) potential GDP, both available quarterly from FRED.

Figure IA.1. Did the Tax Cuts and Jobs Act of 2017 decrease firms' reliance on debt-financed payouts to avoid paying repatriation taxes? Analysis of pre-trends.

This figure presents evidence consistent with the parallel trends assumption necessary for a causal interpretation of the diff-in-diff estimates presented in Table 7. In Panel A, we estimate a probit model for debt-financed repurchases that differs from that presented in column 2 of Table 4 in only two aspects: (1) We restrict the sample period to the last ten years of our sample (2010-2019), and (2) we allow the coefficient on the *Tax cost of repatriating foreign earnings (lagged)* to vary for each sample year by interacting this variable with a full set of year indicators. Then, for each year from 2010 through 2019, the figure plots the conditional marginal effects (evaluated at the means of the independent variables) of the coefficients on the interaction terms *Tax cost of repatriating foreign earnings (lagged)* × *Year* as well as their 95% confidence intervals. In Panel B, we present an analogous figure for regular dividends based on the probit model presented in column 4 of Table 4.

Panel A. Debt-financed repurchases.



Panel B. Debt-financed regular dividends.

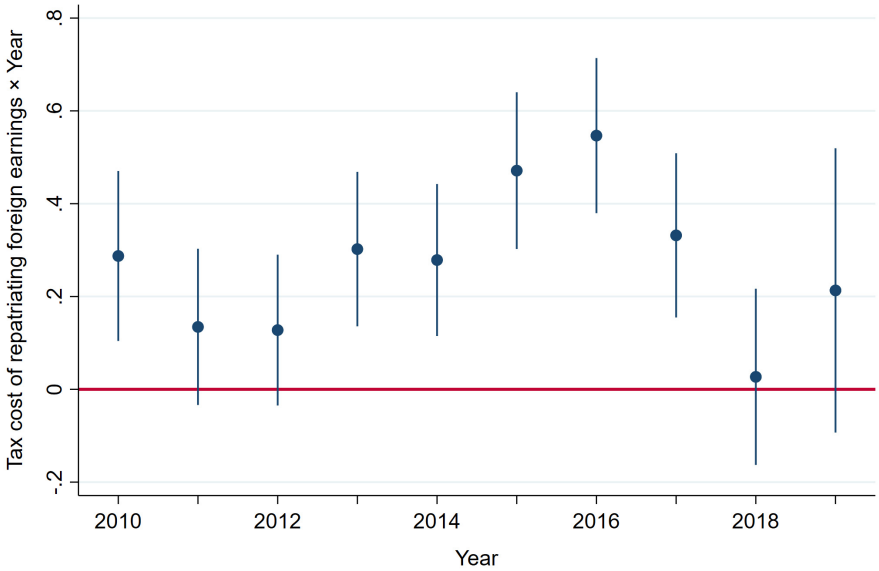


Table IA.1. Simultaneous payouts and security issues— breaking down the role of debt and equity.

This table examines the type of security that firms issue when they simultaneously pay out and raise capital during the same fiscal year. Panel A focuses on net debt issues; Panel B examines firm-initiated equity issues (*FE*); and Panel C focuses on employee-initiated equity issues (*EE*). Columns 1-5 examine total payouts (*TP*); columns 6-9 focus on the sum of share repurchases and special dividends (*Rep*); and columns 10-13 focus on regular dividends (*Div*). Table 2 in the main body of the paper provides a condensed version of this table showing only annual figures averaged over all sample years to conserve space.

Panel A. Net debt issues (*ND*).

	Total payout (*TP*)					**Repurchases & special dividends (*Rep*)**				**Regular dividends (*Div*)**			
	Firm counts			*$ magnitudes*		*Firm counts*		*$ magnitudes*		*Firm counts*		*$ magnitudes*	
Annual figures averaged over …	% public firms that pay out capital & issue *ND*	% *TP* payers that also issue *ND*	% firms issuing *ND* that also pay out capital	Aggregate sum of min{*TP*, *ND*} over … aggreg. sum of *TP*	Aggregate sum of min{*TP*, *ND*} over … aggreg. sum of *ND*	% public firms that pay reg. dividend & issue *ND*	% *Rep* payers that also issue *ND*	Aggregate sum of min{*Rep*, *ND*} over … aggreg. sum of *Rep*	Aggregate sum of min{*Rep*, *ND*} over … aggreg. sum of *ND*	% public firms that repurchase or pay special div. & issue *ND*	% *Div* firms that also issue *ND*	Aggregate sum of min{*Div*, *ND*} over … aggreg. sum of *Div*	Aggregate sum of min{*Div*, *ND*} over … aggreg. sum of *ND*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1989-1994	17.9%	40.5%	48.5%	36.5%	37.9%	9.8%	39.7%	42.2%	14.7%	14.7%	42.3%	41.3%	28.6%
1995-1999	20.7%	46.2%	47.7%	35.6%	32.0%	14.5%	45.8%	39.5%	19.1%	14.2%	50.0%	45.3%	18.4%
2000-2004	14.6%	31.7%	48.6%	26.0%	29.7%	10.6%	31.2%	25.2%	16.7%	9.1%	35.1%	37.4%	18.3%
2005-2009	17.1%	32.7%	55.9%	23.4%	46.9%	13.2%	32.6%	26.0%	34.3%	11.3%	36.4%	35.7%	24.3%
2010-2014	22.1%	36.4%	65.7%	25.6%	51.7%	17.9%	36.4%	33.4%	42.4%	14.1%	39.2%	38.2%	28.5%
2015-2019	25.4%	38.9%	71.6%	28.2%	48.4%	22.5%	39.2%	34.6%	35.7%	15.1%	41.7%	40.0%	27.0%
all years	19.4%	37.9%	55.5%	29.7%	40.8%	14.3%	37.6%	34.0%	26.6%	13.1%	40.9%	40.0%	24.3%

Panel B. Firm-initiated equity issues (*FE*).

	Total payout (*TP*)					Repurchases & special dividends (*Rep*)				Regular dividends (*Div*)			
	Firm counts			*$ magnitudes*		*Firm counts*		*$ magnitudes*		*Firm counts*		*$ magnitudes*	
Annual figures averaged over …	% public firms that pay out capital & issue *FE*	% *TP* payers that also issue *FE*	% firms issuing *FE* that also pay out capital	Aggregate sum of min{*TP*, *FE*} over … aggreg. sum of *TP*	Aggregate sum of min{*TP*, *FE*} over … aggreg. sum of *FE*	% public firms that pay reg. dividend & issue *FE*	% *Rep* payers that also issue *FE*	Aggregate sum of min{*Rep*, *FE*} over … aggreg. sum of *Rep*	Aggregate sum of min{*Rep*, *FE*} over … aggreg. sum of *FE*	% public firms that repurchase or pay special div. & issue *FE*	% *Div* firms that also issue *FE*	Aggregate sum of min{*Div*, *FE*} over … aggreg. sum of *Div*	Aggregate sum of min{*Div*, *FE*} over … aggreg. sum of *FE*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1989-1994	4.6%	10.4%	28.3%	7.5%	31.7%	2.2%	9.3%	8.0%	14.2%	3.5%	10.0%	8.3%	22.0%
1995-1999	4.4%	9.8%	24.6%	2.1%	11.3%	2.6%	8.3%	2.8%	8.0%	2.6%	9.3%	2.1%	5.0%
2000-2004	3.9%	8.6%	24.0%	3.4%	17.2%	2.5%	7.3%	3.4%	10.3%	2.1%	8.1%	3.8%	8.2%
2005-2009	3.1%	6.0%	24.1%	1.4%	16.3%	1.7%	4.3%	0.7%	5.9%	1.9%	6.3%	2.8%	10.6%
2010-2014	3.1%	5.1%	23.6%	0.7%	12.6%	2.0%	4.1%	0.6%	7.8%	1.7%	4.8%	1.0%	7.6%
2015-2019	4.9%	7.4%	26.2%	0.9%	12.0%	4.0%	6.9%	0.8%	6.4%	1.7%	4.8%	1.4%	7.6%
all years	4.0%	8.0%	25.2%	2.9%	17.3%	2.4%	6.8%	3.0%	8.9%	2.3%	7.4%	3.4%	10.4%

Panel C. Employee-initiated equity issues (*EE*).

	Total payout (*TP*)					Repurchases & special dividends (*Rep*)				Regular dividends (*Div*)			
	Firm counts			*$ magnitudes*		*Firm counts*		*$ magnitudes*		*Firm counts*		*$ magnitudes*	
Annual figures averaged over …	% public firms that pay out capital & issue *EE*	% *TP* payers that also issue *EE*	% firms issuing *EE* that also pay out capital	Aggregate sum of min{*TP*, *EE*} over … aggreg. sum of *TP*	Aggregate sum of min{*TP*, *EE*} over … aggreg. sum of *EE*	% public firms that pay reg. dividend & issue *EE*	% *Rep* payers that also issue *EE*	Aggregate sum of min{*Rep*, *EE*} over … aggreg. sum of *Rep*	Aggregate sum of min{*Rep*, *EE*} over … aggreg. sum of *EE*	% public firms that repurchase or pay special div. & issue *EE*	% *Div* firms that also issue *EE*	Aggregate sum of min{*Div*, *EE*} over … aggreg. sum of *Div*	Aggregate sum of min{*Div*, *EE*} over … aggreg. sum of *EE*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1989-1994	23.3%	52.9%	53.8%	9.6%	82.6%	13.5%	56.2%	15.9%	45.9%	18.7%	54.2%	12.6%	72.9%
1995-1999	29.0%	64.7%	48.3%	11.4%	73.8%	21.4%	67.5%	16.1%	55.7%	18.1%	63.9%	17.8%	53.2%
2000-2004	34.6%	75.5%	49.0%	13.5%	70.9%	26.5%	78.9%	18.5%	55.5%	19.0%	72.8%	20.6%	45.5%
2005-2009	41.6%	79.9%	56.8%	10.6%	85.8%	33.5%	84.0%	14.5%	77.6%	23.9%	77.1%	22.5%	56.7%
2010-2014	44.9%	74.4%	65.5%	9.4%	89.3%	37.6%	77.5%	13.7%	81.4%	25.9%	72.6%	19.2%	69.5%
2015-2019	41.6%	63.5%	69.9%	4.5%	85.7%	37.8%	65.8%	6.9%	78.9%	21.8%	60.3%	9.4%	69.6%
all years	35.3%	68.3%	56.6%	10.0%	81.4%	27.6%	71.5%	14.6%	64.8%	21.3%	66.9%	17.2%	61.6%

Table IA.2. Characteristics of firms that finance their payouts with debt—including controls for debt- and equity-market conditions.

This table examines the characteristics of payout payers and of firms that finance their payouts via net debt issues. Panels A and B are analogous to columns 1-2 and 3-4 of Table 5, respectively, with the only difference that here we follow Ma (2019) and include controls for debt- and equity-market conditions. These macroeconomic controls vary only at the year level, which is why they are incompatible with the inclusion of year fixed effects; instead, we add a linear time trend. All independent variables are defined in Internet Appendix A. In all columns, we estimate probit models with industry (three-digit SIC) fixed effects. For ease of interpretation, we report conditional marginal effects evaluated at the means of the independent variables. Robust standard errors clustered at the firm level are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Panel A. Share repurchases and special dividends.

Dependent variable:	**Repurchase?**		**Debt-financed repurchase?**	
	(1)	(2)	(3)	(4)
Firm size (beginning of year)	0.076***	0.076***	0.028***	0.028***
	0.002	*0.002*	*0.001*	*0.001*
Investment-grade rating (beginning of year)	0.093***	0.092***	0.031***	0.031***
	0.013	*0.013*	*0.005*	*0.005*
Operating cash flow (lagged)	0.620***	0.620***	0.152***	0.152***
	0.025	*0.025*	*0.012*	*0.012*
Market-to-book (beginning of year)	-0.007***	-0.007***	0.005***	0.005***
	0.002	*0.002*	*0.001*	*0.001*
Leverage (beginning of year)	-0.305***	-0.305***	-0.087***	-0.086***
	0.016	*0.016*	*0.007*	*0.007*
Cash (beginning of year)	0.064***	0.064***	-0.218***	-0.218***
	0.017	*0.017*	*0.010*	*0.010*
Controls for debt- and equity-market conditions				
Credit spread (beginning of year)	-2.371***		-2.393***	
	0.271		*0.155*	
Credit premium (beginning of year)		-1.496***		-2.390***
		0.255		*0.152*
Term spread (beginning of year)	-1.600***		-0.788***	
	0.185		*0.114*	
Term premium (beginning of year)		-2.451***		-1.738***
		0.284		*0.175*
Shiller earnings price ratio	1.476***	1.839***	0.347**	0.749***
(E10/P, beginning of year)	*0.276*	*0.287*	*0.150*	*0.152*
Output gap (beginning of year)	1.606***	2.140***	0.424***	0.760***
	0.186	*0.174*	*0.113*	*0.105*
Linear time trend	0.0111***	0.0084***	0.0029***	0.0009***
	0.0004	*0.0005*	*0.0002*	*0.0002*
No. observations	104,225	104,225	103,914	103,914
No. firms	11,369	11,369	11,300	11,300
% observations with dep. var. = 1	37.0%	37.0%	14.2%	14.2%

Panel B. Regular dividends.

Dependent variable:	**Dividend?**		**Debt-financed dividend?**	
	(1)	(2)	(3)	(4)
Firm size (beginning of year)	0.076***	0.076***	0.026***	0.026***
	0.003	*0.003*	*0.001*	*0.001*
Investment-grade rating (beginning of year)	0.316***	0.315***	0.056***	0.056***
	0.021	*0.021*	*0.006*	*0.006*
Operating cash flow (lagged)	0.422***	0.422***	0.108***	0.108***
	0.036	*0.036*	*0.012*	*0.012*
Market-to-book (beginning of year)	0.001	0.001	0.005***	0.005***
	0.003	*0.003*	*0.001*	*0.001*
Leverage (beginning of year)	-0.288***	-0.288***	-0.077***	-0.076***
	0.023	*0.023*	*0.008*	*0.008*
Cash (beginning of year)	-0.231***	-0.232***	-0.240***	-0.241***
	0.025	*0.025*	*0.011*	*0.011*
Controls for debt- and equity-market conditions				
Credit spread (beginning of year)	-4.390***		-2.583***	
	0.250		*0.140*	
Credit premium (beginning of year)		-3.805***		-2.490***
		0.216		*0.138*
Term spread (beginning of year)	-0.002		-0.307***	
	0.146		*0.092*	
Term premium (beginning of year)		-1.801***		-1.464***
		0.245		*0.147*
Shiller earnings price ratio	4.165***	4.353***	0.885***	1.140***
(E10/P, beginning of year)	*0.266*	*0.280*	*0.121*	*0.123*
Output gap (beginning of year)	0.228	0.351**	0.014	0.147*
	0.145	*0.142*	*0.088*	*0.083*
Linear time trend	0.0000	-0.0030***	-0.0003	-0.0023***
	0.0005	*0.0006*	*0.0002*	*0.0002*
No. observations	103,653	103,653	103,371	103,371
No. firms	11,297	11,297	11,234	11,234
% observations with dep. var. = 1	31.8%	31.8%	13.3%	13.3%

Table IA.3. Characteristics of firms that finance their payouts with equity.

This table examines the characteristics of payout payers and of firms that finance their payouts via firm-initiated equity issues. The table is analogous to Table 5, but the focus here is on equity-financed instead of debt-financed payouts. As in Table 5, columns 1 and 3 report the results of a probit model estimated within the full sample of public firms where the dependent variable is an indicator set equal to one if the firm repurchases shares or pays a special dividend (in column 1) or if the firm pays a regular dividend (in column 3). In column 2, we estimate a probit model where the dependent variable is an indicator set equal to one for firms with equity-financed repurchases; i.e., for firms for which min{Rep_{it}, *Firm-initiated equity issues*} > $100,000, where *Rep* denotes the sum of share repurchases and special dividends. Column 4 reports the results of an analogous probit model focusing on equity-financed regular dividends. All independent variables are defined in Internet Appendix A. All columns include industry (three-digit SIC) and year fixed effects. For ease of interpretation, we report conditional marginal effects evaluated at the means of the independent variables. Robust standard errors clustered at the firm level are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Dependent variable:	**Repurchase?**	**Equity-financed repurchase?**	**Dividend?**	**Equity-financed dividend?**
	(1)	(2)	(3)	(4)
Firm size (beginning of year)	0.078***	0.002***	0.077***	0.002***
	0.002	*0.000*	*0.003*	*0.000*
Investment-grade rating (beginning of year)	0.089***	-0.009***	0.314***	-0.002
	0.013	*0.002*	*0.021*	*0.002*
Operating cash flow (lagged)	0.629***	-0.019***	0.427***	-0.023***
	0.025	*0.002*	*0.037*	*0.003*
Market-to-book (beginning of year)	-0.007***	0.001***	0.000	0.001***
	0.002	*0.000*	*0.003*	*0.000*
Leverage (beginning of year)	-0.327***	0.012***	-0.300***	0.022***
	0.016	*0.003*	*0.023*	*0.002*
Cash (beginning of year)	0.069***	-0.004	-0.226***	-0.023***
	0.017	*0.003*	*0.025*	*0.003*
No. observations	104,225	99,900	103,653	100,015
No. firms	11,369	10,854	11,297	10,836
% observations with dep. var. = 1	37.0%	2.5%	31.8%	2.5%

Table IA.4. Do debt-financed dividends increase firms' exposure to negative shocks? Industry downturns and investment.

This table examines whether debt-financed regular dividends are associated with lower levels of investment during industry downturns (for brevity, we write "dividends" to refer to regular dividends). The table is analogous to Table 8, with the only difference being that the focus here is on debt-financed regular dividends instead of debt-financed repurchases and special dividends. As in Table 8, the dependent variable in all columns is investment (the sum of CAPEX and acquisitions) scaled by beginning-of-year total assets. Columns 1-4 restrict the analysis to firms that either have a high-yield credit rating (BB+ or lower) or are unrated, while columns 5-8 focus on firms with an investment-grade credit rating. Industry distress is an indicator set equal to one if the firm operates in a three-digit SIC industry where the median firm experienced an annual stock price return below −15%. The timing of the variables is as follows: Investment and net income plus depreciation are measured during fiscal year *t* (and are scaled by total assets at the beginning of year *t*); market-to-book and firm size are measured as of the beginning of year *t*; industry distress, dividends, debt-financed dividends, and their interactions are measured during year *t*−1; and leverage, cash, and credit rating are measured as of the beginning of year *t*−1 to ensure that they are not mechanically impacted by dividend decisions during year *t*−1. All variables are defined in Internet Appendix A. All columns include firm and year fixed effects. Robust standard errors clustered at the industry (three-digit SIC) level are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Dependent variable:	**Investment: (CAPEX + acquisitions) / beginning of year assets**							
Access to capital (beginning of year, lagged):	High-yield rating or unrated				Investment-grade rating firms			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Industry distress (lagged)	-0.010***	-0.010***	-0.009***	-0.010***	-0.005	-0.008	-0.005	-0.008
	0.002	*0.002*	*0.002*	*0.002*	*0.003*	*0.006*	*0.003*	*0.006*
Ind. distress × dividend payer (lagged)		-0.001		0.003		0.004		0.005
		0.002		*0.003*		*0.006*		*0.006*
Dividend payer (lagged)		0.003		0.002		0.003		0.004
		0.002		*0.002*		*0.007*		*0.007*
Ind. distress × debt-financed dividend (lagged)			-0.007*	-0.010**			0.001	-0.001
			0.004	*0.005*			*0.004*	*0.004*
Debt-financed dividend (lagged)			0.002	0.001			-0.002	-0.003
			0.002	*0.003*			*0.002*	*0.002*
Market-to-book (beginning of year)	0.013***	0.013***	0.013***	0.013***	0.005	0.005	0.005	0.005
	0.002	*0.002*	*0.002*	*0.002*	*0.003*	*0.003*	*0.003*	*0.003*
Cash flow / beginning of year assets	0.056***	0.056***	0.056***	0.056***	0.239***	0.239***	0.238***	0.238***
	0.012	*0.012*	*0.012*	*0.012*	*0.050*	*0.050*	*0.050*	*0.050*
Firm size (beginning of year)	-0.020***	-0.020***	-0.020***	-0.020***	-0.031***	-0.032***	-0.031***	-0.031***
	0.003	*0.003*	*0.003*	*0.003*	*0.004*	*0.004*	*0.004*	*0.004*
Leverage (beginning of year, lagged)	-0.085***	-0.084***	-0.084***	-0.084***	-0.077***	-0.077***	-0.080***	-0.080***
	0.008	*0.008*	*0.008*	*0.008*	*0.014*	*0.014*	*0.014*	*0.015*
Cash (beginning of year, lagged)	0.027***	0.027***	0.027***	0.027***	0.043	0.043	0.042	0.042
	0.004	*0.004*	*0.004*	*0.004*	*0.030*	*0.030*	*0.030*	*0.030*
No. observations	84,671	84,671	84,671	84,671	10,641	10,641	10,641	10,641
No. firms	9,992	9,992	9,992	9,992	874	874	874	874
F test: all coefficients = 0	20.0***	19.2***	19.1***	18.6***	20.1***	19.5***	19.4***	18.8***
Distress × dividend payer + Dividend payer = 0 (*p* value)		0.471		0.035		0.332		0.223
Distress × debt-fin. dividend + Debt-fin. dividend = 0 (*p* value)			0.104	0.008			0.682	0.431
Distress × dividend payer + Dividend payer + Distress × debt-fin. dividend + Debt-fin. dividend = 0 (*p* value)				0.405				0.485

Table IA.5. Do debt-financed dividends increase firms' exposure to negative shocks? Stock price reaction to the COVID-19 crisis. This table examines whether debt-financed regular dividends are associated with a deeper stock price decline during the COVID-19 crisis (for brevity, we write "dividends" to refer to regular dividends). The table is analogous to Table 9, with the only difference being that the focus here is on debt-financed regular dividends instead of debt-financed repurchases and special dividends. As in Table 9, the dependent variable in all columns is the natural logarithm of a firm's cumulative stock return in excess of the risk-free rate from February 3, 2020, to March 23, 2020 (included). Columns 1-3 restrict the analysis to firms that either have a high-yield credit rating or are unrated, while columns 4-6 focus on firms with an investment-grade credit rating. We identify a firm as a dividend payer if the firm paid a regular dividend during the fiscal year that ended in calendar year 2019 (for 75.1% of the sample firms, this fiscal year ended on December 31, 2019); and analogously for debt-financed dividends. We measure a firm's credit rating as of the beginning of the fiscal year that ended in calendar year 2019 to ensure that it is not mechanically impacted by dividend decisions during that fiscal year. For comparability with Fahlenbrach, Rageth, and Stulz (2020), we include the following controls from the asset pricing literature: the firm's equity beta during calendar year 2019, the book-to-market ratio and the natural logarithm of the market value of the firm's equity as of the end of calendar year 2019, the firm's excess stock return during calendar year 2019 (i.e., its momentum in 2019), and gross profitability during the fiscal year that ended in calendar year 2019 scaled by end-of-fiscal-year assets. All variables are defined in Internet Appendix A. All columns include industry (three-digit SIC) fixed effects. Robust standard errors are shown in italics beneath the coefficient estimates. We use ***, **, and * to denote significance at the 1%, 5%, and 10% level (two-sided), respectively.

Dependent variable:	**Cumulative excess return from February 3, 2020, to March 23, 2020**					
Access to capital (at beginning of 2019):	High-yield rating or unrated			Investment-grade rating		
	(1)	(2)	(3)	(4)	(5)	(6)
Dividend payer in 2019	0.014		0.030	-0.079		-0.069
	0.019		*0.022*	*0.052*		*0.056*
Debt-financed dividend in 2019		-0.028	-0.049*		-0.033	-0.023
		0.026	*0.029*		*0.032*	*0.034*
Equity beta in 2019	-0.076***	-0.077***	-0.075***	-0.116	-0.103	-0.116
	0.019	*0.019*	*0.019*	*0.081*	*0.080*	*0.081*
Book-to-market at end of 2019	0.011	0.011	0.011	-0.129	-0.130	-0.131
	0.015	*0.015*	*0.015*	*0.096*	*0.096*	*0.095*
Ln(market value of equity) at end of 2019	0.021***	0.023***	0.021***	0.051***	0.051***	0.051***
	0.005	*0.005*	*0.005*	*0.019*	*0.019*	*0.019*
Momentum in 2019	-0.002	-0.004	-0.003	0.109	0.106	0.103
	0.013	*0.013*	*0.013*	*0.101*	*0.106*	*0.103*
Profitability in 2019	0.016	0.016	0.014	0.045	0.060	0.037
	0.032	*0.033*	*0.033*	*0.145*	*0.144*	*0.144*
No. observations (and firms)	2,125	2,125	2,125	287	287	287
F test: all coefficients = 0	4.5***	4.8***	4.3***	3.6***	3.6***	3.3***
Dividend payer + Debt-financed dividend = 0 (*p* value)			0.500			0.085