Dividend Policy and the COVID-19 Crisis

Mazur, Mieszko and Dang, Man and Vo, Thuy Anh Thi

October 2020

Dividend Policy and the COVID-19 Crisis

Mieszko Mazur, IESEG School of Management
Man Dang, Da Nang University of Economics
Thi Thuy Anh Vo, Da Nang University of Economics

This version: October, 2020

Abstract

This paper examines dividend payment behavior of the S&P1500 firms during the COVID-19 crisis characterized by the stock market crash and a V-shaped stock price recovery propelled by technology stocks. We find that the great majority of firms either maintain or increase the level of dividend payment during the crisis period. Yet, the relationship between the dividend payout and bottom-line earnings available to common shareholders is significantly negative. This relationship holds even for dividend-increasing firms whose earnings streams should be relatively higher (or increasing) compared to other firms in the sample. We also find that forecast earnings of up to one year in the future are negatively associated with the current dividend level implying that the existing payout policies are unsustainable. Interestingly, we document similar patterns for stock repurchases.

1 Introduction

In March 2020, the worldwide pandemic of COVID-19 led all major industrialized countries to the shut-down of the bulk of their economic activity. Manufacturing and service firms were closed, air traffic was suspended, and populations were locked down (stipulating a penalty for breach). As a consequence, the economies suffered a significant decline in the total output, on the one hand, and the substantial decline in consumption on the other. The resulting revenue shock led to stock market crashes, dramatic real GDP contractions, and rising unemployment. In Q2 2020 US GDP fell by 9.5% and its unemployment rate rose to over 20%.[1]

In this paper, we examine corporate dividend policy during the COVID-19 crisis. Although the US stock market has seen a V-shaped recovery, the rebound in valuations is largely attributable to technology stocks, while most other sectors lag behind their pre-COVID-19 market capitalizations.[2] With this fact in mind, we study the dividend behavior of US firms in response to the economywide negative shock induced by COVID-19 and its heterogenous impact on the bottom-line earnings. More specifically, we address two basic questions: does the dividend policy under the COVID-19 crisis can be explained by the prudent management behavior (e.g., Lintner, 1956; DeAngelo, DeAngelo, Skinner, 2004; Ham, Kaplan, and Leary, 2020), or alternatively, is the dividend policy predominantly driven by the agency problems of corporate insiders and their career concerns (e.g., Fudenberg and Tirole, 1995; Acharia, Le, and Shin, 2017; Wu, 2018).

We establish several empirical facts related to the corporate dividend payment decisions in times of crisis, when the unexpected exogenous event of COVID-19 adversely affected most of the economy all at once. First, we show that dividend paying firms significantly underperform non-dividend paying firms during several months of the stock price recovery following the March 2020 stock market crash (Figure 1). Second, we find that the great majority of US listed firms (over 80%) either maintain or increase the level of dividend

[1] https://faculty.fuqua.duke.edu/ charvey/Audio/COVID/COVID-Harvey.html

[2] https://www.wsj.com/articles/nasdaq-composite-erases-coronavirus-losses-to-seize-new-record-11591695001

payment despite the painful economic downturn. Moreover, the incidence of dividend cuts during COVID-19 is similar to the one that occurs in the normal (non-crisis) periods (see e.g., Li and Lie, 2006). Further, we find that firms that tend to experience low or negative realized earnings during the COVID-19 crisis, maintain highest dividend payouts. This effect remains robust with respect to various estimation techniques and is statistically significant at the 1% level throughout all tests. Next, we examine the same relation for the subset of the dividend-increasing firms and find an essentially identical pattern – *poorest earners are highest dividend payers*. In a related set of tests, we show that dividend-increasing firms with the least favorable expected earnings up to one year in the future, pay largest dividends, suggesting that under COVID-19 high realized dividends forecast low future earnings. Next, when we look into the identity of our sample firms, it is particularly striking that firms from industries hit hardest by the COVID-19 crisis (e.g., oil and gas) increase dividends despite a dramatic losses in their earnings and market capitalizations. Finally, we conduct a complementary analysis of share repurchases given their importance for the payout policy (Grullon and Michaely, 2002; Massa, Rehman, and Vermaelen 2007). Here again, we find that firms with lowest earnings spend more heavily on repurchases. The same is also true for share repurchases by dividend-increasing firms. Taken together our results seem to be consistent with the agency-based theories of corporate behavior in which senior managers are extremely reluctant to cut dividends in response to the earnings decline with the aim of diminishing their own employment risk (Lambrecht and Myers, 2012; Wu, 2018). Our findings suggest that the observed dividend levels are not sustainable and that S$P1500 firms are likely to significantly limit dividend payouts in the near future to match their existing earnings potential.

Our paper contributes to the literature in several ways. First, our study adds to the existing research on dividend policy in times of crisis, which focuses mostly on the recent financial turmoil of 2007-2009 (e.g., Abreu and Gulamhussen, 2013; Floyd, Li, and Skinner, 2015; Acharia, Le, and Shin, 2017). We complement this literature by showing that during the COVID-19 crisis troubled firms with low realized earnings pay largest dividends and that the propensity to cut dividends is as low as in normal (non-crisis) times. This involves

firms from all sectors of the economy including financials. Moreover, the level of dividend payout is negatively related to the expected future earnings, indicating that SP1500 firms are highly likely to be forced to cut dividends in the near future and therefore the current level of dividends is largely unsustainable. Is is worth noting that Lehman Brothers and Merrill Lynch increased their dividends despite mounting losses at the beginning of the 2007-2009 credit crunch (Acharia et al., 2017). Second, our research complements the existing literature on repurchases (e.g., Grullon and Michaely, 2002; Almeida, Fos, and Kronlund, 2016; Floyd, Li, and Skinner, 2015) by showing that during COVID-19 crisis firms that spend most on repurchases report lowest current earnings and are expected to have lowest earnings in the future. Third, we add to a broad strand of research on corporate dividend behavior (e.g., Grennan, 2019; Cohen, Gómez-Puig, and Sosvilla-Rivero 2019; Qiao, Chen, and Hung, 2018; Ma and Wohar, 2014; DeAngelo, DeAngelo, and Skinner, 2004; Brav, Harvey, and Michaely, 2005). Finally, we extend a nascent literature on the effect of COVID-19 on publicly listed corporations (e.g., Fahlenbrach, Rageth, and Stulz, 2020; Agca, Birge, Wang, and Wu, 2020) in an attempt to shed additional light on dividend policy decision, one of the most puzzling phenomenon in corporate finance. To our knowledge this is the first paper to study dividends and share repurchases of S&P1500 firms during the COVID-19 crisis period characterized by the March 2020 stock market crash and the V-shaped heterogenous recovery of firms' market capitalizations. The reminder of the paper is organized as follows. Section 2 briefly reviews the relevant literature. Section 3 describes the data and sample. Section 4 presents the empirical evidence and Section 5 concludes.

2 Literature review

In his seminal paper, Lintner (1956) demonstrates that the magnitude of the bottom-line net earnings is the primary determinant of the amount of the dividend paid out to shareholders and that the managers shape the dividend policy based on the net earnings flow. To be more specific, in the presence of a substantial increase in earnings, managers acting in the best interest of shareholders should raise dividends. If the reverse is true and a firm experi-

ences a significant decline in earnings, the same prudent management should cut dividends. These dividend adaptation processes should be understandable for outside groups such as shareholders and the financial community in general. To this end, the management should be sufficiently informative and persuasive.

A large strand of literature draws on the work of Lintner (1956) and the empirical predictions it yields. For example, DeAngelo, DeAngelo, and Skinner (2004) find that dividend-paying firms that produce stronger earnings also raise the amount of dividend payouts. Moreover, they observe that US industrial firms that generate the majority of earnings also pay the majority of dividends. Similarly, Grullon and Michaely (2002) show that dividend-paying firms are much more profitable than firms that do not pay dividends. Equally important, DeAngelo, DeAngelo, and Skinner (1992) demonstrate that losses are critical determinants of dividend reductions and omissions. In a related more recent study, DeAngelo et al. (2004) find a strong relationship between losses and the failure to pay dividends. Nearly all the firms that reported losses in the year 2000 failed to pay dividend that year.

Taken together, the above evidence suggests that bottom-line earnings drive dividend payouts and that the prudent management adjusts dividends to the level of earnings. Based on this postulate, we hypothesize that during the COVID-19 crisis, due to the heterogenous impact of the revenue shock induced by COVID-19, firms should adjust their dividend payouts to the realized earnings, especially because the pandemic imposed a heavy toll on bottom-line earnigns. Following existing literature, a variation of this hypothesis assumes that the management should make relevant adjustments in the existing dividend policy given their prediction of future earnings (Benartzi, Michaely, and Thaler, 1997; Ham et al., 2020). The two hypotheses conjecture that we should see a positive relationship between reported earnings and the dividend payout, as well as a positive relationship between current dividend payout and future earnings.

A second, well-established strand of literature indicates that the management has a personal interest in being not sufficiently responsive to the changing earnings vis-à-vis changes in dividend policy. For example, Fudenberg and Tirole (1995) and Wu (2018) develop

models of a dividend decision in which a self-interested management who faces unemployment risk chooses to keep dividends intact even though the earnings change markedly. Such low propensity to change dividends insulates the management from the risk of removal. Wu (2018) shows that, when the dividend is cut or eliminated due to disappointing earnings, the risk of manager turnover goes up by approximately one-third. Because management in order to preserve job security is reluctant to cut dividends when earnings decline, shareholders' wealth diminishes. Figure 1 seems to provide *prima facie* indirect evidence of the above behavior. It shows that dividend-paying firms in S&P1500 significantly underperform non-dividend payers since March 23, 2020, when the market crash brought down the index to its lowest point.

Existing empirical literature finds some evidence in support of low responsiveness of dividend payments to the realized earnings due to self-interest of the management as discussed above. Most of this literature, however, focuses on the latest financial crisis of 2007-2009. For example, Acharya, Le, and Shin (2013) and Hirtle (2014) show that banks continued to pay dividends even though they kept reporting losses. Among them were Lehman Brothers and Merrill Lynch that later on had to discontinue their operations. Our work builds on this line of research and hypothesizes that due to managements' general reluctance to change the dividend amount in reaction to deteriorating earnings during COVID-19 crisis, we should not observe any relationship (neither positive nor negative) between reported earnings and firms' dividend payouts.

3 Data, sample, and descriptive statistics

3.1 Data and sampling

The data for this study are drawn from several sources. Information on dividend distributions, ex-dividend dates, and daily stock returns come from Thomson Reuters (TR) Eikon. Accounting data are obtained from Compustat Fundamentals Quarterly file, and fiscal-year earnings forecasts are collected from the Institutional Brokers Estimate System (I/B/E/S)

database accessible through TR Eikon. The data were downloaded on August 1, 2020. The time span for most of the analysis in the paper is from Q4 2019 through Q2 2020.

The initial sample consists of all 1,506 S&P1500 constituents as of August 1, 2020. Out of these, 1,026 stocks (68%) pay cash dividend at least once in 2019. This includes dividends paid either monthly, quarterly, semi-annually, annually, or with unspecified frequency. We exclude special dividends. The vast majority of dividend-paying firms – about 94% – declare a quarterly dividend. In our main analysis, we use stocks that pay quarterly dividends both in 2019 and 2020 for which Compustat Fundamentals Quarterly data are available. Therefore, if the firm suspends dividend payment in 2019 or begins paying dividend only in 2020, it is omitted from the sample.

3.2 Descriptive statistics

Table 1 reports descriptive statistics on the change in dividend policy induced by COVID-19 crisis, together with dividend characteristics as well as accounting measures of the dividend-paying firms. Surprisingly, despite heavy downward pressure on cash-flows due to the negative revenue shock in the first two quarters of 2020, only 63 firms in our sample (or 7%) cut dividends. This compares with 56 firms that cut dividends in normal (non-crisis) times, on average (Li and Lie, 2006). Moreover, the average dividend increase (reduction) is 16% (57%) which is similar to 19% (49%) of the dividend increase (reduction) documented in Ham, Kaplan, and Leary (2000) for the 1971-2016 sample period with several boom and bust cycles. Further, only 12% of our sample firms suspend dividends meaning that they declare a dividend until Q1 2020 but stop dividend payment in Q2 2020 for an indefinite period. On the other hand, 30% of the firms in our sample experience dividend increase which is significantly higher than 16% reported in Ham et al. (2020) for US listed firms in normal times.

4 Results

4.1 Univariate analysis

Figure 1 plots the dividend yield together with the evolution of the SP1500 between January and July 2020. March 23 – shown in the middle of the figure – marks the bottom of the COVID-19 stock market crash. The stock index on July 31, 2020 is almost exactly at the same level as on January 2, 2020 representing a V-shaped recovery in stock market valuations (on average). Somewhat in contrast to this, the level of the dividend yield is much higher in July 2020 as compared to January 2020 (by about 0.1 or 14%). A plausible interpretation of this basic pattern would be that, in aggregate, dividend-paying firms do not recover fully from the March 2020 stock market crash and do not review their dividend policy adequately in response to the COVID-19 crisis and the deteriorating earnings.[3]

This conjecture appears in line with Figure 2, which displays stock market performance of dividend versus non-dividend paying firms. While both groups perform at par during the first quarter of 2020, dividend-paying firms significantly underperform non-dividend paying firms during the stock market run-up beginning on March 23, plausibly due to significantly weaker fundamentals of dividend payers reflected in poorer stock returns. This decoupling grows stronger over time and becomes quite substantial in July 2020.

4.2 Multivariate analysis

In this section, we investigate the relation between dividend policy and bottom-line net income available to shareholders during the COVID-19 crisis for dividend paying as well as dividend-increasing firms. We also examine to what extent current dividend policy conveys information about future earnings. Finally, in a complementary analysis, we focus on share repurchases, which in recent years have become an integral part of firms' cash payout policies and a substitute to dividends (Grullon and Michaely, 2002).

[3]https://www.wsj.com/articles/why-did-stock-markets-rebound-from-covid-in-record-time-here-are-five-reasons-11600182704

4.2.1 Dividend paying firms

We begin by examining the relationship between dividend yield and earnings available to common shareholders. Despite the fact that most of the variation in dividend yield can be explained by variability of the firm's share price (Larain and Yogo, 2008), the change in the amount of dividend is ultimately determined by the senior management (Johnson and Tian, 2000). If desired, firms can instantaneously alter their dividend policies and thus influence the level of the dividend yield. In our sample, roughly 50% of companies change the amount of the dividend paid during the first two quarters of 2020, reflecting dramatic changes in the economic environment triggered by the COVID-19 crisis (Table 1).

The dependent variable in the first set of regressions displayed in Table 2 is the logarithm of the dividend yield. We follow Compustat and define dividend yield as the gross dividend per share on the ex-date divided by company's close price on the same day, measured at the quarterly frequency. The key explanatory variable for all models is earnings per share (EPS) including extraordinary items and calculated on a fully diluted basis. We choose this variable because as documented in seminal work by Lintner (1956) net earnings are the most important single factor determining existing dividend policy. The set of controls includes firm size proxied by the logarithm of the book value of total assets, cash holdings computed as the sum of cash and cash equivalents to the book value of total assets, investment opportunities measured by market-to-book ratio, and the rate of investment defined as capital expenditures scaled by the book value of total assets. All variables are quarterly. The estimation period if from Q4 2019 to Q2 2020. Our analysis spans three consecutive quarters with a COVID-19 revenue shock occurring at the beginning of March 2020.

As seen in Table 1, the coefficient estimate on EPS is negative and statistically significant at the 1% level implying that firms with lowest EPS have highest dividend yields. The results are qualitatively similar using pooled OLS with quarter and industry fixed effects (Column 1), or alternatively, the panel data approach with quarter and firm fixed effects (Column 2). Moreover, the results are robust to the inclusion of additional variables controlling for firm size, magnitude of cash holdings, investment opportunities, and capital

expenditures (Columns 3-4), and remain virtually the same irrespective of the estimation technique. DeAngelo et al. (2004), and Skinner (2008) find that on the condition that the firm already pays the dividend, the amount of the dividend is higher for firms with higher earnings. Our regressions seem to produce the opposite result. Firms with highest earnings tend to have lowest dividend yields.

Despite the fact that the extant literature documents high correlation between dividend and the dividend yield (Bali and Hite, 1998), one may question the use of the dividend yield in the above analysis as it may appear somewhat noisy. Everything else being equal, firms with highest EPS may have highest market valuations and thus low dividend yields. We therefore implement a cleaner test of the relation between earnings and dividends and run set of regressions where the dependent variable is the dividend payout ratio (*Dividend payout*) defined as the product of the ordinary cash dividend and the number of shares outstanding divided by net income. This policy measure seems more adequate than the dividend yield, as it better captures the part of the net income available to common shareholders paid out periodically in the form of the dividend. The regression set-up is otherwise identical to the one displayed in Table 2. We follow Massa, Rehman, and Vermaelen (2007) and consider firms with positive payouts only. The estimates are shown in Table 3.

As can be seen, the results are very similar to those obtained in Table 2 for the dividend yield. Here again, we find that the relationship between EPS and dividend payout is negative and highly statistically significant. This relation implies that, ceteris paribus, firms with low realized EPS pay out high quarterly dividends measured as the fraction of earnings available to common shareholders.

4.2.2 Stock repurchases during the COVID-19 crisis

Existing research suggests that repurchases and dividends are substitutes (see e.g., Grullon and Michaely, 2002; Skinner, 2008). Firms can manage cash distribution to shareholders through dividend payments, repurchases, or a combination of both. To provide clearer and fuller picture of the cash payout policies during COVID-19 crisis, we investigate the relation between earnings available to shareholders and stock repurchases. We define repurchases

as the product of the total shares repurchased and the average per share repurchase price divided by the net income (all quarterly). The relative volume of repurchases in Q4 2019-Q2 2020 is quite high and equal to twice the amount of net income (Table 1, Panel C). In Q2 2020 the ratio of repurchases to net income drops to barely 7% (untabulated) but remains positive. Note that the percentage is much lower than the 23% dividend payout in the same period (Table 1, Panel B).

Table 4 presents the regression results. We adopt the same specification as in Tables 2-3. Similar to the dividend regression models, we consistently find a negative association between EPS and repurchases implying that firms which experience lower net earnings pay out higher portion of net earnings in the form of stock repurchases. The coefficient estimate on EPS is statistically significant at the 1% level in all specifications (Columns 1-4).

4.2.3 Firms increasing dividends during the COVID-19 crisis

Our next step is to analyze firms that choose to increase dividends during the COVID-19 crisis. 30% of all dividend payers in our sample increased the amount of dividend to common shareholders in the first two quarters of 2020 during which time the economy was hit by the catastrophic revenue shock. Clearly, it appears that dividend-increasing firms are financially healthy with strong fundamentals and relatively high (and increasing) realized and expected earnings. For example, Wu (2018) and Ham et al. (2020) provide evidence suggesting that firms that increase dividends have strong current earnings and anticipate a persistent earnings increase.

It is apparent from the Figure 3 that dividend-increasing firms in Q2 2020 perform significantly more poorly compared to Q4 2019. EPS in Q4 2019 is approximately 236% higher than in Q2 2020, whereas the amount of dividend per share is 10% lower in Q4 2019. Moreover, capital expenditures in Q4 2019 are almost three times as large as those reported for Q2 2020. Somewhat surprisingly, during the COVID-19 crisis, cash holdings of the dividend-increasing firms rise marginally (from 8.99% to 10.35%). Altogether, the univariate evidence suggests that the dividend-increasing firms in 2020 have significantly lower earnings, invest substantially less, but, pay higher dividends than in 2019.

Contrary to our expectations and the predictions of prior research, EPS has a negative coefficient, which indicates that dividend-increasing firms with lower actual earnings per share tend to pay higher dividends (Table 5). Prior literature suggests the opposite, namely that firms with higher earnings should pay higher dividends (DeAngelo et al., 2004). The coefficient estimate from both models (Column 1-2) is significantly different from zero at the conventional level. We find the same effect for both dependent variables of interest: the dividend yield and the dividend payout ratio. Bottom-line is that, somewhat surprisingly, the results for the dividend-increasing firms remain effectively the same as for all other firms in the sample.

4.2.4 Predicting future earnings with changes in dividend policy

In this section, we investigate whether higher dividends offered to shareholders by the dividend-increasing firms during COVID-19 crisis contain any additional information about future earnings prospects of these firms. In a recent study, Ham et al. (2020) find that dividends include highly persistent information about the future level of earnings. We test this conjecture using analyst earnings forecast data for up to one year into the future. If the increase in dividends convey information about the expected level of future earnings, then we should see a positive correlation between the current dividend payout and earnings forecast.

We run the regression model of EPS forecast on the dividend payout ratio and a set of controls (Table 6, Panel A). The dependent variables are, respectively, consensus analyst forecasts three-quarters and four-quarters ahead (Columns 1-2). In all models, coefficient estimates on the dividend payout variable are negative and statistically significant at the 1% level. The estimates indicate that during COVID-19 crisis higher dividend payout (relative to net income) conveys negative information about future earnings. More specifically, companies that pay higher dividends during the COVID-19 crisis are expected to have lower earnings in the future.

In the following analysis (Table 6, Panel B), we study predictive content of share repurchases by examining whether repurchase decisions in the current period convey infor-

mation about firms' future earnings. We expect that firms with favorable earnings prospects have higher level of repurchases and therefore higher payouts. To test this prediction, we regress EPS forecast on share repurchases and a set of firm-specific control variables. EPS forecast is defined as the analyst consensus forecast of earnings per share for the Q1 2021 and Q2 2021, which is the equivalent to, respectively, three and four quarters ahead of Q2 2020. We find a negative relation between future expected earnings and the current amount of share repurchases. The result indicates that firms that decide to pay out more cash in the form of repurchases are expected to exhibit lower earnings in the future. These findings are slightly weaker than those for dividend payouts exhibited in Table 6 Panel A, however, qualitatively they remain the same.

4.2.5 Identity of underperforming dividend-increasing firms during the COVID-19 crisis

Table 7 presents a short selection of dividend-increasing firms characterized by a dramatic decrease in the net income and the market capitalization of equity between Q4 2019 and Q2 2020. These firms are among a broader set of S&P1500 stocks, who despite a series of bad performance chose to pay significantly higher dividends. Among notable examples are firms that belong to the oil and gas industry like EOG Resources that increased its dividend by 30% despite mounting losses and 40% plunge in its stock market value. Others include Marathon Petroleum, One Gas, or Pioneer Natural Resources (Table 7).

5 Conclusion

This paper reports evidence on the dividend behavior of the SP1500 firms during the recent COVID-19 crisis characterized by the stock market crash of March 2020 and a relatively rapid V-shaped stock price recovery (on average). Despite the fact that S&P1500 now exceeds the pre-COVID-19 level, the rebound in equity values exhibits large heterogeneity across firms, and has been driven mainly by a handful of large technology stocks. Generally, the negative shock induced by COVID-19 still lingers on the vast majority of sectors.

We show that the large fraction of firms in our sample (over 80%) either keep or increase the dividend amount despite a sequence of bad earnings reports and the significant deterioration of equity values. Firms are reluctant to cut dividends and the incidence of dividend reductions (7%) is similar to the one reported during non-crisis times. On the other hand, the incidence of dividend increases (30%) is significantly higher than in normal times. Interestingly, dividend-payers significantly underperform non-dividend payers during the stock price recovery period beginning in March 2020. In a multivariate setting, we find that poorest earners have highest dividend payouts. Equally important, we find that the current dividend correlates negatively with expected future earnings, implying that S&P1500 firms that anticipate low level of future earnings pay highest dividends. This result reflects low propensity of managers to adjust the dividend level to the realized earnings as well as future earnings potential. Finally, we find the same patterns for share repurchases. Overall, our evidence seems to be consistent with the agency framework of corporate behavior in which managers guided by their own career concerns are reluctant to adjust dividend payouts to the level of deteriorating earnings caused by the COVID-19 crisis.

References

Adams, R.B. and Ferreira, D., 2007. A theory of friendly boards. *Journal of Finance, 62(1),* pp.217-250.

Abreu, J.F. and Gulamhussen, M.A., 2013. Dividend payouts: Evidence from US bank holding companies in the context of the financial crisis. *Journal of Corporate Finance, 22,* pp.54-65.

Acharya, V.V., Le, H.T. and Shin, H.S., 2017. Bank capital and dividend externalities. *Review of Financial Studies, 30(3),* pp.988-1018.

Agca, Senay and Birge, John R. and Wang, Zi'ang and Wu, Jing, 2020. The Impact of COVID-19 on Supply Chain Credit Risk.
Available at SSRN: https://ssrn.com/abstract=3639735

Almeida, H., Fos, V. and Kronlund, M., 2016. The real effects of share repurchases. *Journal of Financial Economics, 119(1),* pp.168-185.

Bali, R. and Hite, G.L., 1998. Ex dividend day stock price behavior: discreteness or tax-induced clienteles? *Journal of Financial Economics, 47(2),* pp.127-159.

Benartzi, Shlomo, Roni Michaely, and Richard Thaler., 1997 "Do changes in dividends signal the future or the past?." *Journal of Finance 52(3),*pp.1007-1034.

Brav, A., Graham, J.R., Harvey, C.R. and Michaely, R., 2005. Payout policy in the 21st century. *Journal of Financial Economics, 77(3),* pp.483-527.

Cohen, L., Gómez-Puig, M. and Sosvilla-Rivero, S., 2019. Has the ECB's monetary policy prompted companies to invest, or pay dividends? *Applied Economics, 51(45),* pp.4920-4938.

DeAngelo, H., DeAngelo, L. and Skinner, D.J., 2004. Are dividends disappearing? Dividend concentration and the consolidation of earnings. *Journal of Financial Economics, 72(3),* pp.425-456.

DeAngelo, H., DeAngelo, L. and Skinner, D.J., 1992. Dividends and losses. *Journal of Finance, 47(5),* pp.1837-1863.

Fahlenbrach, Rüdiger and Rageth, Kevin and Stulz, Rene M., 2020. How Valuable is Financial Flexibility When Revenue Stops? Evidence from the COVID-19 Crisis. *Available at SSRN: https://ssrn.com/abstract=3586540*

Floyd, E., Li, N. and Skinner, D.J., 2015. Payout policy through the financial crisis: The growth of repurchases and the resilience of dividends. *Journal of Financial Economics, 118(2),* pp.299-316.

Fudenberg, D. and Tirole, J., 1995. A theory of income and dividend smoothing based on

incumbency rents. *Journal of Political Economy, 103(1),* pp.75-93.

Grennan, J., 2019. Dividend payments as a response to peer influence. *Journal of Financial Economics, 131(3),* pp.549-570.

Grullon, G. and Michaely, R., 2002. Dividends, share repurchases, and the substitution hypothesis. *Journal of Finance, 57(4),* pp.1649-1684.

Ham, C.G., Kaplan, Z.R. and Leary, M.T., 2020. Do dividends convey information about future earnings? *Journal of Financial Economics, 136(2),* pp.547-570.

Hirtle, B., 2014. Bank holding company dividends and repurchases during the financial crisis. *FRB of New York Staff Report 666.*

Johnson, S.A. and Tian, Y.S., 2000. The value and incentive effects of nontraditional executive stock option plans. *Journal of Financial Economics, 57(1),* pp.3-34.

Lambrecht, B.M. and Myers, S.C., 2012. A Lintner model of payout and managerial rents. *Journal of Finance, 67(5),* pp.1761-1810.

Larrain, B. and Yogo, M., 2008. Does firm value move too much to be justified by subsequent changes in cash flow? *Journal of Financial Economics, 87(1),* pp.200-226.

Li, W. and Lie, E., 2006. Dividend changes and catering incentives. *Journal of Financial Economics, 80(2),* pp.293-308.

Lintner, J., 1956. Distribution of incomes of corporations among dividends, retained earnings, and taxes. *American Economic Review, 46(2),* pp.97-113.

Ma, J., and Mark E. W., 2014. Expected returns and expected dividend growth: Time to rethink an established empirical literature. *Applied Economics 46(21)* 2462-2476.

Massa, M., Rehman, Z. and Vermaelen, T., 2007. Mimicking repurchases. *Journal of Financial Economics, 84(3),* pp.624-666.

Qiao, Z., Chen, K.Y. and Hung, S., 2018. Professionals inside the board room: accounting expertise of directors and dividend policy. *Applied Economics, 50(56),* pp.6100-6111.

Skinner, D.J., 2008. The evolving relation between earnings, dividends, and stock repurchases. *Journal of Financial Economics, 87(3),* pp.582-609.

Wu, Y., 2018. What's behind smooth dividends? Evidence from structural estimation. *Review of Financial Studies, 31(10),* pp.3979-4016.

Figure 1: **Dividend yield of S&P1500 firms during the COVID-19 crisis**
Solid V-shaped line depicts the evolution of S&P1500 between 2 January 2020 and 31 July 2020, and the broken line plots the dividend yield of the dividend-paying stocks in S&P1500, whose payout frequency is quarterly. The level of the S&P1500 is set to 100 on January 2, 2020. Dividend yield is estimated daily on a rolling basis using the amount of the last quarterly dividend and multiplied by 100. Firms that suspend dividend payment in Q2 2020 are excluded from calculation beyond Q2 2020. The data are derived from Thomson Reuters Eikon.

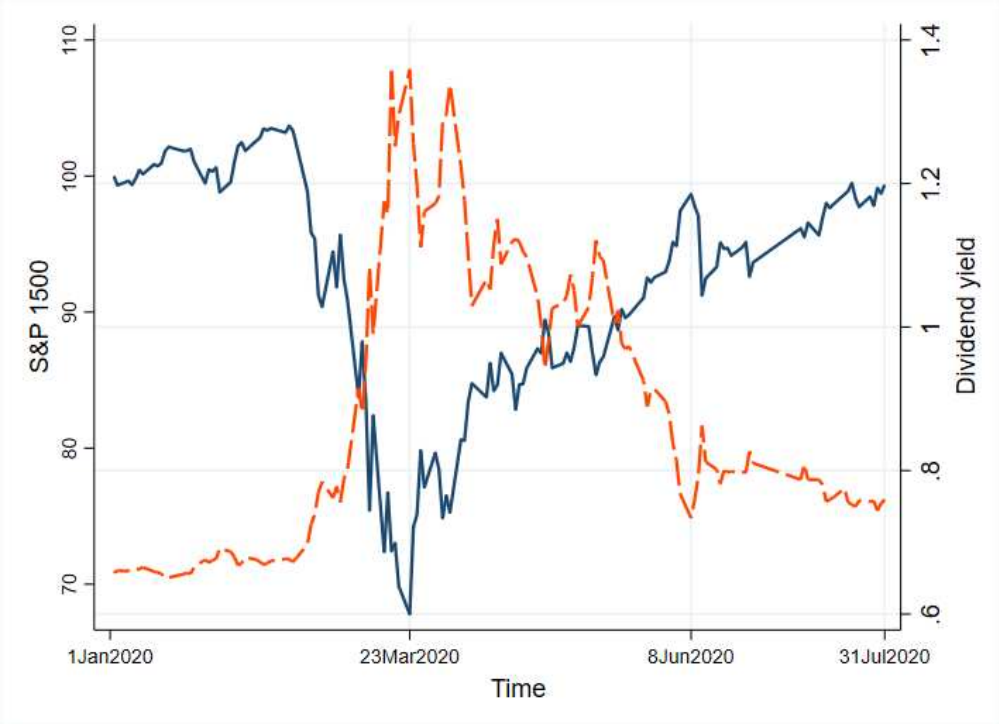

Figure 2: **Stock market performance of dividend- versus non-dividend paying firms in S&P1500**
The plot depicts stock market performance of dividend- and non-dividend paying firms between 2 January 2020 and 31 July 2020 using equal-weighted daily returns. The values for 2 January 2020 are set to 100. Dividend-paying firms pay common cash dividend on a quarterly cycle at least in one quarter both in 2019 and 2020. The data are derived from Thomson Reuters Eikon.

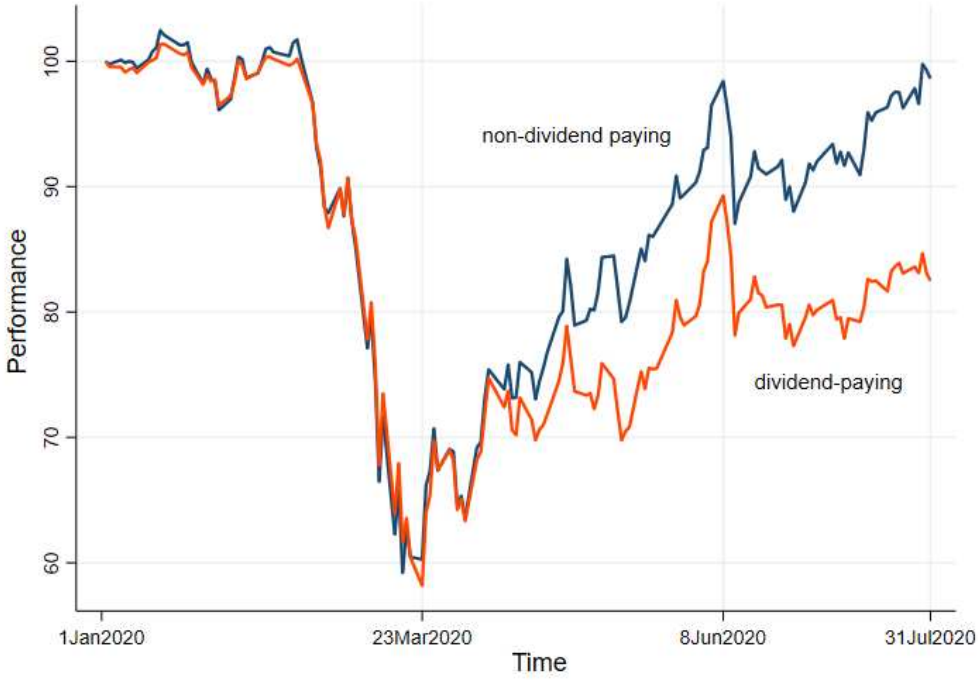

Figure 3: **Dividend-increasing firms during the COVID-19 crisis**
Bars in the graph represent earnings per share (*EPS*), dividend per share (*DPS*), capital expenditures (*Capex*), and cash holdings (*Cash holdings*) for dividend-increasing firms in the sample. 30% of dividend-paying firms increase the amount of the dividend during the COVID-19 crisis. Dividend increase is defined as the positive change in the amount of the ordinary quarterly cash dividend per share between Q4 2019 and the quarter of 2020 in which the dividend was actually raised. *Capex* and *Cash holdings* are both scaled by the book value of total assets. To ensure comparability between variables, the values of *Capex* are multiplied by 10. Data are quarterly observations derived from Compustat Fundamentals Quarterly file.

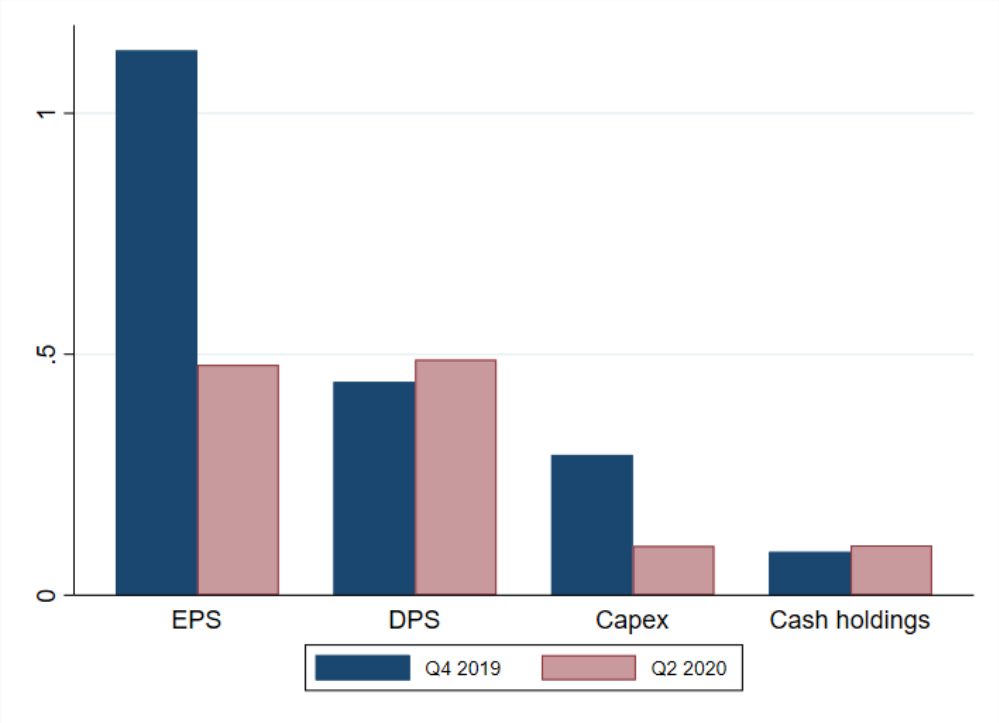

Table 1
Dividend payment behavior of S&P1500 firms during the COVID-19 crisis
Panel A presents dividend payment behavior of the S&P1500 firms in Q1–Q2 2020 compared to Q4 2019. The first half of the 2020 is marked by the stock market crash induced by the COVID-19 pandemic and a subsequent V-shaped stock price recovery (on average). A firm is classified as dividend-paying, if it declares an ordinary cash dividend at least once in 2019. Q4(Q2) denotes the last (second) available quarter in which the company pays the quarterly dividend in a given year until the end of the sample period. Special dividends are not taken into account. In Panel B *Dividend yield* is the ordinary cash dividend divided by the ex-day close price of companys stock, and *Dividend payout* is the ordinary cash dividend times number of common shares outstanding divided by the net income. In Panel C the time span of the sample is from Q4 2019 through Q2 2020. The number of firm level observations is identical as in the most saturated specification shown in Table 2. The data are derived from Thomson Reuters Eikon and Compustat Fundamentals Quarterly file.

Panel A: Dividend-paying firms

Firm category	Obs.
Dividend-paying firms in 2019	1,026 (68%)
Firms paying quarterly dividends both in 2019 and 2020	969 (94%)
Firms with unchanged dividend amount between Q4 2019 and Q2 2020	493 (51%)
Firms increasing dividend amount between Q4 2019 and Q2 2020	296 (30%)
Firms cutting dividend between Q4 2019 and Q2 2020	63 (7%)
Firms suspending dividend in Q2 2020	117 (12%)

Panel B: Dividend characteristics in Q2 2020

Variable	10th Perc	Mean	Median	SD	90th Perc	Obs.
Dividend amount ($)	0.085	0.400	0.300	0.376	0.850	852
Dividend yield $\times$ 100	0.202	0.809	0.679	0.789	1.518	852
Dividend payout	−0.365	0.225	0.359	6.505	1.482	852
Dividend increase (%)	2.50	16.01	7.31	58.82	20.00	296
Dividend cut (%)	−94.66	−57.41	−50.00	24.25	−29.88	63

Panel C: Firm characteristics

Variable	10th Perc	Mean	Median	SD	90th Perc	Obs.
EPS	−0.530	0.501	0.520	2.146	1.870	2,769
Firm size ($bn)	1.282	41.792	7.961	180.841	69.305	2,769
Cash holdings	0.011	0.098	0.062	0.108	0.225	2,769
Market-to-Book	0.250	1.523	1.108	1.585	2.988	2,769
Capex	0.000	0.016	0.008	0.024	0.043	2,769
Repurchases	0.003	2.043	0.365	23.542	1.901	1,352

Table 2
Regression analysis of dividend yield during the COVID-19 crisis
The table presents regression results for dividend yield on EPS and a set of controls. Specifications (1) and (3) are pooled OLS regressions with industry and time (quarter) fixed effects. Specifications (2) and (4) use panel data with firm and time (quarter) fixed effects. The analysis uses last quarter of 2019 and the first two quarters of 2020. *Dividend yield* is the ordinary cash dividend divided by the ex-day close price of company's stock. *EPS* is earnings per share including extraordinary items and measured on a fully diluted basis. *Firm size* is the book value of total assets. *Capex* is capital expenditures. *Cash holdings* and *Capex* are both scaled by the book value of total assets. All variables are quarterly. Industry is defined at the two-digit SIC level. Standard errors are clustered at the firm level and p-values are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

	Dependent variable = Log(Dividend yield)			
	(1)	(2)	(3)	(4)
EPS	−0.024***	−0.014***	−0.021***	−0.013***
	(0.001)	(0.001)	(0.001)	(0.001)
Log(Firm size)			0.017***	−0.066
			(0.001)	(0.492)
Cash holdings			0.189**	0.329***
			(0.020)	(0.004)
Market-to-Book			−0.051***	−0.048***
			(0.000)	(0.000)
Capex			−0.685**	−0.687***
			(0.028)	(0.003)
Firm fixed effects	N	Y	N	Y
Quarter fixed effects	Y	Y	Y	Y
Industry fixed effects	Y	N	Y	N
Clustered S.E.	Y	Y	Y	Y
R-squared	0.3469	0.2935	0.3971	0.3105
Obs.	2,785	2,785	2,769	2,769

Table 3
Regression analysis of dividend payout during the COVID-19 crisis
The table presents regression results for dividend payout on EPS and a set of controls. Specifications (1) and (3) are pooled OLS regressions with industry and time (quarter) fixed effects. Specifications (2) and (4) use panel data with firm and time (quarter) fixed effects. The analysis uses last quarter of 2019 and the first two quarters of 2020. *Dividend payout* is the ordinary cash dividend times number of common shares outstanding divided by the net income. *EPS* is earnings per share including extraordinary items and measured on a fully diluted basis. *Firm size* is the book value of total assets. *Capex* is capital expenditures. *Cash holdings* and *Capex* are both scaled by the book value of total assets. All variables are quarterly. Industry is defined at the two-digit SIC level. Standard errors are clustered at the firm level and p-values are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

	Dependent variable = Log(Dividend payout)			
	(1)	(2)	(3)	(4)
EPS	−0.101***	−0.130***	−0.103***	−0.127***
	(0.000)	(0.000)	(0.000)	(0.001)
Log(Firm size)			0.020***	0.008
			(0.006)	(0.962)
Cash holdings			0.006	−0.756**
			(0.952)	(0.046)
Market-to-Book			−0.008	−0.038*
			(0.127)	(0.079)
Capex			−0.085	−0.513
			(0.855)	(0.480)
Firm fixed effects	N	Y	N	Y
Quarter fixed effects	Y	Y	Y	Y
Industry fixed effects	Y	N	Y	N
Clustered S.E.	Y	Y	Y	Y
R-squared	0.2611	0.1148	0.2650	0.1188
Obs.	2,259	2,259	2,247	2,247

Table 4
Regression analysis of stock repurchases during the COVID-19 crisis
The table presents regression results for stock repurchases on EPS and a set of controls. Specifications (1) and (3) are pooled OLS regressions with industry and time (quarter) fixed effects. Specifications (2) and (4) use panel data with firm and time (quarter) fixed effects. The analysis uses last quarter of 2019 and the first two quarters of 2020. *Repurchases* is the product of the total shares repurchased and the average per share repurchase price divided by the net income. *EPS* is earnings per share including extraordinary items and measured on a fully diluted basis. *Firm size* is the book value of total assets. *Capex* is capital expenditures. *Cash holdings* and *Capex* are both scaled by the book value of total assets. All variables are quarterly. Industry is defined at the two-digit SIC level. Standard errors are clustered at the firm level and p-values are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

	Dependent variable = Log(Repurchases)			
	(1)	(2)	(3)	(4)
EPS	−0.064***	−0.097***	−0.066***	−0.089***
	(0.000)	(0.000)	(0.000)	(0.000)
Log(Firm size)			0.004	0.067
			(0.651)	(0.869)
Cash holdings			0.297**	−2.112**
			(0.047)	(0.012)
Market-to-Book			−0.003	−0.065
			(0.732)	(0.338)
Capex			−0.097	0.082
			(0.929)	(0.946)
Firm fixed effects	N	Y	N	Y
Quarter fixed effects	Y	Y	Y	Y
Industry fixed effects	Y	N	Y	N
Clustered S.E.	Y	Y	Y	Y
R-squared	0.1862	0.2163	0.1878	0.2313
Obs.	1,352	1,352	1,347	1,347

Table 5
Dividend-increasing firms during the COVID-19 crisis

The table reports results from regressing dividend yield and dividend payout ratio on EPS and a set of controls for a subsample of dividend-increasing firms. Dividend increase is defined as the increase in the amount of the ordinary quarterly cash dividend between Q4 2019 and the quarter of 2020 in which the dividend was actually raised. Specifications (1)-(2) use panel data with firm and time (quarter) fixed effects. *Div.Yield* is the ordinary cash dividend divided by the ex-day close price of company's stock. *Div.Payout* is the ordinary cash dividend times number of common shares outstanding divided by the net income. *EPS* is earnings per share including extraordinary items and measured on a fully diluted basis. *Firm size* is the book value of total assets. *Capex* is capital expenditures. *Cash holdings* and *Capex* are both scaled by the book value of total assets. All variables are quarterly. Standard errors are clustered at the firm level and p-values are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

Variable	Log(Div.Yield)	Log(Div.Payout)
	(1)	(2)
EPS	−0.007**	−0.057**
	(0.032)	(0.011)
Log(Firm size)	−0.137**	0.057
	(0.027)	(0.900)
Cash holdings	0.167**	−2.264**
	(0.019)	(0.015)
Market-to-Book	−0.058***	−0.116
	(0.000)	(0.209)
Capex	−0.879**	−0.585
	(0.032)	(0.638)
Firm fixed effects	Y	Y
Quarter fixed effects	Y	Y
Clustered S.E.	Y	Y
R-squared	0.4737	0.2240
Obs.	754	1,195

Table 6
Payout policy prediction about future EPS during the COVID-19 crisis
The table reports OLS results from regressing analyst consensus EPS forecast on dividend payout (Panel A) and stock repurchases (Panel B) for a sample of dividend-increasing firms. Dividend increase is defined as the increase in the amount of the ordinary quarterly cash dividend per share between Q4 2019 and the quarter of 2020 in which the dividend was actually raised. *Dividend payout* is the ordinary cash dividend divided by the net income. *Repurchases* is defined as the product of the total shares repurchased and the average per share repurchase price divided by the net income. *Firm size* is the book value of total assets. *Capex* is capital expenditures. *Cash holdings* and *Capex* are both scaled by the book value of total assets. All variables are quarterly. Industry is defined at the one-digit SIC level. Standard errors are clustered at the firm level and p-values are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels respectively.

Panel A: Predicting EPS based on dividend payout

	Dependent variable = EPS forecast	
	Q1 2021	Q2 2021
	(1)	(2)
Log(Dividend payout)	−0.574***	−0.584***
	(0.000)	(0.003)
Size	0.244***	0.260***
	(0.000)	(0.000)
Market-to-Book	0.099***	0.143***
	(0.008)	(0.001)
Capex	10.186**	4.458
	(0.026)	(0.376)
Industry fixed effects	Y	Y
Clustered S.E.	Y	Y
R-squared	0.1785	0.2143
Obs.	178	175

Panel B: Predicting EPS based on stock repurchases

	Dependent variable = EPS forecast	
	Q1 2021	Q2 2021
	(1)	(2)
Log(Repurchase)	−0.655**	−0.62*
	(0.039)	(0.063)
Size	0.249**	0.230**
	(0.011)	(0.023)
Market-to-Book	0.114**	0.158**
	(0.36)	(0.015)
Capex	14.632	5.907
	(0.129)	(0.620)
Industry fixed effects	Y	Y
Clustered S.E.	Y	Y
R-squared	0.1588	0.1571
Obs.	89	88

Table 7
Identity of underperforming dividend-increasing firms during the COVID-19 crisis

The table presents a short selection of dividend-increasing firms with the large negative change in the net income between Q4 2019 and Q2 2020 (unadjusted for seasonality). These data points are not outlying observations. Negative change in the market capitalization of equity (Δ *Market Cap*) demonstrates that investors revise downward market valuations of firms with significant unexpected losses and mediocre future prospects. Data are quarterly observations derived from Compustat Fundamentals Quarterly file.

Firm name	Ticker	Δ Net Income (%)	Δ Market Cap (%)	Δ Dividend (%)
Pacific Premier Bancorp	PPBI	−341	−36	+14
Sysco	SYY	−261	−37	+15
EOG Resources	EOG	−242	−38	+30
Pioneer Natural Resources	PXD	−227	−25	+25
Wyndham Destinations	WYND	−197	−49	+11
KBR	KBR	−167	−8.5	+25
Perspecta	PRSP	−105	−12	+17
Lamb Weston Holdings	LW	−101	−16	+15
Marathon Petroleum	MPC	−98	−49	+9
Universal Display	OLED	−97	−12	+50
Wintrust Financial	WTFC	−75	−39	+12
Jefferies Financial	JEF	−76	−24	+20
Yum Brands	YUM	−58	−27	+12
Reliance Steel & Aluminum	RS	−52	−5	+14
One Gas	OGS	−51	−22	+8