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Politics and Regulation of Share Repurchases: Theory and Evidence

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Abstract

Share repurchases have come under intense scrutiny and criticism from politicians, regulators, media, and academics. First, we examine whether such criticism can be theoretically justified. We also test whether the evidence supports the predictions from the critical view of repurchases. Our results indicate that stock repurchases do not cause firms to become less resilient. Repurchasing firms have adequate cash resources to meet their investment needs than non-repurchasing firms, which holds even after the firms have experienced adverse financial shocks. We document that repurchasing firms do not reduce hiring rates, employee compensation, or employee and environmental commitment. We do not find that repurchases lead to an increase in underfunded pension liabilities. Finally, we do not find that repurchases accompany higher CEO compensation.

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"We, too, are concerned that short-term interests are too often driving stock buybacks. Shareholders, employees, and the American public will benefit when executives have the appropriate incentives to facilitate job growth and long-term investment in their firms. Accordingly, it is time for the public to weigh in on the impact of the buyback phenomenon on ordinary investors, wages, investment, and the overall competitiveness of U.S companies." – From "the letter" dated June 28, 2018, by Senate Democrats to SEC Chairman Jay Clayton.

1. Introduction

On November 19, 2021, the U.S. House of Representatives passed the Build Back Better (BBB) Act, which included a 1% tax on share repurchases. According to government estimates, the 1% tax would raise $124 billion over ten years. The Act failed to pass in the U.S. Senate. After months of delay and negotiations, on August 7, 2022, the BBB Act passed the U.S. Senate as a budget reconciliation bill titled the Inflation Reduction Act (IRA). President Biden signed the bill on August 16, 2022. Supporters of the tax, including the White House[1], argue that the provision will discourage companies from share repurchases and divert cash to the workforce and social and environmentally responsible investments. Lawmakers say that companies favor share repurchases because they help to boost executive compensation at the expense of average employee compensation that has stagnated over the years. The proposed tax could influence corporate decisions and lead to different outcomes. For instance, companies would pay more cash dividends instead of repurchasing shares. The Joint Committee on Taxation assumes that more dividends will force the ultra-wealthy to pay ordinary income taxes on the cash dividends. In contrast, share repurchases would only be taxable at capital gains if realized. Critics[2] contend

[1] https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/16/fact-sheet-how-the-inflation-reduction-act-builds-a-better-future-for-young-americans/

[2] In a New York Times article (Eavis, P. (2021, Nov 19)) Prof. Alex Edmans argues that share repurchases route capital from mature companies to capital-hungry younger firms and that repurchases allow companies to control the

that the tax could reroute the flow of money and reduce the flexibility of companies concerning payouts.

Cash dividend payments represent more of a commitment compared to repurchases. Consequently, companies are very reluctant to cut dividends, effectively forcing companies to distribute dividends regardless of the economic conditions. These debates over the relative merits and demerits of share repurchases reached a crescendo after the passage of the Tax Cuts and Jobs Act (TCJA) of 2017, which reduced corporate income tax rates and the taxes on the repatriation of foreign income. The latter resulted in a "windfall" profits, which lawmakers argue was spent on share repurchases than necessary investment in the workforce, capital expenditures, and research and development. It is important to note that this debate over share repurchases has existed since they became legal.

The Securities and Exchange Commission (SEC) adopted Rule 10b-18 in 1982, which granted "safe harbor" protection to U.S. corporations. The passage of Rule 10b-18 unleashed a dramatic increase in corporate share repurchases that have continued to this day[3]. Growth in share repurchases, however, has not been without controversy. Politicians have been at the forefront of this opposition. As indicated by Lazonick (2015), the earliest instance of political pressure on corporations to divert cash from repurchases to other investments was in 2008 when Senators Charles Schumer, Robert Menendez, Representative Rahm Emmanuel, and Ed Markey wrote to CEOs of ExxonMobil, BP, Royal Dutch Shell, Chevron, and ConocoPhillips[4]. They criticized these companies for collectively spending $194 billion on buybacks from 2004 until

timing of the repurchases, whereas dividends are fixed in advance. This flexibility enables companies to hoard capital during difficult times and spend on repurchases when bountiful profits exist.

[3] Palladino and Lazonick (2021) find that U.S public corporations have spent $6.9 trillion on share repurchases during 2010-2019

[4] A Reuters news article referencing this letter can be accessed from https://cn.reuters.com/article/instant-article/idUKN3135461320080731

the first quarter of 2008. They stated that the $194 billion would have been sufficient to provide $2,000 rebates to every family in the U.S., produce 5 million plug-in hybrid cars, and power 3.5 million solar-powered homes. Further, they went on to criticize these firms for underinvestment in R&D. These criticisms reached a new high in the aftermath of the TCJA 2017 when many senators faulted corporations for spending the savings from the tax cuts on additional repurchases. For example, Senate Democrats released a report in November 2018 claiming that companies authorized $882 billion in share repurchases in 2018[5]. The report accused these companies of laying-off workers when they spent billions on share repurchases. Highlighting several observations, an op-ed piece written by Senators Chuck Schumer and Bernie Sanders in the New York Times in 2019[6] captured many of the criticisms leveled by politicians against share repurchases. First, they state that repurchases make firms less resilient, weaken them in the long term, and reduce workers' productivity as a more significant share of profits is diverted to dividends and repurchases. Second, they claim that repurchases restrain firms from making meaningful investments in R&D and equipment, paying higher wages, paying paid medical leave, paying better retirement benefits, providing better worker training, and making sufficient pension fund contributions.

Joining this chorus against repurchases by politicians were labor unions, think tanks, academics, and the popular press. For instance, Communication Workers of America urged senators to rein in corporate repurchases[7]. They stated that Verizon repurchased $5 billion worth of shares while turning down striking employees, stating that the company could not afford wage increases, improved health care, and job security. Activist hedge fund managers Elliott

[5] https://www.democrats.senate.gov/imo/media/doc/TheTrumpTaxLawAndTrumpEconomicsAreFailingAmericanWorkers.pdf. The report included only those companies that announced at least $5 billion of share repurchases.
[6] This opinion piece can be accessed from https://www.nytimes.com/2019/02/03/opinion/chuck-schumer-bernie-sanders.html
[7] https://cwa-union.org/news/cwa-member-urges-senators-act-rein-in-corporate-stock-buybacks

Management and Paul Singer targeted AT&T and demanded that the company lay off employees and spin off assets. AT&T then consented to spend $30 billion in share repurchases. Popular news outlets, such as the New York Times[8,9], and The Washington Post[10,11]are primarily disposed against share repurchases.

One of the most recent criticisms of share repurchases in the post-TCJA era is that the same companies that diverted billions of dollars to share repurchases were the ones that queued up to seek government aid during the Covid-19 crisis. Criticism against the airline industry was particularly harsh. In September 2020, the U.S. Treasury finalized bailout loans for seven airlines up to a maximum loan concentration of $7.5 billion per airline. The four biggest airlines and Boeing spent $70 billion on share repurchases in the five years preceding the pandemic[12]. In the ten years before the Covid crisis, the four biggest airlines, Alaska Airlines and Jet Blue Airways spent about 90% of their free cash flow on share repurchases[13]. Airlines and other companies that sought relief during the pandemic were heavily criticized. The criticism centered around the thought that instead of spending money on share repurchases, companies could have spent the money on shoring up capital and liquidity, thus making the companies more resilient to shocks than seeking a bailout from the government.

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[8] Phillips, M. (2020, Mar 25). Buyback binge halts, and doesn't look great at the moment.. *New York Times* https://www.nytimes.com/2020/03/24/business/coronavirus-stock-buybacks.html?searchResultPosition=1

[9] Flitter, E., & Eavis, P. (2020, Apr 25). The buybacks that ate restaurants' cash up.. *New York Times.* https://www.nytimes.com/2020/04/24/business/coronavirus-bailouts-buybacks-cash.html?searchResultPosition=1

[10] Putka, G. (2019, Nov 10). Company insiders *are* selling stock during buyback programs and making additional profits when stock prices jump. *The Washington Post*. https://www.washingtonpost.com/business/economy/company-insiders-are-selling-stock-during-buyback-programs-and-making-additional-profits-when-stock-prices-jump-and-its-legal/2019/11/06/fc592f58-e493-11e9-a331-2df12d56a80b_story.html

[11] Pearlstein, S. (2014, May 10). "Corporations can't stop gobbling up their own stock." Washington Post 10 May 2014. Business Insights: Essentials. Web. 29 Jan. 2022. https://www.washingtonpost.com/business/corporations-cant-stop-gobbling-up-their-own-stock/2014/05/09/83c8ddb0-d6e6-11e3-aae8-c2d44bd79778_story.html

[12] https://www.washingtonpost.com/business/2020/04/15/bailout-coronavirus-airlines-boeing-buybacks/

[13] https://www.marketwatch.com/story/airlines-and-boeing-want-a-bailout-but-look-how-much-theyve-spent-on-stock-buybacks-2020-03-18

Given these criticisms, it is of little surprise that, in addition to the recently passed IRA Act, at least four bills have been proposed to curb share repurchases. Prominent among them is the, *Reward Work Act*, originally introduced as Senate Bill 2605 in the Senate by Senators Tammy Baldwin, Elizabeth Warren, and Brian Schatz in March 2018, joined in April 2018 by Kirsten Gillibrand, and in November 2018 by Bernie Sanders. Other acts include the *Stock Buyback Reform and Worker Dividend Act of 2019*, proposed by Senator Sherrod Brown, the Worker Dividend Act, proposed by Senators Cory Booker and Bob Casey. Rep. Joe Kennedy II reintroduced the *Worker Dividend Act* in September 2019. The common theme across all these acts is to curb share repurchases. Some go as far as repealing Rule 10b-18. In contrast, others place significant restrictions such as "working dividends" tied to repurchases, disclosure of share repurchase amounts versus the following – employee wages, layoffs, pension plan contributions, considerations of investments in research and development, worker training programs, hiring, and capital expenditures. The proposed laws also demand certification from the CEO and the board of directors regarding the accuracy of the facts mentioned in the disclosure and affirmation that the share repurchase program is in the company's best interest. These laws also want the SEC to review share repurchase proposals and provide its stamp of approval.

2. Theoretical Perspectives, Empirical Predictions, and Summary of Findings

In this section, we will examine the criticisms against share repurchases using the extant theory of cash dividends and share repurchases. We will argue that there is no theoretical basis for the calls for curtailing share repurchases. Regulation or taxation that forces private firms to deviate from their privately optimal level of share repurchases would lead to an equilibrium in which firms reduce investments. This situation causes firms to underinvest, which may not be

socially optimal. We briefly discuss the underlying corporate finance theory below. After that, we formulate testable predictions that will follow from the critical view of share repurchases that include potential adverse effects of share repurchases on firm resiliency, firm resiliency after a negative financial shock, employee hiring rate, employee compensation, and employee morale and welfare. The critical view also predicts that share repurchases will lead to higher CEO compensation and unfunded pension liabilities. Opposing views on share repurchases have implications for the ESG factors, which increasingly serve as the guiding principle for investing. We subject the above predictions to the scrutiny of careful empirical investigation. Hopefully, our evidence can inform legal or regulatory initiatives such as repealing Rule 10b-18 outright, taxing share repurchases or otherwise curbing or constraining firms' ability to repurchase their stock.

2.1 Theory: Is Penalizing Repurchases Consistent with Private Optimality?

In this subsection, we will briefly discuss the theoretical arguments behind the optimal amount of share repurchases. Firms use cash dividends and share repurchases to distribute cash to their shareholders. Potentially the firm can distribute its free cash flow (cash flows available in the firm that is not committed to debt payments or making the optimal level of investments, say I*). Let us denote the firm's free cash flow as (C - I*). In perfect capital markets, i.e., markets without taxes or frictions, Miller and Modigliani (1961) showed that the dividend/repurchase policy does not affect the wealth of the shareholders or the value of the firm as long as it keeps its investment policy at the optimal level of I*. With a limited amount of non-negative NPV projects requiring an optimal investment of I*, regulatory mandates on firms' payout policy (e.g., limiting repurchases) will force the firm to overinvest (invest above I*). In other words, it is privately optimal for the corporation to distribute to its shareholders the residual amount (C - I*),

and invest the amount I* optimally in the firm. If the tax code treated cash dividends and repurchases similarly, firms will distribute (C - I*) as the total cash dividends and repurchases. Suppose either one form of distribution is discouraged by regulation or by imposing additional taxes. In that case, that is equivalent to forcing the firm to invest more than I*, i.e., overinvest (Invest in negative net-present-value projects. From the perspective of private optimality, such regulation or taxes would lead to a lower value for the firm. In section 2.2, we will examine how restrictions on repurchases would fare from the perspective of social optimality.

Now let us relax the assumptions of perfect capital markets. For example, due to agency costs, and the managerial tendency for empire-building, assuming that free cash flow in the firm would lead to wasteful overinvestment. See Jensen and Meckling (1976) and Jensen (1986). Instead of investing, a firm would want to optimally pay out its free cash flow of (C - I*). In other words, it becomes optimal to pursue a "residual" payout policy in the presence of agency frictions. That is, the optimal total payout is (C - I*). Recall that the split of `the entire distribution to shareholders (as cash dividend versus share repurchase) is a matter of indifference in perfect capital markets without taxes, or when the tax code does not treat either cash dividends or repurchases differentially.

Now let us consider that cash dividends are taxable to the shareholders at ordinary personal income tax (denote it as τ_D), which typically exceeds the capital gains tax rate that effectively applies to the income from share repurchase (denote it as τ_R) . Since τ_D exceeds τ_R, the split of the total payout matters to the shareholders. It is optimal for the firm to use share repurchases as a preferred means to distribute cash to the shareholders. In other words, the firm should use share repurchases as its only method of distribution to shareholders if there are no

additional financial frictions and not use cash dividends. Black (1976) referred to this as "the dividend puzzle."

John and Williams (1985) model asymmetric information between corporate insiders and dispersed shareholders. They show that, in an information equilibrium of the model, the firm may optimally pay out some cash dividends even though τ_D exceeds τ_R . The remainder of the free cash flow (C - I*) would be optimally paid out via share repurchases (Ambarish, John and Williams (1987)).

In our opinion, the regulatory and political view of share repurchases is inconsistent with the private optimality of firm objectives, such as maximizing firm value or equity value. Any regulation that penalizes repurchases would force firms to reduce repurchases, tantamount to forcing firms to pursue suboptimal distribution policies and indirectly forcing firms to pursue suboptimal investment policies. At this point, many critics of repurchases may argue that their criticism of repurchases was based on the benefits that the overinvestment by firms will bring to workers and other stakeholders. We now turn to the social optimality of restricting distributions to shareholders, especially share repurchases.

2.2 Theory: Is Penalizing Share Repurchases Consistent with Social Optimality?

A central criticism against share repurchases is that it benefits the shareholders (including directors and officers) at the expense of workers, stakeholders, and the local economy. At first glance, the argument has merit. Restrictions on repurchases will force the firm to overinvest, which can manifest in hiring more workers than required, paying higher wages than market wages, spending more than regulatory levels on employee safety and satisfaction, and replenishing underfunded pension liabilities. Overinvestment is consistent with social optimality,

which benefits various stakeholders. There are two reasons why this argument is not sound. First, CEOs may choose to spend the free cash flow (the excess amount) on their pet projects instead of the purposes of the social planner. Once the firm overinvests, will it be used to advance the social goals? Will it be used to hire more workers, pay higher than market wages, spend more than regulatory levels on employee safety and satisfaction, and replenish underfunded pension liabilities? Perhaps not. If so, targeted regulation may be more effective than mandates on share repurchases, which may be too blunt a tool to achieve social goals. Secondly, when the CEO chooses the optimal investment for the next year, considering the restrictions and regulations on repurchases, his new optimal budget for next year will be smaller than I*. Since the new regulation on repurchases has reduced the marginal return to the shareholders (or, more generally, to the suppliers of capital), the optimal investment will be lower than I*, which would hurt the workers and stakeholders in the long run. In other words, forcing firms to pursue privately suboptimal policies will lead to long-run effects, less long-run investment, and a lower number of newer firms. That will lead to outcomes that are (privately and socially) suboptimal. Based on the two problems stated above, whether repurchases will lead to the outcomes that the critics have argued or not is an empirical matter.

The long-run investments made by the firm would go down. That is, the long-run investment level higher than I* is unsustainable. Regulation may be more effective than mandates on share repurchases, which may be a blunt tool to achieve social goals. In Section 2.3, we will draw out some direct predictions arising from the negative characterization of share repurchases.

2.3 Empirical Predictions from the Critical View of Share Repurchases

In this section, we formulate some direct predictions arising from the negative characterization of share repurchases. Using theoretical arguments, we showed in the previous section that those negative characterizations of share repurchases are sub-optimal for private firms. Our goal in this section is to formally state testable predictions and to see if the empirical evidence would support these predictions - P1 to P6.

P (1) Share repurchases make firms less resilient.

P (2) Share repurchases are associated with lower employee hiring.

P (3) Share repurchases are associated with lower employee compensation.

P (4) Share repurchases are associated with poor social responsibility – employee-centric and environmentally-centric.

P (5) Share repurchases are associated with lower employee retirement benefits.

P (6) Share repurchases are associated with higher CEO compensation.

2.4 Summary of Findings

Our results, in brief, are as follows - regarding firm resiliency, we find that share repurchases do not compromise firms' liquidity. We find that share repurchasing firms do not experience any cash shortfall relative to non-repurchasing firms even when we consider extreme liquidity shock periods, i.e., sudden severe drop in sales. We also do not find that share repurchases come at the expense of lower hiring or reduced employee expenses. Our tests reveal that repurchasing firms are better stewards of social responsibility. We also do not find that incidence of pension fund underinvestment is higher for repurchasing firms. Finally, our evidence does not reveal CEO compensation over those of non-repurchasing firms. In sum, we

find that widespread criticisms leveled at share repurchases can neither be justified by theoretical arguments nor empirical evidence.

The remainder of the paper is as follows. Section 3 discusses the sample and variable measurement. Section 4 discusses the results, while section 4 performs robustness tests. Finally, section 5 presents our conclusions.

3. Sample and variables

3.1 Data

Our sample consists of all firms in the COMPUSTAT annual database from 1990 through 2019. We obtain a majority of our variables from COMPUSTAT. In addition to COMPUSTAT, we used the KLD database to get social responsibility variables. We used data from Barry Hirsch and David Macpherson's database (see http://unionstats.com) for labor unionization rates by industry. To calculate CEO total compensation and option compensation, we use the EXECUCOMP database. We obtain the CEO-to-median worker compensation ratio for 2019 from the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) website. We restrict our sample to firms without missing assets, sales, CUSIP, number of common shares, and the book value of equity. We dropped financials and utility firms from the sample. We only retain firms with assets greater than $10 million. Our final sample is 141,499 firm-year observations for 14,506 firms. However, the sample size varies depending on the data available to answer each research question.

3.2 Test Variables

In this section, we define the test variables. We provide detailed definitions for the test variables and other variables in Appendix A.

Share Repurchases: Researchers can choose between multiple proxies and their respective databases to estimate share repurchases. Proxies for repurchases include cash spent on share repurchases, decreases in shares outstanding, changes in treasury stock, and actual share repurchases reported in publicly filed 10-K and 10-Q statements. Banyi, Dyl, and Kahle (2008) do a thorough assessment to determine the integrity of each measure and conclude that the COMPUSTAT measure that captures the purchases of common stock is the best estimate of share repurchases. We follow their advice and use the purchases of common stock from COMPUSTAT. We calculate share repurchases as the Purchase of Common and Preferred Stock less Change in Preferred Stock (Banyi, Dyl, and Kahle (2008), Grullon and Michaely (2002)). We express our repurchase variable in discrete and dummy formats: REPURDUM3 is a dummy variable that takes the value of 1 if the firm repurchased in any one year within a three-year rolling period, REPURDUM is a dummy variable that takes the value of 1 if the firm repurchased in the current year, REPUR3 is the defined as the average of the amount spent on share repurchases during three-year rolling window scaled by total assets, REPUR is defined as the amount spent on share repurchases during the current year scaled by total assets.

Cash Surplus: As noted earlier, one of the criticisms of repurchasing firms is that funds diverted to repurchases could have been used to shore up firms' cash reserves to meet unexpected needs, i.e., make them more resilient. Firms are assumed to be resilient if they have sufficient internally generated resources to meet their near-term needs (t+1). We validate this against two scenarios. Our initial test is an unconditional one. The second is a conditional test where we

assess cash resiliency when firms are subject to a sudden cash-flow shock, defined as a sales drop of at least 25% from the preceding year. To test for cash resilience, we estimate what the projected, or pro forma, cash surplus would be next period (t+1) based on realized internal cash flows adjusted for "planned" investment in capital expenditures and net working capital and dividends. Considering planned rather than actual values is crucial since we want to measure what the repurchasing firm's cash surplus would be if planned expenditures occurred. Using actual expenditures, which may have been lower due to unexpected declines in internal cash flow, would give us a false sense of the cash liquidity the firm would have experienced had projected expenditures taken place. We use current period (historical) values to estimate planned estimates for capital expenditures, net working capital, and dividends. In the context of seasoned equity offerings, Huang and Ritter (2021) and DeAngelo, DeAngelo, and Stulz (2010) use a similar measure of projected or pro forma cash surplus. This measure would enable us to see if firms would have sufficient internal resources to meet their needs in the absence of an external capital-raising event. Bliss, Cheng, and Denis (2015) use a similar construct to examine firm cash liquidity during the financial crisis and the flexibility of payout policy.

We use the Huang and Ritter (2021) definition to calculate our projected cash surplus measure. We define it as

$$CASH\ SURPLUS_{i,t} = Cash_{i,t} + Internal\ Cash\ Flows_{i,t} - Investments_{i,t-1} - \Delta Noncash\ Net\ working\ Capital_{t-1} - Cash\ Dividends_{i,t-1} - Reductions\ in\ Long\ Term\ Debt_{t} - Changes\ in\ Current\ Debt_{t} \quad (1)$$

We scale the cash surplus measure by total assets. A firm can meet its cash needs without issuing costly external debt or equity if cash surplus values are higher. Huang and Ritter (2021) find that the cash surplus measure predicts the future debt or equity financing much better than

other motives of capital such as market timing, corporate lifecycle, precautionary, and static trade-off motives.

Hiring: We use the COMPUSTAT employees variable (EMP measured in '000s) to calculate our hiring measure. We calculate the percentage increase in the number of employees HIRING, defined as the change in employment levels scaled by employment levels in the prior year.

Staff Expenses: We use COMPUSTAT to obtain the extended labor expenses (XLR) scaled by total assets.

Social Responsibility: We categorize social responsibility into employee-centric and environmentally-centric dimensions. To estimate our employee-centric dimension, we use four proxies. We obtain these from the KLD database[14], which provides several proxies for corporate social responsibility measures. However, not all are consistently measured over time. Consequently, we use a subset of these proxies. The most populated and relevant dimensions are PROFIT SHARING, EMPLOYEE INVOLVEMENT, OTHER STRENGTHS, AND HEALTH SAFETY STRENGTHS. These dimensions are coded as dummy variables that take values of one if the company is deemed active in those dimensions and zero otherwise. PROFIT SHARING is positive if companies have a profit-sharing program that distributes the cash to a significant portion of their workforce. EMPLOYEE INVOLVEMENT is active if companies encourage employee involvement through generous employee stock option (or stock purchase) plans. OTHER STRENGTHS is designed to capture best-in-class performance in human capital management that other dimensions measured by KLD do not cover. These dimensions include reputable third-party ranking and recognition for excellent workforce management. HEALTH SAFETY STRENGTH dimension identifies companies with robust employee health and safety

[14] Di Giuli and Kostovetsky (2014), Avramov, Cheng, Lioui, and Tarelli (2022) and many more researchers have employed the KLD database in their papers.

programs that include comprehensive health & safety policies, identification and elimination of health & safety risks, health & safety training, and continuous assessment and improvement of health & safety. Further, we use a composite measure EMPNET, calculated as the sum of all employee strength indicators from KLD net of all employee weakness indicators from KLD. To estimate our environmentally-centric measure ENVNET, we calculate the sum of all environmental strength indicators from KLD net of all environmental weakness indicators from KLD. For instance, KLD rates companies' strengths and weaknesses on various factors such as wastewater management, environmental management systems, raw material sourcing, hazardous material handling, and many more. We sum up all the strengths and subtract the weaknesses of these indicators to arrive at the ENVNET variable.

Unfunded Pension Liabilities: We use the COMPUSTAT pension annual files to calculate the unfunded pension liabilities. Following Rauh (2006) and Chen, Yu, and Zhang (2013), we calculate the difference between pension assets and liabilities. To estimate the extent of deficits, we follow Rauh (2006) and Chen, Yu, and Zhang (2013) and calculate the unfunded pension liabilities as the difference between pension assets and liabilities scaled by pension liabilities. A positive value for our calculated unfunded pension liability implies a solvent pension plan.

CEO Total Compensation – We follow Brick, Wald, and Palmon (2006) to estimate the total CEO compensation from EXECUCOMP. The total compensation includes salary, bonus, other annual, the value of restricted stock granted, the value of stock options granted (using Black-Scholes), long-term incentive payouts, and the total of all other compensation.

CEO-Worker Compensation Ratio – Section 953(b) of the Dodd-Frank Act was a shot at the increasing pay inequality and CEO pay inflation. This section required public companies to

disclose CEO-to-median worker compensation. On their website, AFL-CIO provides this data for the year 2019. We collect the information from their website and merge it with our dataset.

3.3 Summary Statistics

Table 1 provides the summary statistics of the test variables and other firm characteristics. All continuous variables are winsorized at the 1% and 99% levels. Using the three-year moving average of the amount spent on repurchases (REPUR3) or the yearly spending on share repurchases (REPUR), we find that firms spend approximately 1% of assets on repurchasing shares. Based on REPURDUM3, roughly half the sample of firms repurchased shares during a three-year rolling period. The repurchase dummy for the current year repurchases (REPURDUM) shows that share repurchases occur in 33% of the firm-years. The average firm in the sample has a cash surplus of 8.17% of total assets, and the twenty-fifth percentile value is a cash deficit of -10.4%, which suggests that most firms in the sample maintain adequate cash surpluses. HIRING averages 11.54%, whereas the median value is only 3.27%. A majority of the firms in the sample increase their workforce and don't lay off employees. We see that at least half of the firms in the sample have unfunded pension liabilities. The average of unfunded pension liabilities is approximately -14.81% of the pension liabilities. Firms spend about 21% of total assets on staff expenses. Firms that score high on profit sharing are only 6% of the available firm-years on the KLD database. About 9% of the firm-years score high on employee involvement, 5% of firm-years score high on human capital development, and 4% of firm-years score high on health and safety strength. On average, the employee-centric composite score shows that firms have more employee strengths than weaknesses. Similarly, the environment-centric composite score indicates that, on average, firms have more environmental strengths than

weaknesses. CEOs receive an average total compensation of $5 million (median $2.87 million). Indicative of income inequality, the average CEO receives approximately 180 times more than the median employee compensation. The average firm size is $2.3 billion (the median is $198 million), with 32% funded by leverage. Firms in the sample spend an average of 5.94% of total assets on capital assets and enjoy strong market-to-book ratios of 2.73. Firms have a mean negative ROA of -0.39%, whereas the median ROA is 5.58%. Stock returns (RET) offer a different picture of the firms in the sample. The average one-year stock return is 12% (the median is 2%). Panel B of table 1 presents the same firm characteristics for firms that did not repurchase (based on REPURDUM3), and panel C of table 1 presents the firm characteristics of firms that did repurchase. In bold font, we present the mean and median values that are statistically different at the 1% level. Firms that repurchase maintain higher cash surplus levels (9.3%) than firms than those who do not (8.09%). Non-repurchasing firms hire more than repurchasing (13.17% versus 7.27%) firms. Both classes of firms maintain similar values of unfunded pension liabilities of around -15%. Repurchasing firms spend more on their workforce (25% of total assets) than non-repurchasing firms that spend only about 18% of their total assets on their workforce based on STAFF EXPENSE. Repurchasing firms have better employee-centric and environmentally-centric scores. CEOs of repurchasing firms are well compensated compared to non-repurchasing firms ($5.2 million versus $3.5 million). The pay disparity among repurchasing firms is higher compared to non-repurchasing firms. CEOs in repurchasing firms receive approximately 200 times more than a median worker's compensation, whereas CEOs in non-repurchasing firms receive approximately 89 times more than the median worker's compensation. Repurchasing firms are bigger, display better profitability, and have similar leverage levels to non-repurchasing firms. Overall, repurchasing firms are better stewards of

their workforce. Repurchasing firms hire more employees, spend more on their workforce, and have better employee wellness scores.

[Insert Table 1 about here]

4. Results

4.1 Cash Surplus

4.1.1 Univariate results

One of the criticisms of share repurchases is that they may reduce the cash surplus levels, which could prove critical during periods of internal or external problems such as recessions, product market developments, and economic lockdowns that reduce demand for goods and services. Figure 1 plots the CASH SURPLUS levels from 1991 to 2019 against share repurchases. Until 2015, CASH SURPLUS and share repurchases follow an inverse trend--CASH SURPLUS levels get depleted when share repurchases peak. For instance, share repurchases peaked in 1998 and 2007 when CASH SURPLUS levels achieved a trough in 1999 and 2009. At the aggregate level, this would appear to support detractors of share repurchases. The inverse trend between cash surplus levels and share repurchase seems broken in the aftermath of the financial crisis.

[Insert figure 1 about here]

Macroeconomic shocks such as the global financial crisis and firm-specific shocks could lead to loss of revenue and depleted CASH SURPLUS of firms with varying degrees. Senators Chuck Schumer and Bernie Sanders claimed in their New York Times op-ed that public corporations have become obsessed with share repurchases that weaken the long-term viability of companies. In their view, such irresponsible firms will continue repurchasing shares and deplete their cash surpluses when facing cash crunches. To test this proposition, we examine share repurchases and cash surplus around periods when firms are likely to experience

significant stress on their liquidity position. Specifically, we look at periods surrounding substantial drops in sales. We define the SALE DROP variable as those firms that experience a 25% decline in sales compared to the previous year. In table 2, we partition the sample by share repurchase quartiles[15] (REPUR3) and examine the cash surplus and share repurchases. Panel A of table 2 presents cash surplus by share repurchase quartiles when firms face a sale decline and otherwise. Overall, we find that firms have 3.4% of their assets as CASH SURPLUS, which grows to 12% in the year following the SALE DROP and stays at 12% in two years after the SALE DROP. Firms that face a sales decline and those that are members of the lowest share repurchase quartile had only 1% of their assets as cash surplus when sales dropped 25%, which supports Senators Schumer's and Sander's contention. However, a deep dive into the data shows that firms shore up their cash surpluses in the years following the SALE DROP. For instance, in the share repurchase quartile 1, the cash surplus increases from 1% to 9.82% and to 10.99%. In share repurchase quartile 4, during the year of the SALE DROP, firms maintain a cash surplus of 11.72% of total assets, which further increases to 20.22% in the following year and 18.23% in two years after the SALE DROP. These numbers show that repurchasing firms that experience sales drop erase any cash shortfalls within the next two years. When examining the years with no SALE DROP, we can see that firms maintain a steady CASH SURPLUS of 8%, which shows that firms don't add to their CASH SURPLUS during the years of no SALE DROP. Repurchasing firms in the fourth quartile that did not experience a SALE DROP had a two-period forward cash surplus of 11.35%. Repurchasing firms in the third quartile with SALE DROP had double the amount of CASH SURPLUS in the two periods forward compared to repurchasing firms in the third quartile that did not experience any SALE DROP (10.97% versus

[15] Quartiles of repurchases are formed in year *t*. The one-year and two-year forward CASHSURPLUS and REPUR3 are anchored to the quartiles calculated in year *t*. Hence, those variables track the behavior of the same firm in year *t*

5.11%). Panel B of table 2 replicates panel A with repurchase amounts (REPUR). This panel underscores that repurchasing firms acted responsibly after any crisis concerning share repurchases. The average amounts spent on share repurchase remained around 0.7% (1.4%) during years of SALE DROP (no SALE DROP). Repurchasing firms in any quartile that experienced a SALE DROP repurchased less than repurchasing firms in any quartile that did not experience a sale drop. For example, repurchasing firms in the fourth quartile that experienced a SALE DROP spent 1.95% of their assets on share repurchases in the forward two-period after a SALE DROP, compared to 3.35% of assets for repurchasing firms that did not experience a SALE DROP.

[Insert Table 2 about here]

4.1.2 Multivariate Regression Results

In this section, we present the results of the multivariate regression. In table 3, we present the cash surplus regressions. We test the following specification:

$$\widehat{CASH\ SURPLUS}_{i,t} = \alpha_{i,t} + \beta_{i,t} Repurchase_{i,t} + \gamma_{i,t} Controls_{i,t} + \alpha_i + \alpha_t + \varepsilon_{i,t} \quad (2)$$

The test variable in model 1 is Repurchase, which captures the repurchasing behavior of the sample firm. We use REPURDUM3, REPURDUM, REPUR3, and REPUR as our proxies for Repurchase. We refer Bates, Kahle, and Stulz (2009), Faulkender, Hankins, and Petersen (2019) and Huang and Ritter (2021) to obtain our control variables. Sources or uses of cash are included in equation (1) used to estimate CASH SURPLUS. Hence, we do not control for any of those variables. In this specification, we control for firm size using the log of ASSETS, firm bankruptcy risk using LEVERAGE, firm growth opportunities using the market-to-book (MKBK), firm profitability ROA, and agency costs using a dummy variable AGENCY that takes the value of one if the free cash flows of the firm are greater than the industry average. We also

include firm and year fixed effects - α_i, α_t. The repurchase variables are all positive and statistically significant at the 1% level in three of the four models, suggesting that repurchasing firms have better cash surpluses. Model 2 indicates that firms that repurchase based on REPURDUM have cash surpluses that are 3% greater than firms that don't repurchase. Model 3 (4) shows that firms that repurchase have cash surpluses that are at least $6 million ($10 million) higher than firms that do not repurchase. Larger, highly levered, and firms with higher growth options maintain lower cash surpluses. Highly profitable firms maintain higher cash surpluses. Overall, table 2 and table 3 suggest that share repurchases do not deplete cash surpluses.

[Insert table 3 about here]

4.1.3 Cash Surplus with Internal Risk

Cash surpluses can be depleted when firms face challenges – internal or external. Recessions, wars, natural calamities, or health-care pandemics subdue business activity can deplete cash reserves. Table 2 presents the univariate analysis of cash surpluses and share repurchases due to sudden revenue loss. We take the next step and proceed to the multivariate regressions in this section. In table 4, we test equation (2), but we present the sub-sample regressions of share repurchases against CASH SURPLUS when not facing any sales drop and experiencing a sales drop by splitting the samples into firm-years with no SALE DROP and firm-years with SALE DROP. Models 1,3,5 and 7 in table 4 present regression results with no SALE DROP, and models 2,4,6 and 8 present regression results with SALE DROP. Interestingly, we find that none of the share repurchase variables are negatively related to cash surpluses. Share repurchases are positively related to cash surpluses, which means that firms that repurchase shares act responsibly. Firms repurchase shares only when their cash surplus levels are higher. We need to highlight some effects of the control variables in these sub-sample

regressions. Firm size is negatively related to cash surpluses only in firm-years with no SALE DROP. In firm-years with SALE DROP, firm size is negatively related to cash surplus but is not statistically significant. Similarly, agency costs are negatively related to cash surpluses only in firm-years with no SALE DROP, and in firm-years with SALE DROP, agency cost is positive but not statistically significant. The results for these control variables suggest that during periods of stress, firms accumulate cash regardless of their size or agency cost standing.

[Insert Table 4 about here]

4.2 Employee Hiring

Employee hiring and retention is a crucial ingredient to a successful firm. On June 28, 2019, twenty-one U.S. senators wrote a letter to the then SEC Chairman Jay Clayton alleging that share repurchases funneled corporate profits to wealthy shareholders instead of benefiting employees and long-term investments that sustain economic growth. If companies funneled profits toward share repurchases, hiring could slow down and induce repurchasing firms to lay off employees. Table 1 shows that the median employee hiring is 3.27% (for the overall sample), 2.36% for repurchasing firms, and 4.17% for non-repurchasing firms. Other determinants for employee hiring are drawn from an IMF working paper by Agarwal and Kolev (2016), who analyze clustering effects for layoffs in the S&P500 firms. They find that firm size, leverage, profitability, and workforce strength influence employee hiring and layoffs. Specifically, we test the following model with firm and year fixed effects (α_i, α_t).

$$HIRING_{i,t+1} = \alpha_{i,t} + \beta_{i,t} Repurchase_{i,t} + \gamma_{i,t} Controls_{i,t} + \alpha_i + \alpha_t + \varepsilon_{i,t} \quad (3)$$

Table 5 presents the results of the regressions. The repurchase dummy variables are negatively related to HIRING in models 2 and 3 but are not statistically significant. In model 4, we find that the current year repurchases are negatively associated with HIRING, which implies that higher

repurchases in the current year can slow down HIRING to 10.02% based on an average of HIRING of 11.54%. Profitability is negatively related to HIRING, which is puzzling given the results in Agarwal and Kolev (2016). Overall, we don't find any evidence to suggest that repurchasing firms reduce the workforce through layoffs.

[Insert Table 5 about here]

4.3 Employee Compensation

Babenko (2009) and, more recently, a working paper by Bonaime, Kahle, Moore, and Nemani (2020) examine the relationship between payout policy and employee compensation defined by stock options and equity grants. *The letter* mentions that share repurchases do not benefit employees. In the previous section, we explored one facet that affects employees: hiring. In this section, we explore another facet that benefits employees: compensation. We don't examine stock options or equity grants, but we are interested in labor and related expense. We scale the labor and related expenses by total assets and regress against known determinants of employee compensation.

$$Employee\ Compensation_{i,t+1} = \alpha_{i,t} + \beta_{i,t} Repurchase_{i,t} + \gamma_{i,t} Controls_{i,t} + \alpha_i + \alpha_t + \varepsilon_{i,t} \quad (4a)$$

$$Employee\ Compensation_{i,t+1} = \alpha_{i,t} + \beta_{i,t} Repurchase_{i,t} + \gamma_{i,t} Controls_{i,t} + \alpha_j + \alpha_t + \varepsilon_{i,t} \quad (4b)$$

We use control variables motivated by Graefe-Anderson, Pyo, and Zhu (2018). Table 6 presents the results of estimating equation (4). Compensation practices are influenced by industry effects as well. Hence, we present models with firm and year fixed effects, and industry and year fixed effects. Models 1, 3, 5, and 7 are regressions with firm and year fixed effects

(α_i, and α_t), whereas models 2, 4, 6, and 8 are regressions with industry and year fixed effects (α_j, and α_t). All models except 1 and 5 repurchases are associated with higher wages. One argument could be that repurchasing firms are larger. However, we have controlled for firm size using LOGSALE. Models 2, 3, and 4 show that repurchasing firms are associated with approximately 5% (or more) higher employee compensation. Model 6 implies that firms that repurchase based on REPUR3 have employee compensation that is at least $27 million higher than firms that don't repurchase. Model 7 (8) implies that firms that repurchase based on REPUR have employee compensation that is higher by $2.6 million ($20.76million) than firms that don't repurchase. The test variables show that share repurchases don't hurt employee compensation. Large firms and firms that do pay dividends have higher compensation. Employees in firms with higher profitability and larger cash balances don't enjoy higher compensation. Profitable companies may be those with higher growth options; hence they may want to keep the lid on employee compensation. As argued in *the letter*, firms with large cash balances may retain reserves for precautionary purposes and not increase employee compensation.

[Insert table 6 here]

4.4 Social Responsibility – Employee Centric

The letter accused repurchasing firms of executive pay inflation and median workforce wage stagnation. In addition to stagnating wages, Senate Democrats claim that many repurchasing companies also laid-off workers. If share repurchasing firms act in the interest of top management and shareholders and not in the interest of employees, then repurchasing firms should be plagued with poor employee morale. Typically administered by the company's human resource department or an external agency, surveys are usually employed to measure employee morale. Such surveys are generally prone to measurement errors, biases, and intimidation. We

used the KLD Database and chose four variables to proxy for employee-centric social responsibility proxies. Our proxies are not perfect. However, given data availability, we believe these variables closely capture employee morale – PROFIT SHARING, EMPLOYEE INVOLVEMENT, OTHER STRENGTHS, and HEALTH SAFETY STRENGHT. We present the logit regression results in table 7. In panel A of table 7, we present the logistic regression with the repurchase dummy variables as test variables, and in panel B, we replicate with repurchase amounts. We test the following specification with time-fixed effects (α_t)

$$SOCIAL\ RESPONSIBILITY_{i,t+1} = \alpha_{i,t} + \beta_{i,t} Repurchase_{i,t} + \gamma_{i,t} Controls_{i,t} + \alpha_t + \varepsilon_{i,t} \quad (5)$$

In panel A, models 1, 2, 3, 5, 6, and 7 show that repurchasing firms are more likely to have better social responsibility. Specifically, we find that repurchasing firms are more likely to have profit-sharing schemes, employee involvement through stock options or stock grants, and better human capital management. In models 4 and 8, we find that repurchasing firms may marginally lack health safety standards. Large firms are also likely to have better employee wellness indicators. Firms with high leverage are likely to score lower on employee wellness indicators. High-growth firms are likely to discourage profit-sharing schemes but are more likely to have stock options or grants. In panel B, we witness similar results to those in panel A. Firms that repurchase shares are more likely to have profit-sharing schemes, employee involvement programs, and better human capital management. The signs of the control variables are similar to panel A.

[Insert Table 7 about here]

As mentioned earlier, our choice of employee-centric variables is not perfect. We calculate a composite measure of employee-centric social responsibility to alleviate any bias.

EMPNET is defined as the sum of all employee-centric strength variables net of all employee-centric weakness variables in KLD. We then use equation (5), repeat the regressions, and present the results in panel C of table 8. We find very encouraging results. All the repurchase proxies are positive and highly significantly related to the composite employee-centric social responsibility variable, which suggests that repurchasing firms score very high on employee wellness.
In panel D, we repeat panel C, but our dependent variable is ENVNET, which is the sum of all environmental strength indicators net of all environmental weakness indicators in KLD. Repurchasing firms score high on environmental responsibility as well. In the next section, we examine the pension contribution of firms with defined benefit pension schemes.

4.5 Pension Unfunded Liabilities

Pension plans are crucial in attracting, retaining, and motivating talented employees. In the U.S., pension plans are classified into two types: defined contribution and defined benefit plans (Asthana (1999)). Defined contribution plans are more popular than defined benefit plans because a formula defines the contribution by employers and the employees bear all the investment risk. The firm is absolved of any valuation declines. In a defined benefit plan, a formula considers years of service, wages, or salary defined benefits. The company that sponsors a defined benefit plan is responsible for any shortfalls. Underfunded defined benefit plans are constantly contentious (Chen, Yu, and Zhang (2013)). *The letter* states that instead of funding corporate pension plans repurchasing firms use the cash to repurchase shares. Defined benefit pension plans enjoy special tax status – pension contributions by companies are tax deductible, and any earnings by pension assets are tax-free. Companies are mandated to make minimum contributions to their pension plans. When the pension plan assets are insufficient to meet their

pension plan obligations, these pension plans have unfunded liabilities. Pension unfunded liabilities heavily influence mergers and acquisition decisions. Target firms that have high pension unfunded liabilities can become unattractive. We calculate the unfunded pension liabilities as in Rauh (2006) and Chen, Yu, and Zhang (2013) –

$$UNFUNDED\ PENSION_{i,t} = \left[\frac{Fair\ Value\ Pension\ Assets_{i,t} - Present\ Value\ of\ Pension\ Obligations_{i,t}}{Present\ Value\ of\ Pension\ Obligations_{i,t}}\right] \quad (6)$$

Our control variables are motivated by Chen, Yu, and Zhang (2013). Besides the usual firm-specific variables, we use MARGINALTAX, and UNIONMEM, defined as marginal tax rates and the industry-specific percentage of union membership. Pension contributions are tax-deductible, and high union membership can induce firms to contribute more to their pension plans and reduce their unfunded pension liabilities. Summary statistics in table 1 show that firms that sponsor defined benefit plans have approximately unfunded pensions of -15%. This number is not any different among repurchasing firms and non-repurchasing firms. In a multivariate framework, we test whether share repurchases exacerbate the unfunded pension liabilities or not. We test the following specification with firm and time-fixed effects (α_i, α_t)

$$UNFUNDED\ PENSION_{i,t+1} = \alpha_{i,t} + \beta_{i,t} Repurchase_{i,t} + \gamma_{i,t} Controls_{i,t} + \alpha_i + \alpha_t + \varepsilon_{i,t} \quad (7)$$

Table 8 presents the results of the regression. All except model 1 show that share repurchases are not negatively related to unfunded pension liabilities. On the contrary, share repurchases are positive and statistically significant in all models except model 1. As we expected high union membership rate is positively associated with unfunded pension liabilities, which shows that union membership nudges firms to maintain higher values of pension funding. Understandably, firms with high financial constraints (as measured by KZ) have lower pension funding.

[Insert Table 8 about here]

4.6 CEO Compensation

Income inequality has drawn a lot of attention in the last two decades. *The letter* argues that share repurchases funneled corporate profits to wealthy investors and corporate executives. The Economic Policy Institute[16] estimates that CEO compensation has grown 940% since 1978, and worker compensation has only increased 12% during the same period. CEO pay seems excessive and is visibly the most egregious contributor to the widening inequality. Do CEOs extract this high compensation due to their superior talent or their power to extract such high compensation packages? Using a sample from 1993 to 2012, Song and Wan (2019) find that powerful CEOs extract more compensation than less powerful CEOs[17]. Powerful CEOs may influence by hand-picking directors and placing them on compensation committees (Shivdasani and Yermack, (1999)), which is likely to grow with longer tenure (Bebchuk, Grinstein, Peyer (2010)). Powerful CEOs can force the board to authorize share repurchases, thereby favorably impacting compensation benchmarks such as earnings-per-share. Thus, U.S senators may have a legitimate criticism that higher share repurchases leading to better compensation benchmarks may increase CEO compensation. We test this proposition that share repurchases can increase CEO compensation. We use the total compensation variable from EXECUCOMP as our proxy for CEO compensation. We rely on Brick, Wald, and Palmon (2006) to identify variables that could influence CEO compensation. In addition to the formal firm-level control variables, we also control for the CEO power characteristics such as CEO age, tenure of the CEO, and whether the CEO is the chairman or not. We also control for board governance using board

[16] https://www.epi.org/publication/ceo-compensation-2018/
[17] Also asserted by Murphy (1985), Core, Holthausen, and Larcker (1999), Morse, Nanda, and Seru (2011)

independence. Specifically, our regression model with firm and time-fixed effects (α_i, α_t)is as follows –

$$CEO\ COMPENSATION\ CHANGE\ _{i,t+1} = \alpha_{i,t} + \beta_{i,t} Repurchase_{i,t} + \gamma_{i,t} Controls_{i,t} + \alpha_i + \alpha_t + \varepsilon_{i,t} \quad (8)$$

Table 9 presents the regression results. In panel A, our dependent variable is the one period forward percent change in CEO compensation. We use the one period forward percent change in CEO compensation because share repurchases may aid in achieving EPS goals, which determines CEO compensation. Models 1 through 3 show that share repurchases are not significant in determining any increases in CEO compensation. In model 4, the level of share repurchases are negatively related to future increases in CEO compensation. Higher stock returns are associated with higher percentage increases, which is not surprising. Older CEOs and CEOs who also serve as Board Chairmen are associated with increased CEO compensation. Large firms, firms with high R&D investments and capital expenditures are associated with decreases in CEO compensation. In panel B, the logarithm of CEO-to-median worker compensation (CEO-WORKER COMP RATIO) replaces the percentage increases in CEO compensation as our dependent variable. Except in model 2, none of the share repurchases variables are statistically significant, which implies that share repurchases are weakly associated with a higher CEO-to-median worker compensation ratio. Large firms and firms with larger investments in R&D are associated with lower CEO-to-median worker compensation ratios. Companies with a larger workforce and highly levered companies are associated with higher pay inequalities. These regressions show that share repurchases may not cause increases in CEO compensation and pay inequality. These results show that the pay inequality criticism leveled against share repurchasing firms does not pass the rigor of empirical tests.

[Insert Table 9 about here]

5. Robustness Checks

This section tests our research questions using a difference-in-difference approach during the TCJA period. We also test the robustness of our results using propensity score matching (PSM) and instrumental variables (IV) regression. We use PSM and IV to address endogeneity caused primarily by simultaneity bias or omitted variable bias.

5.1 The 2017 Tax Cuts and Jobs Act (TCJA)

On March 22, 2018, Senate Democrats released a report claiming that the Tax Cuts and Jobs Act passed in 2017 increased layoffs when $225 billion was spent on share repurchases. The report also lists numerous companies that repurchased shares till-date. Further, on November 30, 2018, Senate Democrats released another special report claiming that TCJA enriched corporations, raised executive pay, increased share repurchases, and laid-off workers. The report mentions many well-known corporations such as GM, Walmart, AT&T, Wells-Fargo, and more that have laid-off workers. We used the TCJA as an exogenous event and a difference-in-difference (D-in-D) framework to re-evaluate our earlier analysis. We used sample years of 2014 – 2016 and 2018-2019. We dropped the year 2017 from our analysis because the TCJA passed in 2017. We created a dummy variable TCJA that takes the value of one for the years 2018 and 2019. Our maximum sample size is 14,246 observations. Table 10 presents the results. Owing to brevity, we present results with REPURDUM3 as the test variable. We tested specifications (2, 3, 4, 7, and 8). Table 10 shows that repurchasing firms were associated with higher cash surpluses and higher employee compensation during the sample period. The post-TCJA period is

associated with higher pension funding and lower employee compensation. In the post-TCJA period, share repurchases are not associated with CASH SURPLUS, HIRING, EMPLOYEE COMP, UNFUNDED PENSION, and CEO COMP CHANGE. Using REPURDUM, we find similar results as with REPURDUM3. Using the amounts repurchased (REPUR3 and REPUR), we still find evidence that share repurchases, in general, are associated with higher cash surpluses. However, in the post-TCJA period, using REPUR3 and REPUR, we find that are repurchases were associated with lower cash surpluses. We also find that repurchases post-TCJA were associated with lower staff expenses, which supports the Senators' claim that companies used cash savings to fund share repurchases and reduce workforce and workforce compensation. We consistently find that pension funding positions improved in the post-TCJA period. During the post-TCJA period, share repurchases were not associated with higher CEO compensation. Overall, we do not find any systematic pattern or proof to support the Senate Democrats' claim that firms increased layoffs, decreased workforce compensation, and lowered pension contribution in exchange for higher repurchases.

[Insert Table 10 here]

5.2 Propensity Score Matching

We consider the dummy variables REPURDUM3 and REPURDUM as the treatment variables. Based on Dittmar (2000), we run a logit model with REPURDUM3 and REPURDUM as dependent variables. Prevalent theories on why firms repurchase shares include the undervaluation hypothesis. The undervaluation hypothesis argues that insiders who believe that their firms are undervalued use repurchases as a signaling mechanism to convey asymmetric information (Brav, Graham, Harvey, and Michaely (2005)). To control for undervaluation, we

use the prior-year stock returns. The prior year's stock returns are expected to be negatively related to share repurchase dummies. Another popular theory to explain the decision to share repurchase is the capital structure hypothesis, which argues that firms use share repurchase to increase their leverage and move it closer to an optimum leverage ratio (Hovakimian, Opler, and Titman (2001)). We expect a positive relationship between leverage and repurchases. Agency theory postulates that firms with excess liquid assets are likely to squander it. Hence, we control for agency costs by using two variables – AGENCY and CASH. Cuny, Martin, and Puthenpurackal (2009) show that option compensation is an important determinant for share repurchases. Firms that pay their top management predominantly using options are likely to repurchase more shares to prevent the earnings-per-share dilution due to options vesting. As in Cuny, Martin, and Puthenpurackal (2009), we create OPT to control for options compensation, which is defined as the sum of unexercised and unexercised options unexercisable options scaled by common shares outstanding. Furthermore, we control for firm size and growth opportunities. Large, mature firms are likely to repurchase shares, and firms with more growth opportunities are less likely to repurchase shares. Specifically, we run the following logistic model –

$$REPURDUM3_{i,t} = \alpha_{i,t} + \beta 1_{i,t} SIZE_{i,t} + \beta 2_{i,t} LEVERAGE_{i,t} + \beta 3_{i,t} AGENCY_{i,t} + \beta 4_{i,t} CASH_{i,t} + \beta 5_{i,t} MKBK_{i,t} + \beta 6_{i,t} STOCK\ RETURNS_{i,t-1} + \beta 7_{i,t} OPT_{i,t} + \varepsilon_{i,t} \quad (9)$$

$$REPURDUM_{i,t} = \alpha_{i,t} + \beta 1_{i,t} SIZE_{i,t} + \beta 2_{i,t} LEVERAGE_{i,t} + \beta 3_{i,t} AGENCY_{i,t} + \beta 4_{i,t} CASH_{i,t} + \beta 5_{i,t} MKBK_{i,t} + \beta 6_{i,t} STOCK\ RETURNS_{i,t-1} + \beta 7_{i,t} OPT_{i,t} + \varepsilon_{i,t} \quad (10)$$

After performing this regression, we calculate the propensity scores and match firms using similar industries in the same year. In other words, we use multi-level matching of same year-same industry, which is an even more robust estimation than matching based on size and

other firm-specific fundamental variables. This practice is quite common in the literature. With PSM, we re-estimate tables 3, 4, 5, 6, 7, 8, and 9[18] and name the new tables as tables 3A, 4A, 5A, 6A, 7A, 8A, and 9A[19]. In table 3A, in models 1 and 3, we use PSM scores from equation 9, and in models 2 and 4, we use PSM scores from equation 10. All the models in table 3 A show that cash surpluses are higher for repurchasing firms. We proceed to re-estimate table 4 with PSM. While we don't get results that match table 4, the results from table 4 A show that cash surpluses are not lower among the sub-sample of firms that experience a sale drop when firms repurchase shares. Next, we examine whether repurchasing firms increase hiring or not in a PSM environment. After matching, in Table 5 A, we don't find consistent evidence to state that hiring is either higher or lower in repurchasing firms compared to non-repurchasing firms. In table 6A, we re-estimate the staff expenditure regressions with PSM. Compared with a matched sample of non-repurchasing firms, we don't have any evidence to show that repurchasing firms spend less on staff expenses. Next, we turn our attention to the social responsibility regressions. In table 7A, we find similar results as in table 7. Compared with a matched sample, we find that repurchasing firms have better employee profit sharing, employee involvement, and other strengths indices. We have mild evidence that health and safety is not a strength among repurchasing firms, as shown in table 7 without PSM. In table 8A, we tested the unfunded pension liabilities with PSM. In table 8, we found that repurchasing firms were associated with higher pension funding levels in all models. In table 8A, all four models support the finding that repurchasing firms are associated with higher pension funding levels. We now proceed to estimate the CEO compensation regressions with PSM. We present the results in table 9A. In three out of four

[18] We don't re-estimate table 10 panel B because we only have one year of data for CEO-to-median worker pay ratio.
[19] We do not include the tables for brevity. These tables are available upon request.

models, we find that repurchases were not significantly related to increases in CEO compensation. In model 4, we find that repurchase levels are negatively related to increases in CEO compensation. With matching samples, we find that repurchasing firms had better cash surpluses, cash is not lower for repurchasing firms that experienced a drop in sales, and were better with higher pension funding levels. Repurchasing firms were not different from non-repurchasing firms in hiring and employee expenditures. They had better employee wellness indicators had lower CEO salary increases.

5.3 Instrumental Variable Regression

In this section, we perform instrumental variable regressions by instrumenting for the share repurchase dummies (REPURDUM3 and REPURDUM) and repurchase levels (REPUR3 and REPUR). We use the year-wise industry medians for leverage, stock returns, size, growth opportunities, cash levels, incentive compensation, and financial constraints. The first stage of diagnostic tests for endogeneity and identification rejected the null hypothesis of no endogeneity. The diagnostic tests also rejected the null hypothesis for weak instruments. In summary, the diagnostic tests reveal that we have endogeneity, and our instruments are well-identified. We re-estimate tables 3, 4, 5, 6, 7, 8, and 9[20] and name them 3B, 4B, 5B, 6B, 7B, 8B, and 9B.[21] We start with the cash surplus regressions in table 3B. Instrumental variable regression reveals that in two out of four (models 1 and 2) models, repurchasing firms are associated with lower cash surpluses, which supports the claims that repurchasing firms could have better used the cash to shore their liquidity. However, models 3 and 4 of table 3B show that share repurchases were negatively associated with cash surpluses, but those relationships were not statistically

[20] We don't re-estimate table 10 panel B because we only have one year of data for CEO-to-median worker pay ratio
[21] We do not include the tables for brevity. These tables are available upon request.

significant. In table 4B, using instrumental variable regression, we find similar results to our main results in table 4. During the years when firms experience a significant drop in sales, cash surpluses are not lower among the sub-sample of firms that experience a sale drop when firms repurchase shares. Table 5B presents the IV regression results with hiring as the dependent variable. We find that share repurchases are negatively related to hiring in all models, but the relationship is not statistically significant. Next, we estimate the IV staff expenses regressions and present the results in Table 6B. Share repurchases are highly significant and positively associated with staff expenses. In table 7B, we present the results of the IV social responsibility. We find similar results as in tables 7 and 7A. Share repurchases are mostly positively associated with employee-centric social responsibility. Table 8 B presents the results of the IV regressions with unfunded pensions as the dependent variable. The association between unfunded pensions and share repurchases is negative but not statistically significant. Finally, in table 9B, we estimate the IV regressions with increases in CEO compensation as our dependent variable. Three of the four models presented show that share repurchases are associated with lower increases in CEO compensation. In sum, the IV regression method primarily supports our findings from the main tables.

6. Conclusions

Securities Exchange Commission adopted Rule 10b-18 in 1982, granting "safe harbor" protection to share repurchasing firms from claims of market manipulation. Corporations have embraced share repurchases as their preferred mode of payout ever since. Regulators, lawmakers, and politicians have criticized the growth in corporate share repurchases. Popular media have also chimed in against share repurchases. The criticism is spearheaded by prominent

politicians such as senators Chuck Schumer, Bernie Sanders, and Elizabeth Sanders. These criticisms have led to several bills, including the recent IRA Act, being considered in U.S. Congress to either eliminate corporate share repurchases or, at a minimum, impose significant constraints on the ability of corporations to buy back their stock.

In this paper, we have examined some of the more salient criticisms leveled against share repurchases from the perspective of corporate finance theory. We find that these criticisms have no theoretical basis. We take the prominent aspects of the criticism to formulate testable predictions. Specifically, we examine whether stock repurchases make firms less resilient, especially when confronted with an adverse negative financial shock. In addition, we also examine if share repurchases occur at the expense of employee welfare—a charge often leveled against firms that are regular repurchasers of their stock. We test whether share repurchasing firms have lower hiring rates or pay them lower compensation. Our evidence suggests that these criticisms have little empirical support. Using a cash surplus model that considers pro forma cash needs, we find that compared to non-repurchasing firms, repurchasing firms have adequate cash resources to meet future needs. If anything, the former appears to have a better liquidity position. Importantly, these results hold even when firms face adverse financial shocks. i.e., experience a sudden severe drop in revenues. About employee welfare, we examine several dimensions. We find that share repurchases do not come at the expense of a reduced hiring rate or lower employee compensation. We also find that employee morale, measured by KLD's qualitative ranking of health and safety strengths, employee involvement, and profit sharing, is not diminished when firms buy back their shares. We also do not find that share repurchases are implemented at the expense of pension funding. Finally, we do not find any evidence to suggest that share repurchases are associated with higher CEO compensation.

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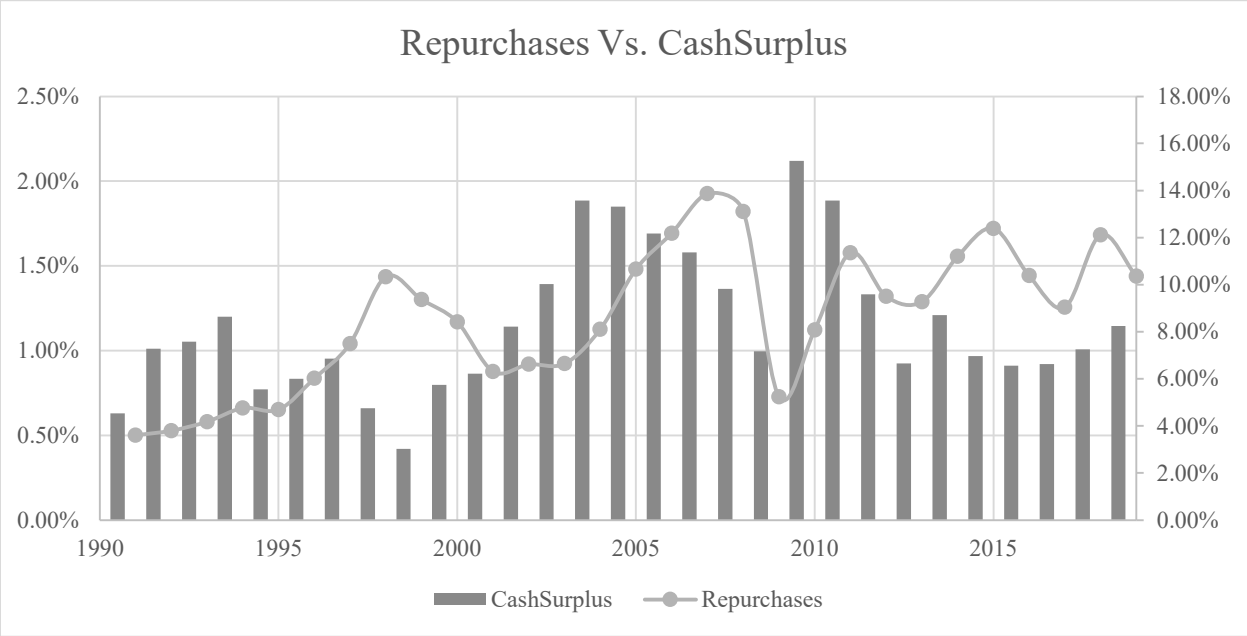
Appendix A – Variable Definitions **Variable Name**	**Variable Definition**	**Source**
AGENCY	Takes the value of 1 if a firm's free cash flow is greater than the mean industry-year free cash flow	COMPUSTAT
ASSETS	Total assets (in millions)	COMPUSTAT
BOARDINDEPENDENCE	Percentage of directors that are independent	EXECUCOMP
CAPEX	Capital Expenses (CAPX) expressed in millions scaled by ASSETS	COMPUSTAT
CASH	Cash and Short-Term Investments expressed in millions scaled by ASSSETS	COMPUSTAT
ΔCASH	$CASH_t$ - $CASH_{t-1}$	COMPUSTAT
CASHFLOW	Calculated as (OIBDP (Operating income before depreciation) - (TXT(Total taxes paid)- DELTATXDI(Change in Deferred Income Taxes)) - XINT(Interest Expenses)- UDVP (Preferred Dividends)– DVT (Total Dividends)) scaled by ASSETS	COMPUSTAT
CASHFLOWVOL	Five-year rolling standard deviation of CASHFLOW	COMPUSTAT
$CASHSURPLUS_{t+1}$	$(CASH_{t-1} + ICF_t – INVESTMENTS_t – \Delta$NON-CASH NWC_t – Cash Dividends$(DVC)_t) \div ASSETS_{t-1}$.	COMPUSTAT
ΔNON-CASH NWC	ΔNWC – ΔCASH.	COMPUSTAT
ΔNWC	Change in Net Working Capital. For firms reporting format codes 1-3, ΔNWC = Working Capital Change Other (WCAPC) + Cash and Cash Equivalents Increase (Decrease) (CHECH). For firms reporting format code 7, ΔNWC = – Accounts Receivable Decrease (Increase) (RECCH) – Inventory Decrease (Increase) (INVCH) – Accounts Payable and Accrued Liabilities Increase (Decrease) (APALCH) – Income Taxes Accrued Increase (Decrease) (TXACH) – Assets and Liabilities Other Net Change (AOLOCH) + Cash and Cash Equivalents Increase (Decrease) (CHECH) – Change in Short-Term Investments (IVSTCH) – Financing Activities Other (FIAO).	COMPUSTAT
CEO AGE	The age of CEO in years	EXECUCOMP
CEO COMPENSATION CHANGE	Percentage Change in CEO compensation	EXECUCOMP
CEO-WORKER COMP RATIO	CEO-to-median-employee compensation ratio	AFL-CIO
CEQ	Book Value of Common Equity (in millions)	COMPUSTAT
CSHO	Common Shares outstanding (in millions)	COMPUSTAT
DIVIDENDS	Cash dividends paid (DVC) expressed in millions scaled by ASSETS	COMPUSTAT
DUALITY	Takes the value of 1 if CEO and Board Chairman are the same person	EXECUCOMP
EMP	Number of Employees (in Thousands)	COMPUSTAT
EMPLOYEE INVOLVEMENT	Takes the value of 1 if firm is rated high in employee involvement	KLD
EMPNET	Sum of all employee centric strength variables, net of all employee centric weakness variables	KLD
ENVNET	Sum of all environmental strength variables, net of all environmental weakness variables	KLD
HEALTH SAFETY STRENGTH	Takes the value of 1 if firm is rated high in health and safety	KLD

HIRING	Percentage Change in Number of Employees calculated as $(EMP_t - EMP_{t-1})/EMP_{t-1}$	COMPUSTAT
ICF	Internal Cash Flow. For firms reporting format codes 1 to 3, ICF = Income Before Extraordinary Items (IBC) + Extraordinary Items and Discontinued Operations (XIDOC) + Depreciation and Amortization (DPC) + Deferred Taxes (TXDC) + Equity in Net Loss (Earnings) (ESUBC) + Sale of Property Plant and Equipment and Investments Gain (Loss) (SPPIV) + Funds from Operations Other (FOPO) + Sources of Funds Other (FSRCO). For firms reporting format code 7, ICF = IBC + XIDOC + DPC + TXDC + ESUBC + SPPIV + FOPO + Accounts Payable and Accrued Liabilities Increase (Decrease) (APALCH).	COMPUSTAT
INVESTMENTS	For firms reporting format codes 1-3, Investments = Capital Expenditures (CAPX) + Increase in Investments (IVCH) + Acquisitions (AQC) + Uses of Funds Other (FUSEO) – Sale of Property (SPPE) – Sale of Investments (SIV). For firms reporting format code 7, investments = CAPX + IVCH + AQC – SPPE – SIV – Investing Activities Other (IVACO).	COMPUSTAT
KZ	Kaplan Zingales Index calculated per Kaplan and Zingales (1997)	COMPUSTAT
LEVERAGE	Sum of Short-Term Debt and Long-Term Debt scaled by ASSETS	COMPUSTAT
LOGASSETS	Natural logarithm of total assets	COMPUSTAT
LOGEMP	Natural logarithm of EMP	COMPUSTAT
LOGSALE	Natural logarithm of total sales	COMPUSTAT
MARGINALTAX	Marginal tax rate before deducting interest expenses	Prof.John Graham's homepage
MARKET VALUE OF EQUITY	CSHO * PRICE (in millions)	COMPUSTAT
MKBK	Market Value of Equity scaled by CEQ	COMPUSTAT
OTHER STRENGHTS	Takes the value of 1 if firm is rated high in other strength	KLD
PRICE	Market Price of Share adjusted by the adjustment factor	COMPUSTAT
PROFITSHARING	Takes the value of 1 if firm is engaged in profit sharing	KLD
R&D	Research and development expenditures expressed in millions scaled by ASSETS	COMPUSTAT
REPUR	Repurchases/AT. Repurchases are defined as Purchase of Common and Preferred Stock (PRSTKC) - less Change in Preferred Stock (CHGPSTK)	COMPUSTAT
REPUR3	The moving average of REPUR in years *t-2, t-1, and t.*	COMPUSTAT
REPURDUM	Takes the value of 1 if a firm repurchased in year *t*	COMPUSTAT
REPURDUM3	Takes the value of 1 if a firm repurchased in any one of the year *t-2, t-1, or t*	COMPUSTAT
RET	Annual Stock returns	CRSP
ROA	Earnings Before Interest and Tax expressed in millions scaled by ASSETS	COMPUSTAT
SALE	Firms total sales (in millions)	COMPUSTAT
SALEDROP	Takes the value of 1 if a firm's Sales growth in the current year is less than 25%	COMPUSTAT

STAFF EXPENSES	Total Staff Expenses (XLR) expressed in millions scaled by ASSETS	COMPUSTAT
TCJA	Post Tax Cut and Jobs Act dummy variable - takes the value of 1 for years 2018 and 2019	
TENURE	The number of years as CEO	EXECUCOMP
UNFUNDED PENSION	Pension Assets Less Pension Liabilities scaled by Pension Liabilities	COMPUSTAT
UNIONMEM	SIC 2 digit Industry-wise ratio of number of workers covered by collective bargaining agreement to the total number of wage and salaried employees	https://www.unionstats.com/

Figure 1 - Repurchases and Cash Surplus



This figure plot share repurchases (REPUR) versus CASHSURPLUS for a period from 1991 through 2019. REPUR is shown on the left-side vertical axis and CASHSURPLUS is shown on the right-side vertical axis.

Table 1 – Summary Statistics

Summary statistics of the key variables. REPURDUM3 is the dummy variable that takes the value of 1 if the firm repurchased shares in any one of past three years. REPURDUM is the dummy variable that takes the value of 1 if the repurchased shares in the current year. REPUR3 is the average share repurchases over the past three years scaled by total assets. REPUR is the share repurchases in the current year scaled by total assets. CASHSURPLUS is the cash surplus scaled by total assets. HIRING is the percentage change in employment with employment levels in year *t-1* as the base year. UNFUNDED PENSION is the difference between pension assets and liabilities scaled by pension liabilities. STAFF EXPENSES is the amount spent on staff scaled by total assets. PROFIT SHARING, EMPLOYEE INVOLVEMENT, OTHER STRENGTHS, and HEALTH SAFETY STRENGHT are employee wellness variables as per KLD database. PROFIT SHARING is a dummy variable that takes the value of 1 if employees participate in profit sharing. EMPLOYEE INVOLVEMENT is a dummy variable that takes the value of 1 if the company encourage employee involvement. OTHER STRENGHTS is a dummy variable that takes the value of 1 if the firm scores high on other strengths. HEALTH SAFETY STRENGTH is a dummy variable that takes the value of 1 if the firm scores high on health and safety measures. EMPNET is defined as sum of all employee centric strength variables, net of all employee centric weakness variables. ENVNET is defined as sum of all environmental strength variables, net of all environmental weakness variables. CEO TOTAL COMPENSATION is the total CEO compensation. CEO-WORKER COMP RATIO is the CEO-to-median-employee compensation ratio. ASSETS is the total assets of the firm. SALE is the total sales of the firm. CASH is the cash and cash equivalents scaled by total assets. LEVERAGE is the sum of short-term and long-term debt scaled by total assets. CAPEX is the capital expenditures scaled by total assets. MKBK is the market-to-book ratio. ROA is the ratio of earnings before interest and tax to total assets. RET is the current year stock returns including dividend distributions. EMP is the number of employees in the current year. KZ is the Kaplan-Zingales financial constraint variable. CASHSURPLUS, HIRING, UNFUNDED PENSION, STAFF EXPENSES, ASSETS, SALE, CASH, LEVERAGE, CAPEX, MKBK, EMP, ROA, RET, REPUR3, and REPUR are winsorized at the 1% level. Panel A reports the summary statistics for the overall sample. Panel B (Panel C) reports the summary statistics for firms that did not repurchase shares (firms that did repurchase shares) during the past three years. We performed a T-test and Wilcoxon Median-test of the variables between Panel A and Panel B. Variables that are significantly different from each other at the 1% level are marked in bold.

Panel A: Overall Sample

Variable	p25	Mean	p50	p75	Sd	N
REPURDUM3	0.0000	0.4745	0.0000	1.0000	0.4993	125536
REPURDUM	0.0000	0.3330	0.0000	1.0000	0.4713	141499
REPUR3	0.0000	0.0122	0.0000	0.0076	0.0303	141499
REPUR	0.0000	0.0117	0.0000	0.0025	0.0341	141499
CASHSURPLUS	-0.1040	0.0817	0.0673	0.2786	0.3423	124937
HIRING	-0.0476	0.1154	0.0327	0.1621	0.4108	118800
UNFUNDED PENSION	-0.3062	-0.1481	-0.1451	0.0311	0.3287	34956
STAFF EXPENSES	0.0540	0.2086	0.1536	0.3068	0.1902	16336
PROFITSHARING	0.0000	0.0593	0.0000	0.0000	0.2362	28201
EMPLOYEE INVOLVEMENT	0.0000	0.0933	0.0000	0.0000	0.2908	28201
OTHER STRENGTHS	0.0000	0.0515	0.0000	0.0000	0.2211	28201
HEALTH SAFETY STRENGTH	0.0000	0.0382	0.0000	0.0000	0.1916	28201
EMPNET	0.0000	0.1075	0.0000	0.0000	1.0086	28201
ENVNET	0.0000	0.1434	0.0000	0.0000	0.8808	28201
CEO TOTAL COMPENSATION	1275.0760	4725.2990	2878.8600	6084.7730	5302.8270	34892
CEO-WORKER COMP RATIO	47.0000	180.9615	95.0000	195.0000	257.0567	1403
ASSETS	49.2910	2364.1360	198.6060	1019.9000	7556.8020	141499
SALE	35.5690	2049.3440	176.4190	938.5130	6451.8280	141499

CASH	0.0294	0.2054	0.1050	0.2966	0.2390	141499
LEVERAGE	0.0971	0.3209	0.2711	0.4986	0.2600	141499
CAPEX	0.0166	0.0594	0.0361	0.0724	0.0710	141499
MKBK	1.0547	2.7251	1.9166	3.4969	2.4904	129768
ROA	-0.0386	-0.0039	0.0558	0.1121	0.2257	141499
RET	-0.2927	0.1188	0.0197	0.3575	0.6821	108325
EMP	0.2100	8.7074	1.0000	5.0500	23.7121	129114
KZ	0.6845	1.4401	1.5100	2.2985	2.3422	126928

Panel B: Summary statistics for no repurchase years based on REPURDUM3

VARIABLE	p25	Mean	p50	p75	sd	N
CASHSURPLUS	-0.1203	**0.0809**	**0.0574**	0.2892	0.3531	60112
HIRING	-0.0532	**0.1317**	**0.0417**	0.2007	0.4314	56404
UNFUNDEDPENSION	-0.3224	-0.1583	-0.1541	0.0319	0.3373	11754
STAFF EXPENSES	0.0351	**0.1803**	**0.1238**	0.2616	0.1805	8527
PROFITSHARING	0.0000	**0.0384**	0.0000	0.0000	0.1921	8887
EMPLOYEE INVOLVEMENT	0.0000	**0.0708**	0.0000	0.0000	0.2565	8887
OTHER STRENGTHS	0.0000	**0.0217**	0.0000	0.0000	0.1458	8887
HEALTH SAFETY STRENGTH	0.0000	**0.0241**	0.0000	0.0000	0.1533	8887
EMPNET	0.0000	**-0.0362**	0.0000	0.0000	0.8380	8887
ENVNET	0.0000	**0.0196**	0.0000	0.0000	0.6612	8887
CEO TOTAL COMPENSATION	941.5300	**3448.3430**	**1938.8080**	4131.9380	4469.7270	10443
CEO-WORKER COMP RATIO	22.0000	**89.0699**	**42.0000**	93.0000	157.6955	229
ASSETS	42.7790	**1520.0280**	**135.8655**	563.7000	5858.0890	65974
SALE	25.0690	**1256.5800**	**104.2710**	487.8430	4880.0910	65974
CASH	0.0302	**0.2247**	**0.1141**	0.3372	0.2565	65974
LEVERAGE	0.0903	**0.3250**	**0.2646**	0.5151	0.2692	65974
CAPEX	0.0155	**0.0627**	**0.0368**	0.0774	0.0758	65974
MKBK	0.9764	2.6964	**1.8545**	3.5006	2.5503	61743
ROA	-0.0908	**-0.0404**	**0.0351**	0.0975	0.2481	65974
RET	-0.3621	**0.1070**	**-0.0226**	0.3633	0.7416	49765
EMP	0.1470	**5.5356**	**0.5600**	2.7275	18.0328	60320
KZ	0.6949	**1.5402**	**1.5448**	2.3832	2.3178	61630

Panel C: Univariate Statistics for Positive Repurchase Years based on REPURDUM3

VARIABLE	p25	Mean	p50	p75	sd	N
CASHSURPLUS	-0.0747	0.0930	0.0808	0.2717	0.3198	58205
HIRING	-0.0449	0.0727	0.0236	0.1178	0.3196	56116
UNFUNDEDPENSION	-0.3037	-0.1566	-0.1529	0.0121	0.3199	21267
STAFF EXPENSES	0.0982	0.2531	0.1991	0.3770	0.1957	6035
PROFITSHARING	0.0000	0.0696	0.0000	0.0000	0.2544	19046
EMPLOYEE INVOLVEMENT	0.0000	0.1046	0.0000	0.0000	0.3060	19046

OTHER STRENGTHS	0.0000	0.0657	0.0000	0.0000	0.2478	19046
HEALTH SAFETY STRENGTH	0.0000	0.0449	0.0000	0.0000	0.2071	19046
EMPNET	0.0000	0.1748	0.0000	0.0000	1.0750	19046
ENVNET	0.0000	0.2017	0.0000	0.0000	0.9625	19046
CEO TOTAL COMPENSATION	1511.4370	5271.1400	3423.7740	6930.1910	5519.7820	24134
CEO-WORKER COMP RATIO	54.0000	199.1358	106.0000	221.0000	268.9355	1171
ASSETS	109.0700	3752.7250	480.0970	2266.8470	9532.2890	59562
SALE	104.6340	3314.9180	485.3140	2144.9130	8194.7310	59562
CASH	0.0289	0.1698	0.0944	0.2416	0.1933	59562
LEVERAGE	0.1571	0.3501	0.3133	0.5077	0.2381	59562
CAPEX	0.0178	0.0526	0.0350	0.0650	0.0584	59562
MKBK	1.1292	2.6728	1.9557	3.3835	2.3287	57798
ROA	0.0213	0.0516	0.0758	0.1264	0.1609	59562
RET	-0.2049	0.1495	0.0716	0.3694	0.6071	51383
EMP	0.5000	12.9356	2.3000	9.4000	28.9661	57502
KZ	0.7348	1.4583	1.4995	2.2165	2.0189	57653

Table 2 CASHSURPLUS by Repurchase Quartiles

Panel A examines the CASHSURPLUS during SaleDrop years and No SaleDrop years. A SaleDrop is defined as an event where SALES drop more than 25% compared to the previous year. CASHSURPLUS is calculated per eq (1). CASHSURPLUS during the SaleDrop year, one-year and two-years post SaleDrop are presented. The CASHSURPLUS variable is further analyzed using quartiles of REPUR3. Panel B repeats the analysis in panel A by replacing the CASHSURPLUS variable with REPUR.

Panel A – CASHSURPLUS

SaleDrop Years			
Repurchase Quartiles	CASHSURPLUS	One-Year Forward CASHSURPLUS	Two-Year Forward CASHSURPLUS
Full Sample	3.4%	12.2%	12.4%
1	1.00%	9.82%	10.99%
2	9.60%	13.80%	12.90%
3	2.85%	11.97%	10.97%
4	11.72%	20.22%	18.23%

No SaleDrop Years			
Repurchase Quartiles	CASHSURPLUS	One-Year Forward CASHSURPLUS	Two-Year Forward CASHSURPLUS
Full Sample	8.7%	8.4%	8.3%
1	7.39%	8.00%	8.06%
2	1.59%	3.22%	5.71%
3	4.59%	4.59%	5.11%
4	14.43%	12.36%	11.35%

Panel B – Repurchases

Sale Drop Years			
Repurchase Quartiles	REPUR3	One-Year Forward Repurchases	Two-Year Forward Repurchases
Full Sample	0.7%	0.6%	0.7%
1	0.00%	0.25%	0.35%
2	0.02%	0.40%	0.03%
3	0.30%	0.54%	0.67%
4	3.67%	2.18%	1.95%

No Sale Drop Years			
Repurchase Quartiles	REPUR3	One-Year Forward Repurchases	Two-Year Forward Repurchases
Full Sample	1.3%	1.4%	1.4%
1	0.00%	0.39%	0.60%
2	0.03%	0.31%	0.54%
3	0.34%	0.86%	1.01%
4	4.40%	3.52%	3.35%

Table 3 – CASHSURPLUS Regressions

This table presents our baseline regressions. The dependent variable is CASHSURPLUS, which is defined per eq(1). Our test variables are REPUR, REPUR3, REPURDUM3, REPURDUM. REPUR is defined as Purchase of Common and Preferred Stock less Change in Preferred Stock scaled by ASSETS. REPUR3 is the moving average of REPUR in years t-2, t-1, and t. REPURDUM3 takes the value of 1 if a firm repurchased in any one of the year t-2, t-1, or t. REPURDUM takes the value of 1 if a firm repurchased in year t. The control variables are LOGASSETS, LEVERAGE, AGENCY, MKBK, and ROA. LOGASSETS is defined as the natural logarithm of total assets. LEVERAGE is defined as sum of Short-Term Debt and Long-Term Debt scaled by ASSETS. AGENCY is a control variable that takes the value of 1 if the free cash flow of the firm is greater than the industry median free cash flow. MKBK is the market value of equity scaled by book value of equity. ROA is Earnings before Income and Taxes scaled by ASSETS. All variables except the dummy variables are winsorized at the 1% level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. All models include year and firm fixed effects. Standard errors are clustered at the firm level.

VARIABLES	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS
REPURDUM3	0.0013			
	(0.4812)			
REPURDUM		0.0305***		
		(12.2883)		
REPUR3			0.2603***	
			(5.3337)	
REPUR				0.4306***
				(12.9439)
LOGASSETS	-0.0350***	-0.0343***	-0.0327***	-0.0329***
	(-13.4011)	(-13.5375)	(-12.9475)	(-13.0431)
LEVERAGE	-0.3223***	-0.3117***	-0.3161***	-0.3127***
	(-33.4839)	(-33.1368)	(-33.6571)	(-33.3422)
AGENCY	-0.0070	-0.0034	-0.0029	-0.0028
	(-1.6252)	(-0.7760)	(-0.6585)	(-0.6433)
MKBK	-0.0041***	-0.0046***	-0.0051***	-0.0051***
	(-5.9440)	(-6.7180)	(-7.4721)	(-7.4534)
ROA	0.4418***	0.4443***	0.4429***	0.4391***
	(40.5243)	(41.0035)	(40.7676)	(40.4792)
Constant	0.3936***	0.3869***	0.3886***	0.3875***
	(26.2815)	(26.7082)	(26.9204)	(26.8684)
Observations	115,045	121,264	121,264	121,264
R-squared	0.546	0.531	0.530	0.531
Adjusted R-squared	0.4913	0.4753	0.4745	0.4756
F test model	142	141.8	138.8	143.4

Table 4 – Cash Surplus Regressions with Saledrop Subsamples

This table presents modifies table 3 by presenting the sub-sample regressions. We split the sample into years with and without SaleDrop. The dependent variable is CASH SURPLUS. Our test variables are REPURDUM3, REPURDUM, REPUR3, and REPUR. REPUR is defined as Purchase of Common and Preferred Stock less Change in Preferred Stock scaled by ASSETS. REPUR3 is the moving average of REPUR in years t-2, t-1, and t. REPURDUM3 takes the value of 1 if a firm repurchased in any one of the year t-2, t-1, or t. REPURDUM takes the value of 1 if a firm repurchased in year t. The control variables are LOGASSETS, LEVERAGE, AGENCY, MKBK, and ROA. LOGASSETS is defined as the natural logarithm of total assets. LEVERAGE is defined as sum of Short-Term Debt and Long-Term Debt scaled by ASSETS. AGENCY is a control variable that takes the value of 1 if the free cash flow of the firm is greater than the industry median free cash flow. MKBK is the market value of equity scaled by book value of equity. ROA is Earnings before Income and Taxes scaled by ASSETS. All variables except the dummy variables are winsorized at the 1% level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. All models include year and firm fixed effects. Standard errors are clustered at the firm level.

	No SaleDrop	SaleDrop	No SaleDrop	SaleDrop	No SaleDrop	SaleDrop	No SaleDrop	SaleDrop
VARIABLES	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS
REPURDUM3	0.0001	0.0366*						
	(0.0511)	(1.8546)						
REPURDUM			0.0286***	0.0432**				
			(11.2479)	(2.3135)				
REPUR3					0.2390***	0.4501		
					(4.8205)	(1.1073)		
REPUR							0.4005***	0.2806
							(11.9151)	(0.8603)
LOGASSETS	-0.0364***	-0.0143	-0.0370***	-0.0070	-0.0355***	-0.0048	-0.0357***	-0.0053
	(-13.4311)	(-1.1259)	(-14.0483)	(-0.5512)	(-13.5417)	(-0.3814)	(-13.6111)	(-0.4245)
LEVERAGE	-0.3245***	-0.3159***	-0.3150***	-0.3054***	-0.3194***	-0.3088***	-0.3162***	-0.3093***
	(-31.7886)	(-6.6829)	(-31.4252)	(-6.7450)	(-31.9404)	(-6.8014)	(-31.6583)	(-6.7938)
AGENCY	-0.0131***	0.0494	-0.0101**	0.0510	-0.0095**	0.0507	-0.0095**	0.0510
	(-2.9467)	(1.5741)	(-2.2782)	(1.6099)	(-2.1430)	(1.6018)	(-2.1475)	(1.6133)
MKBK	-0.0042***	-0.0133***	-0.0043***	-0.0145***	-0.0049***	-0.0146***	-0.0048***	-0.0147***
	(-5.7681)	(-3.1009)	(-5.9273)	(-3.4726)	(-6.6885)	(-3.4996)	(-6.6570)	(-3.5051)
ROA	0.5138***	0.2319***	0.5256***	0.2101***	0.5243***	0.2108***	0.5189***	0.2101***
	(39.7770)	(4.8597)	(41.3337)	(4.5332)	(41.0936)	(4.5446)	(40.7384)	(4.5240)

CONSTANT	0.4034***	0.2153**	0.4016***	0.2086**	0.4038***	0.2064**	0.4028***	0.2102**
	(25.7518)	(2.5078)	(26.4697)	(2.5336)	(26.6930)	(2.4878)	(26.6382)	(2.5382)
Observations	102,315	8,506	107,441	8,968	107,441	8,968	107,441	8,968
R-squared	0.577	0.681	0.567	0.662	0.566	0.661	0.567	0.661
Adjusted R-squared	0.5234	0.2918	0.5131	0.2615	0.5123	0.2604	0.5133	0.2602
F test model	137.6	3.9	142.4	3.9	139.8	3.7	142.5	3.7

Table 5 – Hiring Regressions[22]

This table presents the hiring regressions. The dependent variable is HIRING, which is defined as percentage change in employment using Employment Levels in year *(t-1)* as the base year. Our test variables are REPURDUM3, REPURDUM, REPUR3, and REPUR. REPUR is defined as Purchase of Common and Preferred Stock less Change in Preferred Stock scaled by ASSETS. REPUR3 is the moving average of REPUR in years t-2, t-1, and t. REPURDUM3 takes the value of 1 if a firm repurchased in any one of the year t-2, t-1, or t. REPURDUM takes the value of 1 if a firm repurchased in year t. The control variables are LOGASSETS, LEVERAGE, ROA, and LOGEMP. LOGASSETS is defined as the natural logarithm of total assets. LEVERAGE is defined as sum of Short-Term Debt and Long-Term Debt scaled by ASSETS. ROA is Earnings before Income and Taxes scaled by ASSETS. We define LOGEMP as the logarithm of number of employees. All variables except the dummy variables are winsorized at the 1% level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. All models include year and firm fixed effects. Standard errors are clustered at the firm level.

VARIABLES	HIRING	HIRING	HIRING	HIRING
REPURDUM3	0.0022			
	(0.6573)			
REPURDUM		-0.0026		
		(-0.8438)		
REPUR3			-0.0396	
			(-0.7760)	
REPUR				-0.1311***
				(-3.6787)
LOGASSETS	-0.3699***	-0.3913***	-0.3913***	-0.3924***
	(-33.8919)	(-36.2652)	(-36.3204)	(-36.3943)
LEVERAGE	0.1864***	0.1881***	0.1885***	0.1906***
	(13.0060)	(13.0114)	(12.9957)	(13.1534)
ROA	-0.0024	-0.0295***	-0.0297***	-0.0298***
	(-0.5444)	(-6.6745)	(-6.7125)	(-6.7406)
LOGEMP	-0.2187***	-0.1903***	-0.1902***	-0.1895***
	(-24.3174)	(-22.1430)	(-22.0899)	(-22.0560)
Constant	0.4771***	0.5864***	0.5865***	0.5871***
	(25.2854)	(31.4277)	(31.4358)	(31.4618)
Observations	102,969	112,518	112,518	112,518
R-squared	0.298	0.315	0.315	0.316
Adjusted R-squared	0.2108	0.2309	0.2309	0.2310
F test model	127.6	138.7	139	139.8

[22] For robustness, we replaced year fixed effects with recession time dummy that takes the value of 1 for years 2000, 2001, 2008, and 2009

Table 6 – Staff Expenses Regressions

This table presents the staff expense regressions. The dependent variable is STAFF EXPENSES, is defined as employee expenditures. Our test variables are REPUR, REPUR3, REPURDUM3, and REPURDUM, , and. The control variables are CAPEX, ROA, LEVERAGE, CASH, DIVIDENDS, and LOGSALE. REPUR is defined as Purchase of Common and Preferred Stock less Change in Preferred Stock scaled by ASSETS. REPUR3 is the moving average of REPUR in years t-2, t-1, and t. REPURDUM3 takes the value of 1 if a firm repurchased in any one of the year t-2, t-1, or t. REPURDUM takes the value of 1 if a firm repurchased in year t. The control variables are CAPEX, LEVERAGE, LOGSALE, CASH, and DIVIDENDS. CAPEX is defined as the capital expenditures scaled by ASSETS. LEVERAGE is defined as sum of Short-Term Debt and Long-Term Debt scaled by ASSETS. LOGSALE is defined as the logarithm of total sales. CASH is cash and cash equivalents scaled by ASSETS. DIVIDENDS is defined as cash dividends scaled by total assets.. All variables except the dummy variables are winsorized at the 1% level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Models 1,3,5, and 7 have year and firm-fixed effects. Models 2,4,6, and 8 have year and industry-fixed effects. Industry is defined by the Fama-French 12 industry codes. Standard errors are clustered at the firm level.

	Firm-Year FE	Industry-Year FE	Firm-Year FE	Industry-Year FE	Firm-Year FE	Industry-Year FE	Firm-Year FE	Industry-Year FE
VARIABLES	STAFF EXPENSES	STAFF EXPENSES	STAFF EXPENSES	STAFF EXPENSES	STAFF EXPENSES	STAFF EXPENSES	STAFF EXPENSES	STAFF EXPENSES
REPURDUM3	0.0057	0.0508***						
	(1.6320)	(6.5667)						
REPURDUM			0.0055*	0.0491***				
			(1.7151)	(6.4772)				
REPUR3					0.1110	0.9422***		
					(1.6277)	(6.0099)		
REPUR							0.0931**	0.7175***
							(2.1167)	(6.0207)
CAPEX	-0.0027	-0.0367	-0.0101	-0.0647*	-0.0097	-0.0713*	-0.0095	-0.0711*
	(-0.1390)	(-0.8380)	(-0.5747)	(-1.6538)	(-0.5513)	(-1.8184)	(-0.5394)	(-1.8051)
ROA	-0.0342***	0.0445**	-0.0448***	0.0210	-0.0456***	0.0148	-0.0459***	0.0165
	(-3.0770)	(2.1415)	(-4.4055)	(1.1209)	(-4.5100)	(0.8076)	(-4.5312)	(0.8901)
LEVERAGE	0.0456***	0.0687***	0.0380***	0.0659***	0.0380***	0.0729***	0.0381***	0.0718***
	(4.9838)	(3.6116)	(4.6782)	(3.8391)	(4.6907)	(4.3204)	(4.7013)	(4.2413)
LOGSALE	0.0062***	0.0014	0.0063***	0.0032*	0.0064***	0.0043**	0.0064***	0.0045**
	(2.9494)	(0.7537)	(3.2069)	(1.8228)	(3.2327)	(2.4107)	(3.2350)	(2.5310)
CASH	-0.0185	-0.0367	-0.0267	-0.0492**	-0.0268	-0.0480**	-0.0268	-0.0495**
	(-0.8846)	(-1.5832)	(-1.5261)	(-2.5139)	(-1.5220)	(-2.4723)	(-1.5201)	(-2.5380)

DIVIDENDS	0.2212***	-0.2145	0.2103***	-0.1853	0.2056***	-0.2245	0.2056***	-0.2085
	(3.5822)	(-1.3839)	(3.7692)	(-1.3195)	(3.6996)	(-1.5642)	(3.6765)	(-1.4534)
Constant	0.1936***	0.2272***	0.2022***	0.2267***	0.2029***	0.2286***	0.2028***	0.2300***
	(14.3624)	(14.0748)	(16.5225)	(15.2303)	(16.5858)	(15.3861)	(16.5864)	(15.4157)
Observations	12,958	12,958	14,558	14,558	14,558	14,558	14,558	14,558
R-squared	0.915	0.242	0.908	0.237	0.908	0.240	0.908	0.237
Adjusted R-squared	0.9002	0.2400	0.8925	0.2349	0.8925	0.2382	0.8925	0.2347
F test model	4.283	7.287	4.493	8.384	4.557	8.503	4.550	8.426

Table 7 – Social Responsibility – Employee Centric and Environmentally Centric

This table presents the regressions of firm social responsibility. We chose four employee strength indicator variables from KLD database and perform logit regressions in panel A and panel B. The dependent variable in model 1 is PROFIT SHARING, which takes the value of 1 if the firms allow employee participation in profit sharing. In model 2 the dependent variable is EMPLOYEE INVOLVEMENT, which takes the value 1 if firms encourage employee involvement. The dependent variable in model 3 is OTHER STRENGTHS, which takes the value of 1 if the firm ranks high on other strengths as identified by KLD. The dependent variable in model 4 is HEALTHSAFETY STRENGTHS, which takes the value of 1 if firms rank high on health and safety standards. In panel A and panel B we employ logit regressions. In panel A our test variables are REPURDUM3, REPURDUM. In panel B our test variables are REPUR3, and REPUR. In panel C our dependent variable is EMPNET, which is defined as the sum of all employee strength indicator variables net of the sum of all employee weakness indicator variables. In panel D our dependent variable in ENVNET, which is defined as the sum of all environmental strength indicator variables net of all environmental weakness indicators. All models in panel C and D are fixed effects regression with year and industry fixed effects. Industry is defined using Fama-French 12 industry codes. REPUR is defined as Purchase of Common and Preferred Stock less Change in Preferred Stock scaled by ASSETS. REPUR3 is the moving average of REPUR in years t-2, t-1, and t. REPURDUM3 takes the value of 1 if a firm repurchased in any one of the year t-2, t-1, or t. REPURDUM takes the value of 1 if a firm repurchased in year t. The control variables are LOGASSETS, LEVERAGE, CASH and MKBK. LOGASSETS is defined as the logarithm of ASSETS. LEVERAGE is defined as sum of Short-Term Debt and Long-Term Debt scaled by ASSETS. MKBK is defined as the market value of equity scaled by CASH is cash and cash equivalents scaled by ASSETS. All models in panel A and panel B have year fixed effects. Robust standard errors are employed for panels A and B. Firm-level clustered standard errors are employed in panels C and D. All variables except the dummy variables are winsorized at the 1% level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A – Employee Centric Social Responsibility Regressions using Repurchase Dummies

VARIABLES	PROFIT SHARING	EMPLOYEE INVOLVEMENT	OTHER STRENGTHS	HEALTHSAFETY STRENGTHS	PROFIT SHARING	EMPLOYEE INVOLVEMENT	OTHER STRENGTHS	HEALTHSAFETY STRENGTHS
REPURDUM3	0.2195***	0.1616***	0.4187***	-0.1346				
	(3.2331)	(3.0155)	(4.8987)	(-1.5954)				
REPURDUM					0.1907***	0.1439***	0.2746***	-0.1350*
					(3.0712)	(2.9234)	(3.7143)	(-1.7728)
LOGASSETS	0.3903***	0.4741***	0.6980***	1.0000***	0.3876***	0.4651***	0.6974***	1.0027***
	(17.1618)	(26.8035)	(26.9213)	(34.8677)	(17.0243)	(26.1316)	(26.6173)	(35.2464)
CASH	1.7260***	1.6522***	0.2139	-0.5392*	1.7024***	1.6270***	0.1456	-0.5042*
	(11.0574)	(13.2192)	(1.0514)	(-1.9203)	(11.0839)	(13.1075)	(0.7253)	(-1.8042)
MKBK	-0.0481***	0.0210**	0.0141	0.0383**	-0.0495***	0.0199**	0.0129	0.0375**
	(-3.6753)	(2.1536)	(1.0154)	(2.4081)	(-3.8174)	(2.0639)	(0.9423)	(2.3696)
LEVERAGE	-1.4634***	-1.5536***	-2.5748***	0.1668	-1.4218***	-1.5282***	-2.5605***	0.1314
	(-7.3228)	(-9.8858)	(-12.2420)	(0.8159)	(-7.1946)	(-9.6986)	(-12.2406)	(0.6366)
Constant	-4.4608***	-5.9124***	-8.8641***	-11.3924***	-4.6555***	-6.0334***	-9.0718***	-11.4337***
	(-15.6483)	(-19.6649)	(-16.1300)	(-35.1162)	(-15.8703)	(-17.4142)	(-13.9288)	(-35.3020)

Observations	17,862	20,587	19,132	21,066	18,228	20,996	19,514	21,261
LR $\chi^2	1312	1472	2197	1479	1324	1472	2195	1495

Panel B – Employee Centric Social Responsibility Regression using Repurchase Levels

VARIABLES	Profit Sharing	Employee involvement	Other Strengths	Healthsafety Strengths	Profit Sharing	Employee Involvement	Other Strengths	Healthsafety Strengths
REPUR3	4.4218***	4.4686***	5.5008***	1.3269				
	(6.8391)	(9.4757)	(8.2404)	(1.5435)				
REPUR					2.5892***	3.2343***	3.3471***	0.3457
					(4.7103)	(7.9725)	(5.6900)	(0.4661)
LOGASSETS	0.3815***	0.4554***	0.6943***	0.9886***	0.3881***	0.4590***	0.7019***	0.9918***
	(16.9063)	(26.0485)	(26.9623)	(35.1848)	(17.2491)	(26.2346)	(27.2258)	(35.3315)
CASH	1.6924***	1.6673***	0.0558	-0.5123*	1.6710***	1.6448***	0.0689	-0.4866*
	(11.0767)	(13.5253)	(0.2735)	(-1.8190)	(10.9911)	(13.3886)	(0.3429)	(-1.7339)
MKBK	-0.0635***	0.0070	-0.0062	0.0297*	-0.0570***	0.0113	0.0021	0.0342**
	(-4.8243)	(0.7224)	(-0.4425)	(1.8236)	(-4.3723)	(1.1655)	(0.1499)	(2.1184)
LEVERAGE	-1.2662***	-1.3345***	-2.3494***	0.2740	-1.3363***	-1.3686***	-2.4519***	0.2199
	(-6.3682)	(-8.4328)	(-11.1067)	(1.3042)	(-6.7541)	(-8.6454)	(-11.6638)	(1.0441)
Constant	-4.5888***	-5.9847***	-8.9649***	-11.4507***	-4.5955***	-5.9866***	-8.9757***	-11.4496***
	(-15.6751)	(-17.2904)	(-13.8315)	(-35.2580)	(-15.7142)	(-17.3241)	(-13.8188)	(-35.3147)
Observations	18,228	20,996	19,514	21,261	18,228	20,996	19,514	21,261
LR $\chi^2	1361	1514	2212	1472	1342	1509	2188	1484

Panel C – Employee Centric Social Responsibility Regression using composite variable EMPNET

VARIABLES	EMPNET	EMPNET	EMPNET	EMPNET
REPURDUM3	0.0526***			
	(2.8389)			
REPURDUM		0.0513***		
		(2.8755)		
REPUR3			1.9712***	
			(6.5141)	
REPUR				1.2905***
				(5.7872)
LOGASSETS	0.1455***	0.1429***	0.1365***	0.1398***
	(11.5065)	(11.3980)	(11.2575)	(11.4106)
CASH	0.0687	0.0643	0.0723	0.0653
	(1.1823)	(1.1263)	(1.2811)	(1.1528)
MKBK	0.0086**	0.0088**	0.0039	0.0057
	(1.9860)	(2.0537)	(0.9253)	(1.3495)
LEVERAGE	-0.6078***	-0.5967***	-0.5225***	-0.5486***
	(-8.0940)	(-7.9824)	(-7.1676)	(-7.4937)
Constant	-0.7617***	-0.7292***	-0.7026***	-0.7085***
	(-7.4548)	(-7.7193)	(-7.5653)	(-7.5796)
Observations	26,971	27,466	27,466	27,466
R-squared				
Adjusted R-squared	0.1973	0.1959	0.2014	0.1988
F test model	57.91	56.52	56.94	56.84

Panel d – Environmentally Centric Social Responsibility Regression using composite variable ENVNET

VARIABLES	ENVNET	ENVNET	ENVNET	ENVNET
REPURDUM3	0.0454**			
	(2.5607)			
REPURDUM		0.0583***		
		(3.4109)		
REPUR3			1.3686***	
			(5.2002)	
REPUR				0.8567***
				(4.6495)
LOGASSETS	0.1310***	0.1263***	0.1237***	0.1262***
	(11.4951)	(11.2332)	(11.1963)	(11.3209)
CASH	0.0351	0.0306	0.0296	0.0243
	(0.7527)	(0.6647)	(0.6482)	(0.5297)
MKBK	0.0068	0.0071*	0.0035	0.0049
	(1.6199)	(1.6990)	(0.8899)	(1.2107)
LEVERAGE	-0.4671***	-0.4571***	-0.4175***	-0.4379***
	(-6.8745)	(-6.7675)	(-6.2733)	(-6.5533)
Constant	-1.1028***	-0.9470***	-0.9249***	-0.9294***
	(-11.5493)	(-9.8856)	(-9.7610)	(-9.7582)

Observations	26,971	27,466	27,466	27,466
R-squared				
Adjusted R-squared	0.1612	0.1601	0.1630	0.1611
F test model	22.24	21.90	22.07	22.05

Table 8 – Unfunded Pension Liabilities

This table presents the unfunded pension liabilities regressions. UNFUNDED PENSION is defined as pension assets net of pension liabilities, which is then scaled by pension liabilities. Our test variables are REPUR, REPUR3, REPURDUM3, and REPURDUM. REPUR is defined as Purchase of Common and Preferred Stock less Change in Preferred Stock scaled by ASSETS. REPUR3 is the moving average of REPUR in years t-2, t-1, and t. REPURDUM3 takes the value of 1 if a firm repurchased in any one of the year t-2, t-1, or t. REPURDUM takes the value of 1 if a firm repurchased in year t. The control variables are LOGASSETS, ROA, CASHFLOW, MARGINALTAX, UNIONMEM, MKBK, and KZ. LOGASSETS are defined as logarithm of ASSETS. ROA is defined as Earnings before Interest and Taxes scaled by ASSETS. We define CASHFLOW as Operating income before depreciation net of expenses scaled by ASSETS. MARGINALTAX is defined as tax rate before deducting interest expenses. UNIONMEM is defined as industry-wise ratio of number of workers covered by collective bargaining agreement to the total number of wage and salaried employees. MKBK is Market value of equity scaled by book value of equity. KZ is the Kaplan-Zingales index calculated per Kaplan and Zingales (1997). All variables except the dummy variables are winsorized at the 1% level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. All models have year and firm-fixed effects. Standard errors are clustered at the firm level.

VARIABLES	UNFUNDED PENSION	UNFUNDED PENSION	UNFUNDED PENSION	UNFUNDED PENSION
REPURDUM3	0.0125**			
	(1.9936)			
REPURDUM		0.3748***		
		(3.8778)		
REPUR3			0.0127***	
			(2.6019)	
REPUR				0.2266***
				(3.8406)
LOGASSETS	-0.0061	-0.0076	-0.0089	-0.0075
	(-0.7621)	(-0.9560)	(-1.1252)	(-0.9455)
ROA	0.0737	0.0317	0.0542	0.0397
	(1.3190)	(0.5875)	(0.9962)	(0.7316)
CASHFLOW	0.0419	0.0527	0.0432	0.0466
	(0.8820)	(1.1415)	(0.9272)	(1.0044)
MARGINALTAX	0.0002	0.0004	0.0004	0.0004
	(0.1540)	(0.3900)	(0.3936)	(0.3744)
UNIONMEM	0.1849**	0.1764**	0.1798**	0.1766**
	(2.1824)	(2.0568)	(2.0945)	(2.0539)
MKBK	0.0014	0.0007	0.0013	0.0010
	(0.7385)	(0.3925)	(0.7209)	(0.5646)
KZ	-0.0041***	-0.0039***	-0.0040***	-0.0040***
	(-2.7819)	(-2.6861)	(-2.7370)	(-2.7467)
Constant	0.0655	0.1119**	0.1158**	0.1128**
	(1.1832)	(2.0572)	(2.1313)	(2.0729)
Observations	17,189	17,919	17,919	17,919
R-squared	0.816	0.815	0.815	0.815
Adjusted R-squared	0.7916	0.7914	0.7910	0.7912
F test model	89.66	91.32	90.37	90.83

Table 9 – CEO Compensation

Panel A – Percentage Change in CEO compensation

This table presents the CEO compensation regressions. In panel A, our dependent variable CEO COMPENSATION CHANGE is defined as the percentage change in CEO compensation.. In panel B, our dependent variable is the natural logarithm of the ratio of CEO total compensation to the median-employee total compensation. Our test variables are REPUR, REPUR3, REPURDUM3, and REPURDUM. REPUR is defined as Purchase of Common and Preferred Stock less Change in Preferred Stock scaled by ASSETS. REPUR3 is the moving average of REPUR in years t-2, t-1, and t. REPURDUM3 takes the value of 1 if a firm repurchased in any one of the year t-2, t-1, or t. REPURDUM takes the value of 1 if a firm repurchased in year t. The control variables are LOGASSETS, LEVERAGE, MKBK, ROA, CASHFLOWVOL, LOG EMP, RET, R&D, CAPEX, CEOAGE, TENURE, DUALITY, and BOARDINDEPENDENCE. LOGASSETS is defined as the logarithm of ASSETS. LEVERAGE is defined as sum of Short-Term Debt and Long-Term Debt scaled by ASSETS. MKBK is defined as the market value of equity scaled by CASH is cash and cash equivalents scaled by ASSETS. ROA is defined as Earnings before interest and taxes scaled by ASSETS. CASHFLOWVOL is the five-year rolling standard deviation of CASHFLOW. We define LOG EMP as the logarithm of total employees. RET is defined as the annual percentage change in stock price including dividends. R&D is defined as research and development expenditures scaled by total assets. CAPEX is defined as capital expenditures scaled by ASSETS. CEOAGE is defined as the age of the CEO. We define TENURE as the number of years as CEO. DUALITY takes the value of 1 if the CEO and Board Chairman are the same person. BOARDINDEPENDENCE is defined as the percentage of independent directors. All variables except the dummy variables are winsorized at the 1% level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. All models have year and firm-fixed effects. Standard errors are clustered at the firm level.

Panel A - Change in CEO compensation

VARIABLES	CEO COMPENSATION CHANGE	CEO COMPENSATION CHANGE	CEO COMPENSATION CHANGE	CEO COMPENSATION CHANGE
REPURDUM3	0.0058			
	(0.3502)			
REPURDUM		-0.2424		
		(-1.3731)		
REPUR3			-0.0196	
			(-1.1895)	
REPUR				-0.3551**
				(-2.0460)
LOGASSETS	-0.0996***	-0.1012***	-0.0980***	-0.1029***
	(-4.5462)	(-4.6003)	(-4.4724)	(-4.6991)
LEVERAGE	0.0800	0.0794	0.0741	0.0732
	(1.3078)	(1.3007)	(1.1999)	(1.1923)
MKBK	-0.0006	-0.0005	-0.0010	-0.0006
	(-0.1761)	(-0.1288)	(-0.2825)	(-0.1633)
ROA	-0.1514	-0.1310	-0.1410	-0.1136
	(-1.3542)	(-1.1512)	(-1.2647)	(-1.0008)
CASHFLOWVOL	0.0177	-0.0045	-0.0058	-0.0007
	(0.1304)	(-0.0351)	(-0.0447)	(-0.0052)
LOG EMP	0.0159	0.0188	0.0169	0.0204

	(0.6004)	(0.7041)	(0.6399)	(0.7671)
RET	0.0136**	0.0128**	0.0132**	0.0123**
	(2.5751)	(2.4303)	(2.5183)	(2.3419)
R&D	-0.5889**	-0.5661*	-0.5802**	-0.5540*
	(-2.0222)	(-1.9353)	(-1.9861)	(-1.9005)
CAPEX	-0.9892***	-0.9892***	-0.9863***	-0.9922***
	(-4.1481)	(-4.1490)	(-4.1372)	(-4.1547)
CEOAGE	0.0028**	0.0028*	0.0028**	0.0028*
	(1.9650)	(1.9517)	(1.9731)	(1.9579)
TENURE	-0.0019	-0.0019	-0.0019	-0.0019
	(-1.4401)	(-1.4405)	(-1.4341)	(-1.4467)
BOARDINDEPENDENCE	0.0777	0.0814	0.0805	0.0841
	(0.9321)	(0.9768)	(0.9672)	(1.0118)
DUALITY	0.0393**	0.0391**	0.0393**	0.0391**
	(2.3269)	(2.3175)	(2.3266)	(2.3118)
Constant	0.7185***	0.7286***	0.7208***	0.7392***
	(4.1818)	(4.2259)	(4.1965)	(4.2878)
Observations	14,830	14,834	14,834	14,834
R-squared	0.051	0.051	0.051	0.052
Adjusted R-squared	-0.0357	-0.0357	-0.0357	-0.0354
F test model	7.151	7.210	7.365	7.470

Panel B – CEO Pay Ratio

VARIABLES	LOG CEO-WORKER COMP RATIO	LOG CEO-WORKER COMP RATIO	LOG CEO-WORKER COMP RATIO	LOG CEO-WORKER COMP RATIO
REPURDUM3	0.0036			
	(0.0302)			
REPURDUM		1.9899**		
		(1.9968)		
REPUR3			0.0320	
			(0.3264)	
REPUR				1.2676
				(1.3248)
LOGASSETS	-0.1030**	-0.0944**	-0.1025**	-0.1006**
	(-2.5760)	(-2.4202)	(-2.5640)	(-2.5399)
LEVERAGE	0.3595*	0.3673*	0.3583*	0.3704*
	(1.8989)	(1.9584)	(1.9021)	(1.9642)
MKBK	0.0205	0.0167	0.0205	0.0187
	(1.2563)	(1.0086)	(1.2547)	(1.1295)
ROA	0.5169	-0.0206	0.4940	0.1474
	(0.9822)	(-0.0359)	(0.9311)	(0.2715)

CASHFLOWVOL	0.9097	0.7962	0.9254	0.8328
	(1.5401)	(1.2559)	(1.5588)	(1.3427)
LOG EMP	0.5954***	0.5792***	0.5947***	0.5877***
	(13.1571)	(12.8884)	(13.1629)	(12.8987)
RET	0.1168	0.1270	0.1187	0.1283
	(1.1984)	(1.2880)	(1.2221)	(1.2980)
R&D	-1.4908*	-1.9042*	-1.4799	-1.7378*
	(-1.6609)	(-1.9245)	(-1.6334)	(-1.8174)
CAPEX	0.5511	0.3413	0.5375	0.3808
	(0.4718)	(0.2938)	(0.4598)	(0.3297)
CEOAGE	0.0052	0.0059	0.0054	0.0051
	(0.8242)	(0.9425)	(0.8458)	(0.8129)
TENURE	-0.0034	-0.0033	-0.0034	-0.0032
	(-0.4684)	(-0.4594)	(-0.4727)	(-0.4437)
DUALITY	-0.0056	0.0049	-0.0053	0.0037
	(-0.0769)	(0.0661)	(-0.0736)	(0.0502)
BOARDINDEPENDENCE	1.9784***	1.9411***	1.9634***	1.9421***
	(3.4800)	(3.4489)	(3.4297)	(3.4242)
Constant	2.0496***	2.0153***	2.0287***	2.0922***
	(3.7597)	(3.7570)	(3.7409)	(3.8401)
Observations	563	563	563	563
R-squared	0.489	0.495	0.489	0.492
Adjusted R-squared	0.4763	0.4817	0.4764	0.4786
F test model	40.98	42.03	40.90	41.44

Table 10 – 2017 Tax Cuts and Jobs Act (TCJA) Difference-in-Difference Regressions

Table 10 repeats our earlier regressions with a difference-in-difference framework. We chose TCJA of 2017 as our exogenous event. We use years 2014, 2015, and 2016 as year pre-event. We use years 2018, and 2019 as year post-event, and we drop year 2017 observations. Our test variables is REPURDUM3. REPURDUM3 takes the value of 1 if a firm repurchased in any one of the year t-2, t-1, or t. TCJA is a dummy variable that takes the value of 1 for years 2018 and 2019. LOGASSETS is defined as the logarithm of ASSETS. LEVERAGE is defined as sum of Short-Term Debt and Long-Term Debt scaled by ASSETS. LOGSALE is defined as the logarithm of total sales. CASH is cash and cash equivalents scaled by ASSETS. DIVIDENDS is defined as cash dividends scaled by total assets. MKBK is defined as the market value of equity scaled by CASH is cash and cash equivalents scaled by ASSETS. ROA is defined as Earnings before interest and taxes scaled by ASSETS. We define CASHFLOW as Operating income before depreciation net of expenses scaled by ASSETS. MARGINALTAX is defined as tax rate before deducting interest expenses. UNIONMEM is defined as industry-wise ratio of number of workers covered by collective bargaining agreement to the total number of wage and salaried employees. MKBK is Market value of equity scaled by book value of equity. KZ is the Kaplan-Zingales index calculated per Kaplan and Zingales (1997). CASHFLOWVOL is the five-year rolling standard deviation of CASHFLOW. We define LOG EMP as the logarithm of total employees. RET is defined as the annual percentage change in stock price including dividends. R&D is defined as research and development expenditures scaled by total assets. CAPEX is defined as capital expenditures scaled by ASSETS. CEOAGE is defined as the age of the CEO. We define TENURE as the number of years as CEO. DUALITY takes the value of 1 if the CEO and Board Chairman are the same person. BOARDINDEPENDENCE is defined as the percentage of independent directors. All variables except the dummy variables are winsorized at the 1% level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. All models have year and firm-fixed effects. Standard errors are clustered at the firm level.

VARIABLES	CASH SURPLUS	HIRING	STAFF EXPENSE Firm-Year FE	STAFF EXPENSE Industry-Year FE	UNFUNDED PENSION	CEO COMPENSATION CHANGE
REPURDUM3	0.0337***	-0.0061	0.0081	0.0483***	-0.0075	-0.0063
	(3.0011)	(-0.3465)	(1.0224)	(3.7433)	(-0.6181)	(-0.0367)
TCJA	0.0137	0.0032	-0.0053	-0.0131**	0.0394*	0.1067
	(1.3656)	(0.1701)	(-0.9641)	(-2.0919)	(1.7747)	(0.7663)
REPURDUM3×TCJA	-0.0099	0.0297	-0.0048	0.0120	-0.0132	-0.1308
	(-0.8369)	(1.3665)	(-0.5826)	(0.9671)	(-0.5471)	(-0.8724)
LOGASSETS	-0.0448***	0.0063			0.0014	-0.0775
	(-3.6490)	(0.1884)			(0.0744)	(-0.4790)
LEVERAGE	-0.2785***	-0.4544***	0.0301	0.0597**		0.2994
	(-8.2949)	(-7.7300)	(1.1734)	(2.1453)		(0.7386)
AGENCY	0.0044					
	(0.2716)					
MKBK	-0.0013				0.0013	0.0070
	(-0.5790)				(0.5414)	(0.3616)
ROA	0.2869***	0.0723	-0.0553***	-0.0536**	-0.1014	-0.0841
	(8.3607)	(1.0761)	(-2.6269)	(-2.0461)	(-1.2962)	(-0.2847)
LOG EMP		-0.6786***				-0.2912
		(-9.0912)				(-1.3065)
CASHFLOW					0.0730	
					(1.2979)	

MARGINALTAXES					0.0016	
					(1.1376)	
UNIONMEM					-0.1795	
					(-1.4647)	
KZ					-0.0007	
					(-0.3408)	
CAPEX			0.0281	-0.0321		-1.3772
			(0.5553)	(-0.4463)		(-0.9346)
LOGSALE			0.0012	0.0043**		
			(0.2742)	(2.0688)		
CASH			0.0127	0.0177		
			(0.5278)	(0.5632)		
DIVIDENDS			-0.0476	0.1958		
			(-0.3372)	(0.7361)		
CASHFLOWVOL						-1.4368
						(-0.9550)
RET						-0.0292
						(-0.6352)
RND						-0.2143
						(-0.1992)
CEOAGE						0.0143
						(1.2405)
TENURE						-0.0112
						(-0.6445)
BOARDINDEPENDENCE						0.3623
						(0.4394)
DUALITY						0.1553
						(0.9315)
Constant	0.4576***	1.1255***	0.1465***	0.1039***	-0.2750*	0.2249
	(5.7317)	(6.3399)	(5.6408)	(6.8505)	(-1.8418)	(0.1634)
Observations	14,246	9,734	1,988	1,988	1,748	1,987
R-squared	0.723	0.587	0.961	0.237	0.959	0.268
Adjusted R-squared	0.5907	0.3004	0.9323	0.2303	0.9291	-0.2149
F test model	25.81	30.01	1.595	5.404	2.390	0.729