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Institutional Investor Heterogeneity and Corporate Response to the Covid-19 Pandemic

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We examine the role of institutional investors in determining firms' decisions whether to reduce dividends and share buybacks during the Covid-19 pandemic. Our simple model predicts that the probability of cuts in payouts is linked to the holdings and types of institutions. We link our model to the attention-based theories of the firm. We posit that the highly *proximate* nature of the pandemic may encourage greater risk aversion in organizations. Consequently, the presence of institutions that actively engage with managers results in a reduction in shareholders' payouts during the pandemic to enable firms to deal with increased uncertainty, while institutions that seek short-term value releases reduce the probability of cuts. We test our hypotheses using novel hand-collected data on shareholders' payout cuts in the UK during the Covid-19 lockdown. We find that in firms with larger institutional holdings, shareholders' payouts are more likely to be reduced as a response to the pandemic. However, institutional heterogeneity matters as institutions with a view to improve firms' long-term growth are more likely to affect corporate payout decisions. In contrast, institutions that focus on regular income (e.g. pension funds) seem to resist cuts even in the aftermath of a severe exogenous shock like the Covid-19 pandemic.

Introduction

The Covid-19 pandemic has resulted in unprecedented disruption to global social and economic activities and persistent uncertainty as to its ultimate consequences (Baker *et al.*, 2020; World Bank, 2020). In the runup to the pandemic, a critical body of literature argued that the focus on maximizing shareholder returns through shareholders' payouts (dividends and buybacks) hollowed out firms' resources, making them ill-equipped to cope with exogenous shocks (Dawid, Harting and van der Hoog, 2019). This observation is particularly relevant to the UK, where over 80% of listed firms pay regular dividends compared to under 30% of firms in the USA (Renneboog and Trojanowski, 2008). Figure 1 shows the distribution of percentage changes in dividends paid by all dividend-paying UK firms for which data is available in Thomson Eikon (changes are from October year t to October year t + 1). Panel A shows that during 1995–2019, a cut in dividends was relatively unusual in the UK. However, Panel B shows a large number of dividend reductions in the pandemic year. Figure 1 also suggests that the extent of dividend reductions during the pandemic is far greater than that during the financial crisis of 2007–2008 (Panel C).

Given such pervasive and progressive dividends paid by UK firms, we augment the literature by examining the role of institutional investors in determining firms' decisions to reduce shareholders'

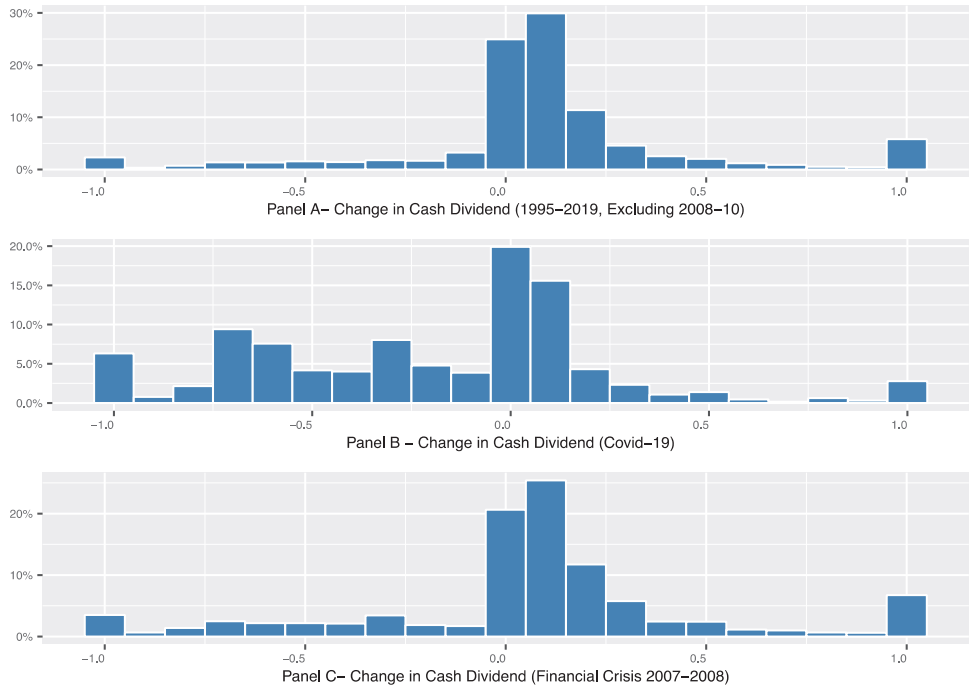

Figure 1. The distribution of dividends changes among dividend-paying firms (1995–2020). This figure shows the distribution of percentage changes in dividends paid by all dividend-paying UK firms. Changes are from October year t to October year t + 1. Panel A shows the change in cash dividend during 1995–2019, while Panels B and C show the change in cash dividend in the pandemic year and in the financial crisis of 2007–2008, respectively [Colour figure can be viewed at wileyonlinelibrary.com]

payouts in response to the Covid-19 pandemic. This analysis is important because (i) institutional investors such as investment advisors and pension funds, who own over 60% of the equity of listed firms in the UK (Office for National Statistics), are expected to act as stewards who monitor and guide managers of their investee firms, especially during increased uncertainty (see Becht, Franks and Wagner, 2019) and (ii) cash dividends are an important source of regular income for some institutions such as pension funds (see Renneboog and Trojanowski, 2008), while for others dividend payments represent an important mechanism that alleviates agency problems by reducing free cash flows under managers' control (see Short, Zhang and Keasey, 2002). However, institutional heterogeneity matters in the sense that not all institutions actively or consistently monitor and control their investee firms (Ferreira and Matos, 2008; Kacperczyk, Sundaresan and Wang, 2021). Consequently, it is important to examine *whether* and *which* institutions influenced firms' decisions to cut shareholders' payouts (dividends and buybacks) in response to the Covid-19 pandemic.

Within this context, we make four contributions to the literature. First, building upon the existing theoretical literature (e.g. Allen, Bernado and Welch, 2000), we develop a simple model that enables us to generate hypotheses regarding a possible link between institutional investors and the probability of payout cuts in response to Covid-19. We posit that the presence of institutional investors who actively engage with firms increases the probability of a payout cut in order to deal with the uncertainty created by the pandemic. However, passive and less-engaged institutional investors, or those who rely on dividends for regular income, are more likely to resist payout cuts. Second, we test our hypotheses using hand-collected data on firms' decisions to reduce shareholders' payouts in the Covid-19-induced lockdown period in the UK. This data is collected by reading over 2,000 company news/announcements from the Regulatory News Service (RNS). Third, we utilize five classification schemes to divide institutions into different groups. These classifications enable us to provide a comprehensive analysis of the role of different types of institutions in determining firms' response to the Covid-19 pandemic. Finally, we provide novel evidence on the significance of exit and voice channels through which institutions influence firms' policies by examining institutional

investors' decision to exit or not after witnessing a cut in shareholders' payouts. In the Online Appendix to this paper, we also provide a discussion on dividend initiations and share buybacks in the pre- and during-Covid-19 periods.

Our paper augments the growing literature on the impact of the Covid-19 pandemic on firms' financial performance. For example, Ding *et al*. (2021) find that the drops in stock prices in 56 countries during the initial pandemic period are inversely related to the pre-pandemic cash and profits, and positively related to debt (see also Baker *et al*., 2020). Tosun, Eshraghi and Muradoglu (2021) show that firms which experienced the 9/11 terrorist attack realized better excess stock returns after Covid-19 than firms without the experience. Bartik *et al*. (2020) highlight the financial difficulties faced by small and medium-sized enterprises and the impact of these on employment in the USA. We add to this literature by showing the role of different types of institutional investors in determining firms' decisions to cut or not cut shareholders' payouts in response to the uncertainty generated by the Covid-19 pandemic.

Our key findings are as follows. First, given the uncertainty created by the pandemic, the presence of institutional investors increases the probability of a reduction in shareholders' payouts (dividends and buybacks). Second, institution type matters; institutions that are likely to engage with firms (e.g. investment advisors) increase the probability of payout cuts during the pandemic but institutions that are considered passive (e.g. pension funds) reduce it. Third, payout cuts do not seem to lead to institutional investors' exit. This lends some support to the voice channel through which institutions influence corporate policies.

The rest of the paper proceeds as follows. The next section provides a brief overview of the relevant literature. The third section presents a theoretical model and hypotheses. The fourth section explains the data and methods. The fifth section presents the main results and robustness checks. The final section concludes.

Literature overview

Institutional investors as stewards – the UK context

Institutional investors own a large portion of equity in almost all countries and are expected to play an important role in monitoring and controlling managers (see Ferreira and Matos, 2008). In the UK, domestic and foreign institutions own over 60% equity of listed firms (Office for National Statistics). In theory, institutional investors may influence corporate policies via two channels: voice (or direct intervention) in corporate policies by monitoring and controlling firms' managers (see Aghion, Van Reenen and Zingales, 2013) or exit by selling their equity in firms in which managers appear to damage shareholders' wealth (see Edmans, 2009).

Within the UK context, the Stewardship Code 'sets high stewardship standards for those investing money on behalf of UK savers and pensioners, and those that support them' (Financial Reporting Council, 2020). Indeed, as Becht, Franks and Wagner (2019, p. 7) point out, the UK stewardship code that lays emphasis on institutions' role in corporate governance has been emulated by many other countries, including the USA. However, more critical accounts have suggested that the existing competitive, contractual, legal and regulatory environment will exert pressures that outweigh the impact of 'soft law' measures such as the code (Reddy, 2021). Indeed, at the time of its inception, it was argued that the need to be competitive would outweigh any restraints imposed by the code (Cheffins, 2010). Accordingly, in 2020, the scope of the code was broadened to make it relevant to more discretionary areas (Reddy, 2021), in time to have a possible impact on institutional investors' behaviour after the onset of the pandemic.

However, the empirical evidence on the link between institutional investors and corporate policies is far from conclusive. As in other areas of corporate finance, the theoretical models do not provide clear 'identifying restrictions to solve the endogeneity problem' (Leary and Michaely, 2010, p. 3222), making it challenging to confirm the causal link between institutions and corporate policies. This challenge notwithstanding, early studies find evidence to suggest that institutions 'vote with their feet' by selling their equity in poorly performing firms (see e.g. Parrino, Sias and Starks, 2003). However, more recent studies based either on survey data (e.g. McCahery, Sautner and Starks, 2016) or proprietary data from one institutional investor in the UK (e.g. Becht, Franks and Wagner, 2019) show that institutional investors actively evaluate and influence their investee firms' operations by voting on major corporate policies

and through regular interactions with the boards of directors.

An important insight offered by the empirical literature is the significance of 'institutional heterogeneity' in the sense that not all institutional investors 'are equally equipped or motivated to be active monitors' (Ferreira and Matos, 2008, p. 500; cf. Shi *et al*., 2020). Given that active monitoring and engagement with investee firms is costly, there is little evidence that many large institutions fulfil their stewardship duties (see e.g. Chan, Li and Xin, 2021; Faccio and Lasfer, 2001). For example, in a cross-country study, which includes the UK, Ferreira and Matos (2008) show that only foreign and independent institutions actively monitor their investee firms. Chan, Li and Xin (2021) highlight the extent to which institutional investors' attention is uneven, with lapses directly impacting audit quality. Jiang and Liu (2021) note much heterogeneity in the extent to which institutional investors are able to impose their agendas; for example, investors who are able to secure board seats will have much more influence. Wang (2014) shows that only active institutional investors with moderate investment horizons reduce accruals management in UK firms. Andriosopoulos and Yang (2015) find that long- and medium-horizon institutions in the UK play a more important role than short-horizon institutional investors in firms' acquisition activities.

Shareholders' payouts and institutional heterogeneity

One strand of the above literature focuses on the link between institutional investors and shareholders' payouts, and highlights the role of such payouts in alleviating agency problems and/or signalling firms' value to the market (e.g. Allen, Bernado and Welch, 2000). Related empirical studies support key predictions of these models. For example, Grinstein and Michaely (2005) find that institutional investors – who are expected to follow the 'prudent-man rule' – avoid firms that do not pay dividends. However, institutional investors may prefer firms to pay lower dividends in the interests of prudence; they are likely to be better informed than individual investors, and less reliant on dividends as a source of information about firms' future prospects (see Amihud and Li, 2006).

In the UK context, Short, Zhang and Keasey (2002) find that institutional holdings result in higher corporate payouts because institutions seek to reduce the amount of free cash flows under managers' control. However, Khan (2006) shows that the identity of large shareholders matters in determining dividend payout decisions, and finds that dividend payouts increase with the large holdings of insurance companies. This may be as these companies possess large resources and are less likely to be distracted by competing demands on their attention (Liu *et al*., 2020). Renneboog and Trojanowski (2008) report that the holdings of tax-exempt institutions such as pension funds increase shareholders' payouts (especially after 1997). Kilincarslan and Ozdemir (2018) show that holdings of long-term institutional investors have a positive relationship with the amount of dividends that firms pay, while the relationship is negative for short-term institutions. Overall, there is considerable evidence to suggest that in the UK, and in other countries, some institutions are more active than others in influencing corporate policies such as shareholders' payouts.

Model and hypotheses

The *attention-based view* suggests that the closer the managers are to where the locus of an exogenous shock is, the more likely they are to adopt a more cautious stance (Barreto and Patient, 2013). Within this contest, our simple model below highlights the importance of asymmetric information and institutions' monitoring.

Model setup

Assume that the Covid-19 shock destroys a proportion $\Delta \in (0, 1)$ of firm value. The shock allocates one of two types of managers $\{\theta_{\mathrm{L}}, \theta_{\mathrm{H}}\}$ to the firm. Each manager type can either suspend dividends (S) or keep them (K) (see Hull, 2013). Type θ_{H} manager can fully recover the lost value Δ without dividend suspension; type θ_{L} manager needs to suspend dividends for recovery. The prior probability of θ_{L} is $\Pr(\theta_{\mathrm{L}}) =$ p and that of θ_{H} is $\Pr(\theta_H) = (1 - p)$. The pre-shock compensation of the manager is c. The manager observes his true type before his decision to suspend dividends.

The institutional investor owns α fraction of equity and only knows the prior probability of the manager type. After the manager's decision, the institutional investor can either intensify her monitoring activity (M) or ignore (I) the manager's

dividend decision. We assume that the institutional investor prefers to receive dividends and, therefore, following the manager's decision to suspend, the investor always chooses M. Increased monitoring, however, is costly (cost is fixed at m, a proportion of the lost value Δ). If she chooses M, the investor finds out the true type of the manager (as in Aghion, Van Reenen and Zingales, 2013) and successfully influences the manager's compensation as follows: (1) type θ_{H} manager receives a penalty $\delta_{\theta_{\mathrm{H}}} > 0$ if he suspends the dividends as this is not needed for recovery but keeps his compensation without suspension; (2) type θ_{L} manager receives a penalty $\delta^{\mathrm{A}}_{\theta_{\mathrm{L}}}$ if he suspends the dividends in order to recover the lost value Δ and receives a penalty $\delta^{B}_{\theta_L} > \delta^{A}_{\theta_L} > 0$ if he does not suspend the dividends to recover the lost value Δ. Thus, the penalty is larger without suspension given that the unprecedented shock justifies suspension for the recovery of the lost value Δ.

If the institutional investor does not intensify monitoring, then both manager types keep their existing compensation $\underline{c}$. Type θ_{H} manager fully recovers Δ without dividend suspension. So, the institutional investor with α proportion of equity gets $\alpha\Delta$ without monitoring and $\alpha\Delta - m$ with monitoring. Thus, it is beneficial for the investor not to intensify monitoring of type θ_{H} manager. If type θ_{L} manager does not suspend the dividends and the investor monitors, the recovery value is $\beta\Delta$ and the investor gets $\alpha\beta\Delta - m$. However, if type θ_{L} manager does not suspend and the investor does not monitor, the recovery value is $\gamma\Delta$ and the investor gets $\alpha\gamma\Delta$. Furthermore, without monitoring, type θ_{L} manager keeps his existing compensation (so he has the incentive not to cut dividends to act like type θ_{H} manager).

We assume that $0 < \gamma < \beta < 1$. Define $(\beta - \gamma) = \varphi$. For the benefits of monitoring to exceed the cost of monitoring, we require $\alpha\beta\Delta - m > \alpha\gamma\Delta$, which implies that

$$\alpha(\beta - \gamma)\Delta = \alpha\varphi\Delta > m \tag{1}$$

The term φ in the above expression can be interpreted as the voice channel (e.g. advice or guidance) through which the institutions influence firms' decisions. This channel is expected to be stronger for institutions that invest in their stewardship and monitoring activities (more on this below).

Semi-separating equilibrium

Our model has a semi-separating equilibrium (see Munoz-Garcia and Toro-Gonzalez, 2019, p. 422) in which type θ_{H} manager chooses K and type θ_{L} manager pools (i.e. keeps dividends with probability σ_{K} and suspends with probability $1 - \sigma_{\mathrm{K}}$).

Proposition 1. Assuming that $\alpha\varphi\Delta > m$, the above dividend suspension game has a semi-separating equilibrium with the following strategies and beliefs.

Let $\mu(\theta_{\mathrm{L}}|\mathrm{K})$ denote the institutional investor's posterior beliefs. In the semi-separating equilibrium, the posterior beliefs are

$$\mu\ (\theta_L|K) = \frac{m}{\alpha\varphi\Delta} \tag{2}$$

Type θ_{H} manager chooses to keep dividends, and type θ_{L} manager chooses to keep dividends with probability

$$\sigma_K = \frac{(1-p)}{p}\frac{m}{[\alpha\varphi\Delta - m]} \tag{3}$$

The institutional investor chooses a mixed strategy in which she chooses to intensify monitoring after observing the manager's decision to keep the dividends with probability

$$\sigma_M = \frac{\delta^{A}_{\theta_L}}{\delta^{B}_{\theta_L}} \tag{4}$$

Proof. Appendix 1.

The results in the above proposition are quite intuitive. The most relevant part of the proposition suggests that the probability with which a manager retains dividends is inversely related to the proportion of equity owned by institutional investors (α in Equation (3)) and to institutional investors' voice (φ in Equation (3)). Our model shows that the manager who needs to cut dividends to recover firm value may mimic a manager who does not require dividend suspension to recover firm value after the shock. The existing literature also reaches similar conclusions: managers are reluctant to reduce regular dividends (Bonaime, Harford and Moore, 2020; Leary and Michaely, 2010). However, in the presence of institutions that engage with firms, managers are more likely to cut dividends to demonstrate a willingness to preserve firms' resources in a time of crisis, and investors may be more committed to the firm in the long

run and more interested in its real capabilities than payout-related signals it might emit to the markets. Thus, we hypothesize that:

H1: Institutional investors' holdings increase the probability of suspension in shareholders' payouts in response to the Covid-19 pandemic.

Institutional investors' heterogeneity and payout cuts

As noted earlier, the recent literature suggests that in the UK and other countries, institutions differ in terms of their incentives to monitor and control managers. Our model offers two insights to add to this literature. First, the probability of payout cuts is inversely related to φ, which is likely to be higher for institutions that actively engage with their investee firms to increase the long-term value of the firms. Second, the probability with which institutional investors intensify their monitoring activity is the ratio of $\delta^{A}_{\theta_L}$ (penalty imposed on type θ_L manager when they suspend dividends) and $\delta^{B}_{\theta_L}$ (penalty imposed on type θ_L manager when they do not suspend dividends). Again, this ratio is likely to be small when institutional investors develop their stewardship capabilities, which enable them to impose a large penalty on managers for undertaking wrong decisions of not suspending dividends.

For example, as Becht, Franks and Wagner (2019) point out, institutions such as Aberdeen Standard Investment in the UK have a dedicated team of analysts and a Governance and Stewardship (G&S) group that actively engage with their investee firms. Becht, Franks and Wagner (2019) highlight that the G&S group develops stewardship capabilities through regular 'conversations with the portfolio companies' management and their boards relating to remuneration, board composition, including appointments of Chairmen, non-executive directors and CEO' (p. 9). Passive institutions such as pension funds or short investment horizon institutions who invest in a diversified portfolio of firms or simply follow the index are less likely to invest in such monitoring and stewardship technologies. Consequently, we expect that institutions which actively engage with managers or have mechanisms in place to put pressure on managers to enable them to survive the uncertainty generated by the Covid-19 pandemic are more likely to influence firms to reduce payouts. Thus, we propose the following hypothesis:

H2: Holdings by institutions that actively engage with firms with a view to improve long-term growth increase the probability of suspension in shareholders' payouts in response to the Covid-19 pandemic.

However, other work suggests that institutional investors may have fundamental agency problems with their principles (e.g. pension savers). Whilst the latter favour stable long-term revenue flows, some institutional investors are often incentivized towards early dividends (Lazonick and Shin, 2019; Mees and Smith, 2019). Consequently, institutional investors who are interested in short-term value releases or rely on cash income in the form of dividends may resist cuts or at the very least not put pressure on firms to reduce shareholder payouts. Hence, we propose:

H3: Holdings by institutional investors interested in short-term value releases in the form of dividends decrease or do not affect the probability of suspension in shareholders' payouts in response to the Covid-19 pandemic.

Dividing institutions into different groups

Given our discussion on institutional investor heterogeneity, testing H2 and H3 requires a classification of institutions into different groups. The existing UK studies either consider all institutions as one group (e.g. Chen *et al*., 2019; Short, Zhang and Keasey, 2002) or use one or a few categories of institutions (e.g. Andriosopoulos and Yang, 2015; Faccio and Lasfer, 2001; Khan, 2006). We utilize five classification schemes to provide a more comprehensive picture of the possible role of different types of institutions in determining firms' responses to Covid-19. First, we divide institutions into 'Active' or 'Passive' categories based on investment orientation classification by Thomson Reuters. *We expect active institutions to increase the probability of payout cuts (H2), and passive institutions to have negative or no impact (H3)*. However, this classification is too broad to assess the validity of H2 and H3 given the institutional heterogeneity in the UK.

Second, we follow the classification in Ferreira and Matos (2008) and Ding *et al*. (2021) to categorize investors as 'Independent' or 'Grey'. Independent institutions are funds managers, investment advisers and research firms, while grey institutions are banks and trusts, insurance

companies, pension funds and endowment funds. Ferreira and Matos (2008) find that the independent institutions are more likely than the grey institutions to actively engage with managers for long-term growth. Consequently, *we expect independent institutions to engage with firms during the Covid-19 pandemic and increase the probability of payout cuts (H2)*. In contrast, the UK literature suggests that institutions such as pension funds do not actively monitor and control firms (Faccio and Lasfer, 2001) and even encourage firms to pay large cash dividends (e.g. Khan, 2006). Thus, *we expect grey institutions to have no or a negative effect on the probability of payout cuts (H3)*.

Third, we divide institutions into foreign and domestic, where domestic institutions are those that are registered in the UK. Andriosopoulos and Yang (2015) argue that foreign institutions are more active in monitoring firms; this may reflect efforts to alleviate greater information asymmetry. In addition, there is evidence to suggest that in a cross-country setting, foreign institutional investment leads to lower dividends, perhaps due to tax disadvantages (see Ferreira, Massa and Matos, 2010), or because of greater comparative information they may bring to the table, diluting the influence of potentially less well-informed domestic investors (Kacperczyk, Sundaresan and Wang, 2021). Therefore, *we expect foreign holdings to increase payout cuts during the Covid-19 pandemic (H2)*. However, domestic institutional investors in the UK have recently come under pressure to promote reinvestment. Even if heedless to calls by politicians to participate in the 'investment big bang',[1] such restraint may be motivated on pragmatic grounds, to preserve investment outlets into the future. Thus, *we expect domestic institutions to increase the probability of payout cuts (H2)*.

Fourth, we apply the classification scheme based on investment horizon as in Bushee (2001). Specifically, using data from Thomson Reuters, we divide institutional investors into three groups: low-, moderate- and high-turnover institutional investors. Here, as in the recent UK studies (e.g. Kilincarslan and Ozdemir, 2018), *we expect long-term institutions (low-turnover) to be more engaged with firms and reduce payouts in order to increase the growth of their investee firms during and after the pandemic (H2)*. However, moderate- and high-turnover institutions (i.e. those that are more interested in short-term gains) are not likely to be involved in regular monitoring of managers. Consequently, *we expect moderate- and high-turnover institutions to have negative or no impact on the probability of payout cuts (H3)*.

Finally, we use the institutional fiduciary standards and legal forms to divide institutions into the following seven categories (see Bushee, 2001): investment advisors, hedge funds, pensions and endowments, bank trusts, sovereign wealth funds, insurance companies and venture capital and private equity firms. The existing evidence, mainly from the USA, suggests that hedge funds and investment advisors play a strategic role in improving firms' long-term performance (e.g. Brav *et al*., 2008). The evidence on these institutions' role outside the USA is still limited. *We expect investment advisors and hedge funds to be more engaged with firms to enable them to deal with the uncertainty due to the Covid-19 pandemic and, therefore, encourage firms to reduce shareholders' payouts (H2)*. In contrast, institutions such as pension funds, insurance companies, endowments and bank trusts seem to be more interested in dividend income (see e.g. Faccio and Lasfer, 2001; Khan, 2006). Consequently, *we expect that these institutions decrease or do not affect the probability of payout cuts (H3)*. To the best of our knowledge, the impact of sovereign wealth funds, private equity and venture capital on firms' payout policy is still an unexplored issue. Recent studies, mainly based on US data, suggest that to avoid political backlash, many sovereign wealth funds deliberately act as passive investors (i.e. 'passivity by design'; Kotter and Lel, 2011; Rose, 2008, p. 107), especially given that the resurgence of protectionism (Evenett, 2019) may open up particular risks for such investment arms of foreign governments. Consequently, *we conjecture that sovereign wealth funds are likely to resist a cut or have no impact (H3)*. In terms of private equity and venture capital firms, a large number of studies evaluate these institutions' roles in long-term performance and buyouts (see Cumming, Siegel and Wright, 2007). However, these institutions' roles in determining payout policy are still an open question. Given the existing evidence on private equity and venture capital firms, these institutions are unlikely to be interested in short-term value releases during the pandemic. Therefore, *we expect that private equity and venture capital firms are likely to increase*

[1] https://www.investorschronicle.co.uk/managing-your-money/2021/08/10/boris-johnson-s-investment-big-bang-needs-more-clarity/

Table 1. Institutional investor heterogeneity and expected impact on payout cuts

Institution classification	Expected impact on probability of payout cuts
Classification 1 – Active versus passive institutions	
Active	Positive (H2)
Passive	Negative or no impact (H3)
Classification 2 – Independent versus grey institutions	
Independent	Positive (H2)
Grey	Negative or no impact (H3)
Classification 3 – Foreign versus domestic institutions	
Foreign	Positive (H2)
Domestic	Positive (H2)
Classification 4 – Investment horizon	
Low turnover	Positive (H2)
Medium turnover	Negative or no impact (H3)
High turnover	Negative or no impact (H3)
Classification 5 – Fiduciary/legal status	
Investment advisors	Positive (H2)
Hedge funds	Positive (H2)
Insurance companies	Negative or no impact (H3)
Pensions and endowments	Negative or no impact (H3)
Bank trusts	Negative or no impact (H3)
PE/VC	Negative or no impact (H3)
Sovereign wealth funds	Negative or no impact (H3)

This table provides a summary of the possible impact of different types of institutions on the probability of payout cuts due to the Covid-19 pandemic.

the probability of payout cuts to enable firms to deal with the Covid-19 pandemic (H2). Table 1 provides a summary of the above discussion on the possible impact of different types of institutions on the probability of payout cuts due to the Covid-19 pandemic.

Data and methods

Data on shareholder payout cuts

We begin with the list of 1,251 active firms on the London Stock Exchange (LSE) on 1 March 2020 in Thomson Reuters' Datastream. We exclude financial firms (SIC codes between 6000 and 6999), firms that have a market capitalization of less than £100 million and firms that do not have data available on total assets, total debt, cash and return on assets. These filters result in 440 firms. We searched for payout announcements on the RNS made by the 440 firms during 1 March and 30 September, 2020. The RNS was accessed using the LSE's website and investEgate.co.uk. Where uncertain, the authors checked companies' websites for announcements. Appendix 2 provides examples of companies' announcements. Two authors independently read, recorded and coded texts from over 2,000 news items, announcements and reports.

Firms' announcements highlight the adverse impacts of the Covid-19 pandemic and the actions, including changes (if any) in the dividends and share repurchase policy, that the firms would take to mitigate such impacts. We could obtain announcements on dividends and/or share repurchases for 368 firms. Most announcements are dividend-related, including one inaugural dividend. Two firms decided to continue with share repurchase schemes previously announced, while 12 decided to suspend. Using these announcements, we constructed a dummy variable Payout_Cut that takes a value of 1 if a firm announced at least one of the following decisions: reduction, omission, suspension, cancellation in common dividends or share repurchases; and a value of 0 if a firm announced no change in dividends or share repurchase previously announced. Payout_Cut is our key dependent variable of interest to test H1–H3.

Data on institutional ownership and institutional heterogeneity

Data on institutional ownership is obtained from Thomson Reuters' Eikon platform.[2] We exclude

[2]We keep ownership of institutions that have at least 0.5% equity in a firm. Some studies look at blockholder

firms that do not have ownership or board data available as of 1 December 2019, and firms that do not have data available for all variables for the main analysis or the matching analysis (described below). After these filters, we have 330 firms in our final sample. To test H1–H3, our key independent variable of interest is IO, which is the shares owned by institutional investors as a proportion of the total number of shares outstanding as of 1 December 2019.

Other variables

Our analysis includes the following firm-specific controls: the natural logarithm of total assets (size), total debt to total assets (Lev), cash reserves to total assets (Cash), return on assets (ROA) and cash flow volatility (CF_Vol). Cash flow volatility, which in the corporate risk management theory represents uncertainty over future growth opportunities, is the standard deviation of cash flows per share over 5 years as in Keefe and Yaghoubi (2016). We also control for the following governance characteristics: BoardSize, Ind_Dir and Gender_Ratio, which are indicators that take a value of 1 if the number of directors, the proportion of independent directors on the board and the proportion of male directors on the board are above the sample median, respectively, and 0 otherwise; and Compensation, which is the natural logarithm of total compensation of all directors. We include industry dummies based on the primary one-digit SIC code. Table 2 describes all the variables used in the analysis.

In our baseline analysis, all variables are as of 2019, except cash flow volatility, which is measured using data from 2015 to 2019.[3] Table 3 compares firms that cut payouts with those that do not. In our sample, 216 firms (65%) reduce shareholders' payouts in response to the Covid-19 pandemic. The average institutional ownership is 64% for firms that cut and around 57% for firms that do not cut payouts. The statistics on institutional ownership reflect the equity ownership by institutional investors produced by the Office for National Statistics. Our data is also consistent with work concluding that institutions like pension funds rarely hold large equity in a firm (e.g. Khan, 2006) and that institutions have very different investment horizons (e.g. Andriosopoulos and Yang, 2015). The results also show that firms which reduce payouts have significantly lower cash flow volatility and lower proportion of male directors compared to those that do not. Our sample size (330 firms) is similar to earlier UK studies on institutional investors (e.g. Khan, 2006; Wang, 2014).

Payout cuts, average treatment effect on the treated and entropy balance

Our baseline analysis uses a logit model to test whether institutional ownership has an impact on the probability of payout cuts during Covid-19. However, firms with high institutional ownership may differ from those with low ownership in terms of earlier firm-specific characteristics and our results after controlling for such characteristics in the baseline logit models are very likely to be model-dependent (see Ho *et al*., 2007). Thus, we extend the baseline analysis by utilizing matching techniques that enable us to generate balancing weights such that firms with high institutional ownership are matched with comparable firms with low institutional ownership on the basis of a set of pre-existing firm characteristics. Specifically, we follow an approach similar to the one used in Kahle and Stulz (2013) along with balancing weights generated through the entropy balancing method (see Hainmuellller, 2012).

We divide firms into treatment and control groups based on the level of institutional holdings prior to the Covid-19 pandemic. The treatment group contains firms in which institutional ownership is in the top 30% of the sample as of 1 December 2019 (i.e. 3 months prior to the start of the period when we study payout decisions).[4] We then test whether firms with high institutional

institutions (e.g. those with more than 3% ownership). This, however, excludes many institutions (e.g. pension funds) who do not hold large stakes in many companies (see Khan, 2006). https://www.thomsonreuters.com/content/dam/openweb/documents/pdf/tr-com-financial/thomsononecom-ib-ownership.pdf

[3]All variables are winsorized at 1% and 99%. As noted later, our entropy balancing approach utilizes firm-specific controls prior to 2019. We use 2017 and 2018 average values for firm controls. Appendix 3 provides detailed descriptive statistics for all years.

[4]We define the treatment group as firms with non-zero ownership for the following types of institutions: hedge funds, banks, pension funds, insurance companies and private equity and venture capital firms, due to the low ownership of these institutions.

Table 2. Variable definitions

Name	Definition
Payout_Cut	Indicator variable equals 1 when the firm announced Covid-related suspension, deferral, postponement or reduction in shareholder payouts (dividends or share buyback), and 0 otherwise during the period 1 March 2020 to 30 September 2020
Div_Change	Change in total cash dividend paid during the period 1 March to 30 September compared to the same period in previous year (Thomson Eikon)
Inst_Investors	Cumulative percentage of shares held by institutional investors (Thomson Eikon)
Active_Inst_Investors	Cumulative percentage of shares held by active institutional investors (based on orientation code) (Thomson Eikon)
Passive_Inst_Investors	Cumulative percentage of shares held by passive institutional investors (based on orientation code) (Thomson Eikon)
Domestic_Inst	Cumulative percentage of shares held by UK institutional investors (Thomson Eikon)
Foreign_Inst	Cumulative percentage of shares held by non-UK institutional investors (Thomson Eikon)
Independent_Inst	Cumulative percentage of shares held by institutional investors, who are fund managers, investment advisers and research firms (Thomson Eikon)
Grey_Inst	Cumulative percentage of shares held by institutional investors, who are banks and trusts, insurance companies, pension funds and endowment funds (Thomson Eikon)
Low_Turnover_Inst	Cumulative percentage of shares held by low-turnover institutional investors (based on investment horizon) (Thomson Eikon)
Moderate_Turnover_Inst	Cumulative percentage of shares held by medium-turnover institutional investors (based on investment horizon) (Thomson Eikon)
High_Turnover_Inst	Cumulative percentage of shares held by high-turnover institutional investors (based on investment horizon) (Thomson Eikon)
Invest_Advisors	Cumulative percentage of shares held by institutional investors, who are fund managers and investment advisers (Thomson Eikon)
Hedge_Funds	Cumulative percentage of shares held by institutional investors, who are hedge funds (Thomson Eikon)
Pensions	Cumulative percentage of shares held by institutional investors, who are pension funds and endowment funds (Thomson Eikon)
Insurance	Cumulative percentage of shares held by institutional investors, who are insurance companies (Thomson Eikon)
Banks	Cumulative percentage of shares held by institutional investors, who are banks and trusts (Thomson Eikon)
PE/VC	Cumulative percentage of shares held by institutional investors, who are private equity or venture capital firms (Thomson Eikon)
SWF	Cumulative percentage of shares held by institutional investors, who are sovereign wealth funds (Thomson Eikon)
Size	The natural logarithm of total assets (Thomson Eikon)
Lev	Total debt to start-of-period total assets (Thomson Eikon)
Cash	Cash reserves to start-of-period total assets (Thomson Eikon)
ROA	Return on assets defined as net income by an average of last year's and current year's total assets∗100 (Thomson Eikon)
CF_Vol	Cash flow volatility defined as the standard deviation of cash flow per share in the last 5 years (Thomson Eikon)
BoardSize	Indicator variable equals 1 when the number of directors on the board is above the sample median, and 0 otherwise (BoardEx)
Ind_Dir	Indicator variable equals 1 when the proportion of independent directors on the board is above the sample median, and 0 otherwise (BoardEx)
Compensation	The natural logarithm of total compensation of the board of directors (BoardEx)
Gender_Ratio	Indicator variable equals 1 when the proportion of male directors on the board is above the sample median, and 0 otherwise (BoardEx)

This table provides the definition and source of variables used in the analysis.

Table 3. Univariate analysis

	Payout_Cut = 1 (N = 216)		Payout_Cut = 0 (N = 114)	
Variable	Mean	Median	Mean	Median
Inst_Investors	0.641	0.671	0.566***	0.591***
Active_Inst_Investors	0.506	0.523	0.445**	0.455**
Passive_Inst_Investors	0.135	0.110	0.124	0.107
Independent_Inst	0.536	0.567	0.464***	0.460***
Grey_Inst	0.013	0.006	0.013	0.006
Domestic_Inst	0.361	0.353	0.307**	0.278**
Foreign_Inst	0.279	0.271	0.262	0.254
Low_Turnover_Inst	0.511	0.524	0.461**	0.473**
Med_Turnover_Inst	0.096	0.078	0.077**	0.053**
High_Turnover_Inst	0.015	0.007	0.015	0.006
Invest_Advisors	0.534	0.565	0.462**	0.460***
Hedge_Funds	0.016	0.000	0.011	0.000
Pensions	0.005	0.000	0.006	0.000
Insurance	0.004	0.000	0.003	0.000
Banks	0.004	0.000	0.004	0.000
PE/VC	0.003	0.000	0.011	0.000
SWF	0.016	0.012	0.016	0.009
Lev	0.240	0.234	0.242	0.210
Cash	0.103	0.071	0.119	0.090
ROA	7.418	6.450	7.663	6.950
CF_Vol	0.126	0.081	0.176***	0.098*
Size	13.70	13.56	13.81	13.60
BoardSize	0.500	0.500	0.544	1.000
Ind_Dir	0.560	1.000	0465	0.000
Compensation	7.690	7.673	7.800	7.730
Gender_Ratio	0.449	0.000	0.600***	1.000

This table presents the univariate analysis comparing firm characteristics by their payout decisions.
*p < 0.1; **p < 0.05; ***p < 0.01.

ownership are more or less likely to cut payouts after the Covid-19 pandemic than firms with low institutional ownership. We use the entropy balancing approach to generate balancing weights such that the first two moments of the distributions of covariates for the firms (prior to 2019) with high institutional ownership and those with low ownership are similar.

Hainmuellller (2012) provides a detailed analysis to show that the entropy balancing approach achieves better covariate balance between treated and control firms compared to other matching approaches by including explicit constraints in the optimization process. An additional advantage of the entropy balancing approach is that, unlike methods such as nearest neighbour matching, it keeps valuable information in the sample by generating continuous weights for control firms without discarding unmatched firms. As we show in the section 'Entropy balancing and the ATT' below, entropy balancing performs better for our sample than balancing created by propensity score matching or nearest neighbour matching. As our treatment variable is computed as of 1 December 2019, all covariates for the entropy balancing are calculated prior to 2019 (i.e. as the average values of 2017 and 2018). We use the balancing weights to compute the average treatment effect on the treated (ATT), which is the causal impact of high institutional ownership (of different types) on the decision to cut payouts during the Covid-19 pandemic for firms with such ownership.

Empirical results

Decision to cut shareholders' payout – baseline analysis

Table 4 provides results for the different specifications, based on institution type, of the following logit model:

$$P(Payout\_Cut = 1|\mathrm{X}) = G\begin{pmatrix}\beta_0 + \beta_1 IO + \beta_2 Lev + \beta_3 Cash + \beta_4 ROA \\ +\beta_5 CF\_Vol + \beta_6 Size + \beta_7 BoardSize \\ +\beta_8 Ind\_Dir + \beta_9 Compensation \\ +\beta_{10} Gender\_Ratio + \lambda' Z\end{pmatrix} \quad (5)$$

where G is the logistic function, IO is the institutional ownership and Z is a vector of industry dummies.

Table 4 (Models 1 and 2) provides evidence supporting H1 as the positive β_1 coefficienct for IO suggests that institutional holdings increase the probability of a shareholders' payout cut during Covid-19. Models 3 and 4 examine the impact of the ownership of active institutional investors, while Models 5 and 6 examine the impact of passive institutions. The coefficients for active institutions are positive and significant, while those for passive institutions are not. Figure 2 shows the predicted probability plots (along with 95% confidence intervals), suggesting that the probability of payout cuts increases with the ownership of all and active institutions. However, the graph for passive institutional investors is almost flat. It is also important to note that while firms that reduce payouts on average have higher cash flow volatility, the probability of payout cuts decreases with cash flow volatility. This result is very intuitive as firms with volatile cash flows are

Table 4. Payout decisions and institutional investor ownership – estimation from logit regressions

	Inst_Investors		Active_Inst_Investors		Passive_Inst_Investors	
	(1)	(2)	(3)	(4)	(5)	(6)
IO	**1.760****	**1.610****	**1.346****	**1.170***	**0.792**	**0.850**
	(0.011)	(0.020)	(0.047)	(0.092)	(0.486)	(0.483)
Lev	−0.394	−0.716	−0.521	−0.836	−0.276	−0.591
	(0.637)	(0.396)	(0.533)	(0.323)	(0.743)	(0.495)
Cash	−1.909	−2.009	−2.027	−2.099	−1.812	−1.879
	(0.200)	(0.184)	(0.168)	(0.160)	(0.214)	(0.210)
ROA	0.010	0.010	0.007	0.006	0.001	−0.001
	(0.686)	(0.727)	(0.788)	(0.823)	(0.979)	(0.963)
CF_Vol	−2.347**	−1.865*	−2.324**	−1.807*	−2.497***	−1.943**
	(0.012)	(0.060)	(0.013)	(0.068)	(0.007)	(0.045)
Size	0.069	0.058	0.099	0.071	0.019	−0.027
	(0.477)	(0.723)	(0.335)	(0.681)	(0.861)	(0.871)
BoardSize		0.045		0.098		0.089
		(0.901)		(0.778)		(0.799)
Ind_Dir		0.327		0.382		0.349
		(0.274)		(0.195)		(0.231)
Compensation		−0.620		−0.624		−0.582
		(0.133)		(0.122)		(0.144)
Gender_Ratio		−0.825***		−0.805***		−0.898***
		(0.007)		(0.009)		(0.004)
Constant	−1.144	4.194	−0.796	4.672	0.354	5.801**
	(0.553)	(0.141)	(0.691)	(0.104)	(0.841)	(0.034)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
N	330	330	330	330	330	330
Log-likelihood	−194.96	−188.68	−196.44	−190.01	−198.41	−191.28

This table reports estimations of logit regressions for the relations between payout decisions and institutional investor ownership, controlling for firm characteristics. The dependent variable is Payout_Cut, an indicator variable that equals 1 when the firm announced dividend or share repurchase suspension, deferral or reduction, and 0 otherwise. IO represents one of the measures of institutional ownership: Inst_Investors, Active_Inst_Investors or Passive_Inst_Investors. All firm, board characteristics and institutional investor ownership are defined in Table 2. Industry dummy variables based on one-digit SIC codes are included but coefficients are not reported. p-Values are given in parentheses.
*p < 0.1; **p < 0.05; ***p < 0.01.

likely to be very cautious at the start of the pandemic in dealing with increased uncertainty. Another novel finding is the relationship between payout cuts and Gender_Ratio. Our results suggest that male-dominated boards are less likely to cut shareholders' payouts. This result resonates with the emerging literature on female leadership captured in the notion of a 'glass cliff', which suggests that female leaders are more effective than male leaders in taking steps that protect firms from exogenous shocks.[5]

This baseline analysis provides some preliminary evidence for H2 and H3 in the sense that active institutional investors' holdings increase the probability of a payout cut (H2), while holdings by passive institutions have no significant effect (H3). However, the active/passive institutions categories in specifications (3)–(6) are too broad to assess the validity of H2 and H3 within the context of institutional heterogeneity in the UK. Moreover, firms with high institutional ownership may differ from those with low ownership in terms of firm-specific characteristics. The following subsection extends this baseline analysis by using finer classifications for institutional investors. In addition, we utilize balancing weights based on the entropy balancing approach to provide a more robust comparison of firms with high and low institutional ownership.

Entropy balancing and the ATT

Figure 3 shows covariate balancing for firms with high and low all institutional holdings before and

[5]https://hbr.org/2020/12/research-women-are-better-leaders-during-a-crisis

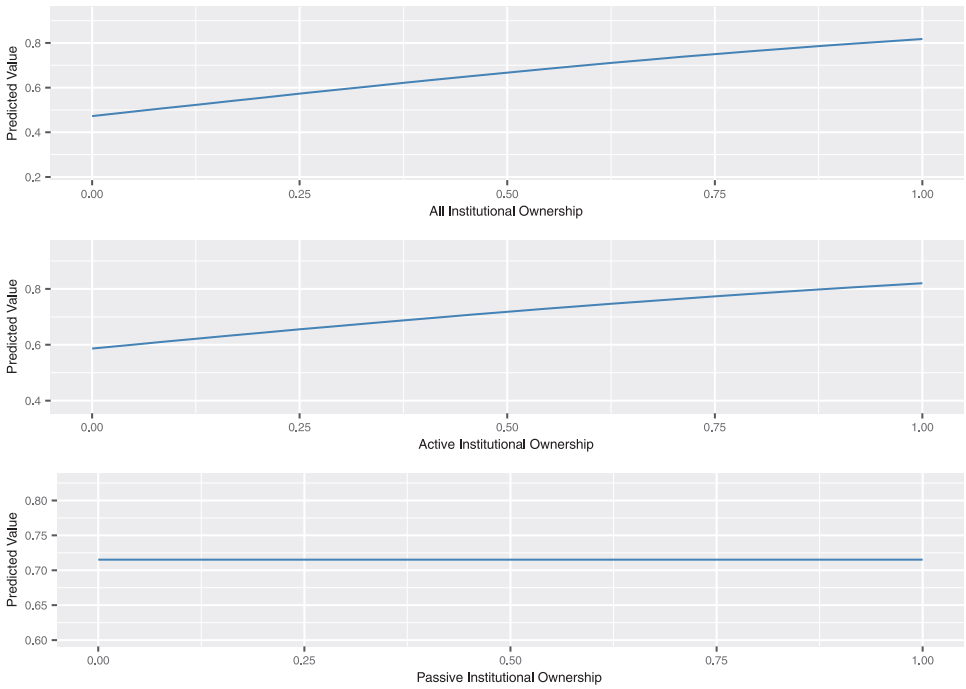

Figure 2. The predicted probabilities and institutional ownership. This figure shows the predicted probability plots and associated 95% confidence intervals using the estimation of the three specifications of the logit model in Equation (5), based on institution type, all institutional investors, active institutional investors and passive institutional investors [Colour figure can be viewed at wileyonlinelibrary.com]

after balancing on the basis of standardized mean differences and variance ratios. Our estimations are carried out using R (survey, weightit, ebal and cobalt packages). For good balance, we expect standardized mean differences to be close to 0 and variance ratios to be close to 1. The figure shows unadjusted sample (i.e. before matching) and adjusted sample (i.e. after matching). It also shows covariate balancing using propensity score matching and nearest neighbour matching. The entropy balancing, given that it includes balancing constraints in the optimization process, achieves a better covariate balance in terms of standardized mean differences and variance ratios compared to propensity score matching and nearest neighbour approaches. Appendix 4 provides results for balancing for all types of institutional investors. The balancing weights generated through this approach are used to estimate the ATT using a model with binary outcome variable Payout_Cut.

Results in Tables 5–8 assess the role of different types of institutions in determining firms' payout decisions during the Covid-19 pandemic. In all tables, balancing weights for the estimand ATT generated through the entropy balancing method are used. Our main interest is in the comparison between firms with high institutional ownership and those with low institutional ownership (i.e. the variable IO in all tables). Table 5 compares the impact of all, active and passive institutional holdings. As in Table 4, high institutional ownership increases the probability of shareholders' payout cuts. This supports H1. We still find that active institutional investors' holdings increase the probability of a payout cut, while holdings by passive institutions have no significant effect. This supports H2 and H3. However, as noted earlier, this active versus passive classification is too broad to take into account institutional heterogeneity in the UK. Tables 6–8 examine the role of institutional investors on the basis of finer classifications.

Table 6 suggests that the holdings of independent institutions are significantly and positively related to payout cut decisions, while those of grey institutions are negative with a p-value of 0.109. This supports H2 and H3 (in conjunction with expected relationships in Table 1). This finding is consistent with Ferreira and Matos (2008), who find that the presence of independent institutions augments firm value. In our context, it may be the

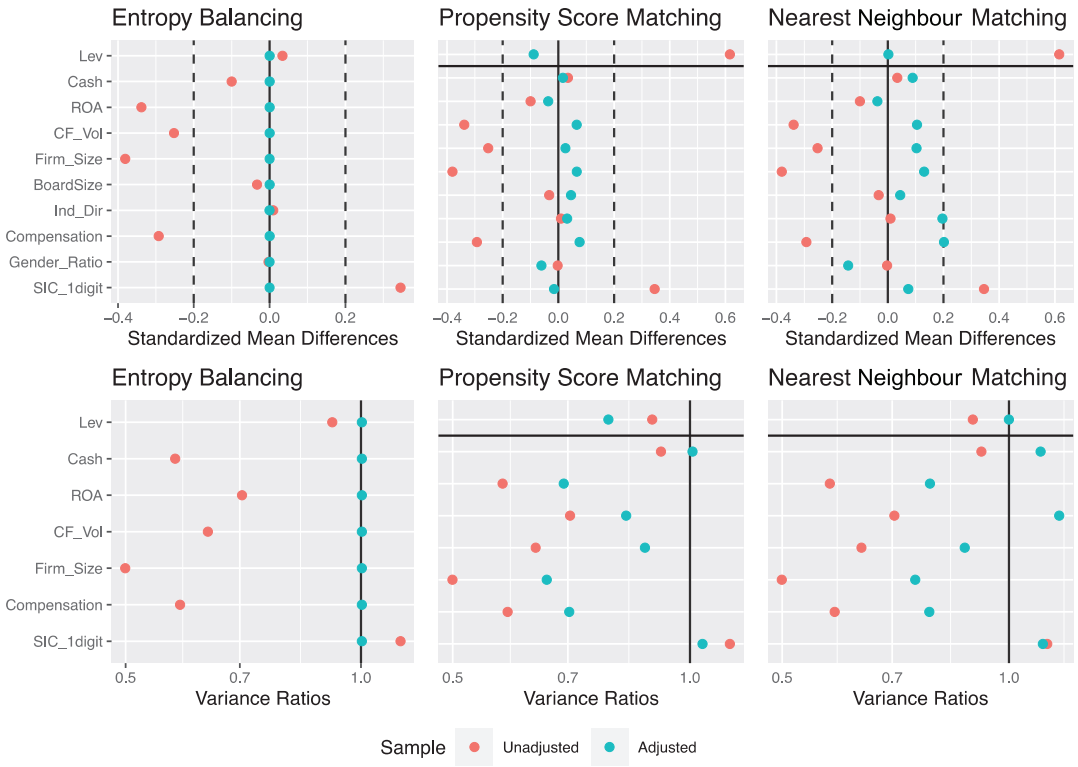

Figure 3. Covariate balance (standardized mean differences and variance ratios). This figure shows covariate balancing for firms with high and low holdings by all institutional investors before and after balancing on the basis of standardized mean differences and variance ratios [Colour figure can be viewed at wileyonlinelibrary.com]

case that independent institutions encourage cutting payouts to conserve cash to deal with uncertainty and to signal managers' cautiousness to the market. Table 6 also shows that classification based on foreign versus domestic institutional investors does not explain firms' decisions to cut shareholders' payouts. Thus, unlike earlier studies, our results suggest that the domestic versus foreign distinction is not relevant to firms' payout responses to the Covid-19 pandemic. Table 7 provides analysis of the role of institutional investors on the basis of their investment horizon. Early studies have documented that institutional investors who have a long-term investment horizon are more active in monitoring than those with a short-term horizon (e.g. Bushee, 2001). However, only recent studies have looked at the impact of institutions' investment horizon on firms' payout to shareholders (e.g. Kilincarslan and Ozdemir, 2018). Our results reveal that the classification of institutions in terms of investment horizon does not explain firms' decisions to cut shareholders' payouts during the Covid-19 pandemic. Although the signs of the coefficients are as predicted in Table 1, the coefficients are not statistically significant at conventional levels. It is possible that the investment horizon classification is not sufficiently nuanced in differentiating the monitoring roles of different types of institutions. Among low-turnover institutions, those interested in dividend income – such as pension funds, insurance companies and endowments – may have negative or no impact on the probability of payout cuts (as stated in H3), while others such as asset management companies may have a positive impact (as in H2). The results based on independent versus grey (Table 6) and fiduciary/legal status (Table 7) classifications corroborate this point.

Earlier, in Table 6, we find that the independent institutions based on Ferreira and Matos's (2008) classification increase the probability of payout cuts. The independent institution category contains institutions such as investment advisors and research firms (e.g. BlackRock Institutional

Table 5. Payout decisions and institutional investor ownership – estimation after entropy balancing

	Inst_Investors	Active_Inst_Investors	Passive_Inst_Investors
IO	**0.646****	**0.630***	**0.062**
	(0.042)	(0.068)	(0.850)
Lev	−0.307	−0.490	−3.315***
	(0.751)	(0.659)	(0.000)
Cash	−2.293	−2.997	−0.969
	(0.194)	(0.110)	(0.604)
ROA	0.003	−0.006	−0.012
	(0.916)	(0.876)	(0.726)
CF_Vol	−0.367	0.349	−1.395
	(0.789)	(0.819)	(0.208)
Size	0.007	−0.195	0.025
	(0.971)	(0.424)	(0.892)
BoardSize	−0.031	0.066	0.337
	(0.936)	(0.883)	(0.391)
Ind_Dir	0.367	0.829**	0.545
	(0.295)	(0.032)	(0.135)
Compensation	−0.430	−0.572	−0.680
	(0.346)	(0.270)	(0.117)
Gender_Ratio	−1.027***	−0.975**	−1.136***
	(0.006)	(0.019)	(0.003)
Constant	4.015	6.917*	6.563**
	(0.190)	(0.051)	(0.031)
Industry	Yes	Yes	Yes
N	330	330	330
Log-likelihood	−175.98	−167.40	−162.45

This table reports the average treatment effect on the treated group estimated using balancing weights generated with the entropy balancing approach. We use entropy balancing to generate balancing weights and the average effect of the treatment on the treated (ATT) estimand, where treated observations are firms with institutional ownership (all, active or passive) in the top 30% of the sample. The balancing weights are used in logit regressions for the relations between payout decisions and institutional investor ownership, controlling for firm characteristics. The dependent variable is Payout_Cut, an indicator variable that equals 1 when the firm announced dividend or share repurchase suspension, deferral or reduction, and 0 otherwise. IO represents one of the measures of institutional ownership treatment: Inst_Investors, Active_Inst_Investors or Passive_Inst_Investors. Firm, board characteristics and industry are used as covariates for balancing and for the logit regression estimation. All variables are defined in Table 2. Industry dummy variables based on one-digit SIC codes are included but coefficients are not reported. p-Values are given in parentheses.
*p < 0.1; **p < 0.05; ***p < 0.01.

Trust Company). This group, however, does not include institutions such as hedge funds (e.g. Rock Creek Group LP), sovereign wealth funds (e.g. Norges Bank Investment Management), private equity (e.g. Capricorn Capital Partners) and venture capital firms (e.g. Scottish Equity Partners LLP). Moreover, grey investors include pension funds (e.g. West Yorkshire Pension Fund) and insurance companies (e.g. the National Farmers' Union Mutual Insurance Society Ltd), among others. Thus, even though our results in Table 6 suggest that independent institutions increase the probability of payout cuts while grey institutions reduce it, it is important to examine in more detail which types of institutions are significant in determining payout decisions during the Covid-19 pandemic.

Table 8 looks at the classification based on the fiduciary and legal status of institutions (see also Bushee, 2001). This is arguably the most interesting analysis in this section as we have seven different categories of institutional investors. Our results suggest that high ownership by investment advisors results in a cut in shareholders' payouts during the pandemic. This is consistent with the literature, which suggests that investment advisors engage with managers to determine the strategic direction of investee firms. Their presence, therefore, seems to reduce payouts in order to conserve cash to deal with the uncertainty generated by the Covid-19 pandemic (H2). Pension funds, in contrast, are usually more interested in regular income through dividends. Our empirical evidence is consistent with this. Indeed, it is an important

Table 6. Payout decisions, institutional investors' monitoring role and foreign versus domestic status – estimation after entropy balancing

	Monitoring role		Foreign versus domestic	
	Independent_Inst	Grey_Inst	Domestic_Inst	Foreign_Inst
IO	**0.973*** **	**−0.467**	**0.515**	**−0.033**
	(0.008)	(0.109)	(0.152)	(0.916)
Lev	0.539	0.052	0.547	−1.589*
	(0.625)	(0.953)	(0.654)	(0.071)
Cash	−0.615	−1.997	−2.587	−0.258
	(0.744)	(0.195)	(0.180)	(0.879)
ROA	−0.029	0.011	−0.006	−0.014
	(0.395)	(0.710)	(0.877)	(0.651)
CF_Vol	0.105	−2.032*	−0.716	−1.455
	(0.946)	(0.057)	(0.626)	(0.169)
Size	−0.319	−0.018	−0.326	0.004
	(0.164)	(0.920)	(0.263)	(0.982)
BoardSize	0.485	0.206	0.547	0.342
	(0.273)	(0.578)	(0.208)	(0.375)
Ind_Dir	0.418	0.563*	0.871**	0.173
	(0.294)	(0.067)	(0.032)	(0.585)
Compensation	−0.355	−0.641	−0.557	−0.547
	(0.507)	(0.112)	(0.282)	(0.177)
Gender_Ratio	−0.923**	−0.819***	−0.930**	−0.996***
	(0.028)	(0.008)	(0.033)	(0.005)
Constant	6.093*	6.038*	9.014**	6.130**
	(0.091)	(0.059)	(0.016)	(0.027)
Industry	Yes	Yes	Yes	Yes
N	330	330	330	330
Log-likelihood	−174.45	−189.27	−183.50	−185.23

This table reports the average treatment effect on the treated group estimated using balancing weights generated with the entropy balancing approach. We use entropy balancing to generate balancing weights and the average effect of the treatment on the treated (ATT) estimand, where treated observations are firms with institutional ownership (all, active or passive) in the top 30% of the sample. The balancing weights are used in logit regressions for the relations between payout decisions and institutional investor ownership, controlling for firm characteristics. The dependent variable is Payout_Cut, an indicator variable that equals 1 when the firm announced dividend or share repurchase suspension, deferral or reduction, and 0 otherwise. IO represents one of the measures of institutional ownership treatment: Independent_Inst, Grey_Inst or Domestic_Inst and Foreign_Inst. Firm, board characteristics and industry are used as covariates for balancing and for the logit regression estimation. All variables are defined in Table 2. Industry dummy variables based on one-digit SIC codes are included but coefficients are not reported. p-Values are given in parentheses.
$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

finding that the presence of pension funds reduces the probability of payout cuts even when a severe exogenous shock (i.e. the Covid-19 pandemic) has exacerbated uncertainty for all economies. The signs of all coefficients in this table are as predicted in Table 1. However, the coefficients for sovereign wealth funds, private equity, insurance companies and venture capital are not statistically significant at conventional levels. As sovereign wealth funds may deliberately act as passive investors in order to avoid political backlash, the pandemic may offer them a further opportunity to demonstrate a lack of desire to impact on organizations.[6] Overall, our results are consistent with these claims in the sense that firms with high ownership by investment advisors seem to cut payouts during the Covid-19 pandemic, while those with high ownership by pension funds are less likely to cut shareholders' payouts. These findings are consistent with H2 and H3 and our expected results in Table 1.

Changes in dividends using difference-in-differences

To assess the robustness of our analysis on firms' decisions to cut shareholders' payouts

[6]As with any general principle, there are important exceptions, most notably the Norwegian SWF remains proactive in seeking to impose ethical principles on target firms, despite being publically criticized by the previous US administration for doing so (cf. Cumming *et al*., 2017)

Table 7. Payout decisions and institutional investors' investment horizon – estimation after entropy balancing

	Horizon		
	Low_Turnover_Inst	Moderate_Turnover_Inst	High_Turnover_Inst
IO	**0.324**	**−0.200**	**−0.184**
	(0.315)	(0.530)	(0.566)
Lev	−0.701	−0.485	−1.112
	(0.464)	(0.654)	(0.256)
Cash	−1.159	−2.297	−4.344***
	(0.518)	(0.193)	(0.009)
ROA	−0.028	0.002	0.000
	(0.381)	(0.964)	(1.000)
CF_Vol	0.831	−0.018	−2.281**
	(0.526)	(0.991)	(0.048)
Size	−0.032	0.109	−0.067
	(0.858)	(0.589)	(0.758)
BoardSize	0.205	0.005	0.179
	(0.586)	(0.989)	(0.645)
Ind_Dir	0.134	0.725**	0.276
	(0.708)	(0.034)	(0.404)
Compensation	−0.466	−0.909*	−0.279
	(0.296)	(0.051)	(0.544)
Gender_Ratio	−1.147***	−0.945**	−0.812**
	(0.003)	(0.013)	(0.013)
Constant	5.228*	6.258*	5.674*
	(0.079)	(0.072)	(0.068)
Industry	Yes	Yes	Yes
N	330	330	330
Log-likelihood	−174.72	−170.28	−176.05

This table reports the average treatment effect on the treated group estimated using balancing weights generated with the entropy balancing approach. We use entropy balancing to generate balancing weights and the average effect of the treatment on the treated (ATT) estimand, where treated observations are firms with institutional ownership (all, active or passive) in the top 30% of the sample. The balancing weights are used in logit regressions for the relations between payout decisions and institutional investor ownership, controlling for firm characteristics. The dependent variable is Payout_Cut, an indicator variable that equals 1 when the firm announced dividend or share repurchase suspension, deferral or reduction, and 0 otherwise. IO represents one of the measures of institutional ownership treatment: Low_Turnover_Inst, Moderate_Turnover_Inst or High_Turnover_Inst. Firm, board characteristics and industry are used as covariates for balancing and for the logit regression estimation. All variables are defined in Table 2. Industry dummy variables based on one-digit SIC codes are included but coefficients are not reported. p-Values are given in parentheses.
$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

based on our announcement data, we also utilize the difference-in-differences (DiD) approach in which we compare changes in cash dividends (Div_Change) paid during the two periods: the pre-Covid change (from 2018 to 2019) compared with the during-Covid change (from 2019 to 2020) for firms with high and low institutional ownership. However, it is important to note that our main analysis based on hand-collected data is more reliable than the DiD analysis using cash dividend data.

For example, Spectris plc paid a cash dividend of 0.651p in 2020, 0.624p in 2019 and 0.580p in 2018. Based on this data, it would appear that Spectris increased its dividend during the Covid-19 pandemic. However, our hand-collected data reveals that after the March 2020 lockdown, Spectris's board withdrew the special dividend and postponed the final dividend for the year due to the uncertainty generated by the pandemic (detailed announcement available in Appendix 2). Appendix 2 also provides an example of a withdrawal of share buyback by Pearson plc, which our hand-collected data takes into account while the cash dividend data does not.

The above data challenges notwithstanding, results for the DiD analysis for different institutional investors are reasonably consistent with those obtained using the hand-collected data from firms' announcements. Specifically, the DiD results show

Table 8. Payout decisions and institutional investors' fiduciary standard/legal forms – estimation after entropy balancing

	Fiduciary/legal forms						
	Invest_Advisors	Hedge_Funds	Pension	Banks	SWF	Insurance	PE/VC
IO	**0.880****	**−0.015**	**−0.570***	**−0.296**	**−0.417**	**−0.172**	**−0.111**
	(0.016)	(0.962)	(0.065)	(0.367)	(0.247)	(0.638)	(0.851)
Lev	0.549	−0.235	−1.905*	−0.939	−2.440**	0.140	1.693
	(0.620)	(0.811)	(0.091)	(0.332)	(0.026)	(0.880)	(0.357)
Cash	−0.932	−1.375	−1.538	−2.246	−2.983	−1.950	0.584
	(0.614)	(0.375)	(0.436)	(0.147)	(0.169)	(0.274)	(0.826)
ROA	−0.017	−0.001	0.013	−0.014	0.019	0.032	−0.022
	(0.615)	(0.965)	(0.712)	(0.614)	(0.583)	(0.327)	(0.616)
CF_Vol	0.254	−1.672	−2.653**	−0.865	−3.643***	−2.087*	−0.494
	(0.868)	(0.165)	(0.025)	(0.448)	(0.003)	(0.074)	(0.854)
Size	−0.320	−0.042	0.107	0.017	−0.010	−0.016	−0.611*
	(0.171)	(0.828)	(0.629)	(0.927)	(0.965)	(0.934)	(0.079)
BoardSize	0.396	0.137	0.323	−0.048	0.414	0.056	−1.034
	(0.367)	(0.727)	(0.428)	(0.901)	(0.366)	(0.888)	(0.113)
Ind_Dir	0.589	0.492	0.279	0.518	0.449	0.566*	1.445**
	(0.139)	(0.158)	(0.459)	(0.108)	(0.301)	(0.096)	(0.022)
Compensation	−0.347	−0.455	−0.803*	−0.503	−0.155	−0.639	−1.182*
	(0.508)	(0.308)	(0.096)	(0.230)	(0.786)	(0.145)	(0.057)
Gender_Ratio	−0.880**	−0.935**	−0.612	−0.894***	−0.880**	−0.718*	−2.526***
	(0.033)	(0.012)	(0.116)	(0.006)	(0.045)	(0.051)	(0.003)
Constant	6.542*	5.566*	4.809	4.662	5.166	6.519**	16.990***
	(0.060)	(0.077)	(0.122)	(0.107)	(0.160)	(0.047)	(0.003)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	330	330	330	330	330	330	330
Log-likelihood	−176.50	−184.00	−168.72	−186.64	−152.68	−162.71	−156.21

This table reports the average treatment effect on the treated group estimated using balancing weights generated with the entropy balancing approach. We use entropy balancing to generate balancing weights and the average effect of the treatment on the treated (ATT) estimand, where treated observations are firms with institutional ownership (all, active or passive) in the top 30% of the sample. The balancing weights are used in logit regressions for the relations between payout decisions and institutional investor ownership, controlling for firm characteristics. The dependent variable is Payout_Cut, an indicator variable that equals 1 when the firm announced dividend or share repurchase suspension, deferral or reduction, and 0 otherwise. IO represents one of the measures of institutional ownership treatment based on fiduciary/legal status. Firm, board characteristics and industry are used as covariates for balancing and for the logit regression estimation. All variables are defined in Table 2. Industry dummy variables based on one-digit SIC codes are included but coefficients are not reported. p-Values are given in parentheses.
$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

that the presence of high ownership by institutions, especially those with long-term investment horizon, results in a negative change in dividends during the Covid-19 pandemic compared to the pre-Covid period. Our results and regression specifications for the DiD estimation are reported in Appendix 5.

Exit or voice?

As noted earlier, the literature suggests that institutions may influence firms through voice or exit (see Edmans, 2009; Franks, 2020). However, there is no consensus so far as to which institutions influence corporate policies through their voice channel or simply exit by selling their equity, putting a downward pressure on the stock price. A key hurdle in this area is the lack of detailed data on institutions' engagement activities with their investee firms (see Becht, Franks and Wagner, 2019). In our model, we assume that institutions engage with firms to influence payout decisions. The Covid-19 pandemic and firms' decisions to suspend or maintain shareholders' payouts provides a unique opportunity to examine the distinction between voice and exit by institutional investors; active funds may use both, whilst, by their very nature, passive funds rely on exit (Franks, 2020). Our key premise, based on earlier empirical evidence, is that institutional investors care about dividends. Due to the

Table 9. Difference-in-differences estimates of change in institutional ownership following payout cut decisions

	Inst_Investors	Active_Inst_Investors	Passive_Inst_Investors
$Covid_t \times Payout\_Cut_i$	−0.002	−0.003	0.003
	(0.887)	(0.814)	(0.731)
Lev	0.076	0.068	0.011
	(0.306)	(0.308)	(0.776)
Cash	0.018	0.017	0.001
	(0.904)	(0.899)	(0.985)
ROA	0.005**	0.004***	0.000
	(0.017)	(0.006)	(0.921)
CF_Vol	−0.072	−0.081	0.018
	(0.538)	(0.456)	(0.745)
Size	0.032	0.036	−0.005
	(0.526)	(0.429)	(0.792)
BoardSize	−0.022	−0.017	−0.007
	(0.230)	(0.300)	(0.414)
Ind_Dir	−0.016	−0.014	−0.003
	(0.336)	(0.373)	(0.721)
Compensation	0.036	0.040*	−0.002
	(0.170)	(0.072)	(0.867)
Gender_Ratio	−0.008	−0.009	−0.002
	(0.683)	(0.606)	(0.884)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	660	660	660
R^2	0.047	0.06	0.004

This table reports panel data fixed effects estimates for the relations between decision to reduce shareholder payout and change in institutional investor ownership, controlling for firm characteristics. The dependent variable is the change in institutional ownership compared to the previous year. Firm, board characteristics and institutional investor ownership are defined in Table 2. Covid is an indicator that takes a value of 1 if it is the year 2020, and 0 otherwise. All specifications include firm and year fixed effects. p-Values are given in parentheses.
*p < 0.1; **p < 0.05; ***p < 0.01.

uncertainty created by the pandemic, institutional investors may be impelled to more actively engage with firms, and to better understand whether dividend cuts are in order. In this more frequent 'voice' scenario, a cut in payouts is less likely to lead to exit by institutions as they have already made their views known, which is likely to have informed such decisions.

Alternatively, if institutional investors remain passive, and do not directly engage with firms during the pandemic, then it is likely that they do not fully understand why their investee firms have decided to cut shareholders' payouts. Consequently, we expect that if the exit strategy predominates, then institutional investors are likely to reduce their ownership in response to cuts in shareholders' payouts in response to the Covid-19 pandemic. Overall, institutions' decisions to reduce their equity in the firm depends on whether the voice or the exit channel predominates. To examine whether voice dominates exit during the Covid-19 pandemic, we utilize the DiD approach by estimating the following panel data regression model:

$$\Delta IO_{i,t} = \alpha + \beta\,(\mathrm{Covid_t} \times \mathrm{Payout\_Cut_i}) + \sum_{p=1}^{P} \delta_p X_{itp} + \eta_i + \psi_t + \varepsilon_{it} \qquad (6)$$

where $\Delta IO_{i,t}$ denotes the change in institutional ownership in firm i in year t compared to year t – 1; $\mathrm{Payout\_Cut_i}$ is an indicator variable that is equal to 1 for firms that cut shareholders' payout due to Covid-19, and 0 otherwise; $\mathrm{Covid_t}$ is an indicator variable that equals 1 for the year 2020, and 0 for the year 2019; X_{itp} denotes firm-specific controls; η_i denotes firm fixed effects and ψ_t time fixed effects. Pre-Covid changes in institutional ownership are measured between 1 December 2018 and 1 December 2019, while during-Covid changes in

Table 10. Difference-in-differences estimates of payout decisions on firm, board characteristics and institutional investor ownership

	Monitoring role		Foreign versus domestic	
Panel A:	Independent	Grey	Domestic	Foreign
Covid$_t$ × Payout_Cut$_i$	−0.001	−0.003	−0.010	0.011
	(0.971)	(0.343)	(0.387)	(0.402)
Control	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	660	660	660	660
R^2	0.065	0.041	0.039	0.035

	Horizon		
Panel B:	Low	Moderate	High
Covid$_t$ × Payout_Cut$_i$	−0.029	0.027	0.008
	(0.269)	(0.117)	(0.294)
Control	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	660	660	660
R^2	0.013	0.033	0.042

	Fiduciary standard/legal forms			
Panel C:	Invest_Advisors	Hedge funds	Pension	Banks
Covid$_t$ × Payout_Cut$_i$	−0.001	−0.001	0.001	−0.004
	(0.965)	(0.693)	(0.426)	(0.245)
Control	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	660	660	660	660
R^2	0.065	0.023	0.022	0.048

	Fiduciary standard/legal forms (cont.)		
Panel D:	SWF	Insurance	PE/VC
Covid$_t$ × Payout_Cut$_i$	0.002	−0.001	0.000
	(0.229)	(0.585)	(0.924)
Control	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	660	660	660
R^2	0.016	0.007	0.035

This table reports panel data fixed effects estimates for the relations between the decision to reduce shareholder payout and change in institutional investor ownership, controlling for firm characteristics. The dependent variable is the change in institutional ownership compared to the previous year. Firm, board characteristics and institutional investor ownership are defined in Table 2. Covid is an indicator that takes a value of 1 if it is the year 2020, and 0 otherwise. All specifications include firm and year fixed effects. p-Values are given in parentheses.
$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

ownership are measured between 1 December 2019 and 1 December 2020.

Results from the above DiD analysis are provided in Tables 9 and 10. There is no evidence to suggest that a cut in payouts during the Covid-19 period leads to a significant reduction in institutional ownership for any category of institutions. This implies that the voice channel seems to overshadow the exit option as institutions do not reduce their equity ownership, despite reduced

payouts. This is consistent with the limited evidence on institution exit during Covid-19 (see e.g. Uddin and Chowdhury, 2021 on private equity exit strategies). However, it is important to note that, given the global nature of the pandemic, short-term institutional investors, whose main monitoring channel is exit, may not immediately exit after a firm's decision to reduce payouts. This may either be due to illiquidity or increased uncertainty in the financial markets. Consequently, our DiD results should be interpreted with caution and future research may revisit institutions' exit following payout decisions when more comprehensive data on institutional investors' trading is available.

Conclusion

A reduction in shareholders' payouts (dividends and buybacks) is relatively rare in the UK. However, as our hand-collected data shows, an immediate response of many firms in the UK to the Covid-19 pandemic was to cut shareholders' payouts to conserve cash. We examine the role of institutional investors, who own a large portion of equity in firms and are expected to act as stewards, in determining firms' decisions to cut payouts. Evidence from the past major systemic shock (i.e. the 2008 financial crisis) was rather more mixed, when, *inter alia*, dividend payouts were made to signal financial robustness and corporate governance changes. When compared to the 2008 crisis, the focus of possible state bailouts has shifted from banks to corporations. This corresponds to a much broader extension of the role of governments as economic agents, which may have had informal regulatory effects.

With their broad constituencies, institutional investors may be sensitive to societal pressures, and hence to general sentiments of proximate risk. In other words, not only will managers be inclined to caution, but they will also be under pressure from institutions to signal this to their investors, and perhaps to the government. Given the severity of the Covid-19 crisis, this caution is also consistent with the updated (2020) UK stewardship code that lays emphasis on safeguarding the long-term value of investments (Reddy, 2021). However, our analysis shows that institutions who have historically been shown to be more passive (e.g. pension funds) seem to resist cuts in payouts, even during the pandemic. This may be because they are less engaged in onward dialogue with firms, and hence are less sensitive to organizational challenges. This evidence may undermine their importance as effective stewards who guide managers to deal with uncertainty generated by exogenous shocks.

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