

The Politics of Share Repurchases: What does the evidence say?

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Abstract

This paper examines several popular criticisms leveled against corporate repurchases, especially by politicians. We find that these criticisms, for the most part, do not stand up to the rigor of empirical analysis. Our results indicate that stock repurchases do not cause firms to become less resilient. We find quite the opposite, i.e., repurchasing firms have adequate cash resources to meet their pro forma needs compared to non-repurchasing firms. This holds even when the firms experience unexpected financial distress. We also find that repurchases do not come at the expense of employee welfare. We document that repurchases do not reduce hiring or employee expenses. We also do not find that repurchases come at the expense employee satisfaction or at the cost of underfunded pension contributions. Finally, we do not find that repurchases promote more aggressive 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

The Securities and Exchange Commission (SEC) adopted Rule 10b-18 in 1982 that granted “safe harbor” protection to U.S. corporations thereby shielding them from claims of market manipulation. This unleashed a dramatic increase in corporate share repurchases that have continued to this day. Growth in share repurchases, however, has not been without controversy. Politicians have been at the forefront of this opposition along with labor groups, the popular press, thinktanks to a lesser extent, and even a few academics. 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 ConocoPhillips¹. They criticized these companies for spending \$194 billion from 2004 until the first quarter of 2008. They stated that \$194 billion was sufficient to provide \$2000 rebates to every family, produce 5 million plug-in hybrid cars, and power 3.5 million solar-powered homes, and further went on to criticize these firms on R&D underinvestment. These criticisms reached a new height in the aftermath of the Trump administration’s Tax Cut and Jobs Act of 2017 (TJCA) when many senators faulted corporations for spending the tax cuts on

¹ A Reuters news article referencing the letter can be accessed from <https://cn.reuters.com/article/instant-article/idUKN3135461320080731>

additional repurchases. For example, senate Democrats released a report in November 2018 claiming that \$882 billion of repurchases were authorized in 2018². The report further accused these companies of laying-off workers when billions were spent on share repurchases. Many of the criticisms leveled by politicians against repurchases were encapsulated in an op-ed piece written by Senators Chuck Schumer and Bernie Sanders in the New York Times in 2019³. In the letter they highlighted several observations. First, they state that repurchases make firms less resilient, and workers less productive as greater 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, paid medical leave, better retirements benefits, better worker training, and lower pension fund contributions resulting in underfunding. Joining this chorus against repurchases by politicians were labor unions, think tanks, and the popular press. For instance, Communication Workers of America urged senators to rein in corporate repurchases⁴. In their statement they stated that Verizon repurchased \$5 billion worth of share and turned down striking employees that the company could not afford wage increases, improved health care, and job security. Activist hedge fund managers, Elliott Management & Paul Singer targeted AT&T and demanded that the company lay off employees and spin-off assets. AT&T then acquiesced to spend \$30 billion in share repurchases. Popular news outlets

² <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.

³ This opinion piece can be accessed from <https://www.nytimes.com/2019/02/03/opinion/chuck-schumer-bernie-sanders.html>

⁴ <https://cwa-union.org/news/cwa-member-urges-senators-act-rein-in-corporate-stock-buybacks>

such as New York Times^{5,6}, Washington Post^{7,8} were also largely 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 same the ones that queued up to seek government aid during the Covid-19 economic crisis. Criticism against the airline industry was particularly harsh. In September 2020, the U.S. Treasury closed bailout loans for seven airlines that was subject to maximum loan concentration of \$7.5 billion per airline. Prior to the pandemic, the four big airlines and Boeing spent \$70 billion on repurchases in the past five years⁹. In the past ten years, big airlines have approximately spent more than 90% of their free cash flow on share repurchases¹⁰. The main criticism of airlines and many other companies that sought relief during the pandemic is that instead of spending money on share repurchases they could have spent the money on shoring up their capital and liquidity instead of seeking a bailout from the government.

Given these criticisms, it is of little surprise that there are at least four bills in Congress that aim to curb the practice of share repurchases. Prominent among them is the *Reward Work Act*¹¹ 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 *Stock Buyback Reform and Worker Dividend Act of 2019* proposed by Senator Sherrod Brown and The Worker Dividend Act

⁵ Phillips, M. (2020, Mar 25). Buyback binge halts, and doesn't look great at the moment: [Business/Financial desk]. *New York Times*

⁶ Flitter, E., & Eavis, P. (2020, Apr 25). The buybacks that ate restaurants' cash up: [Business/Financial desk]. *New York Times*

⁷ Putka, G. (2019, Nov 10). . . . Company insiders *are* selling stock during buyback programs and making additional profits when stock prices jump. The Washington Post

⁸ Pearlstein, S. (2014, May 11). The dangerous allure of those stock buybacks. The Washington Post

⁹ <https://www.washingtonpost.com/business/2020/04/15/bailout-coronavirus-airlines-boeing-buybacks/>

¹⁰ <https://www.marketwatch.com/story/airlines-and-boeing-want-a-bailout-but-look-how-much-theyve-spent-on-stock-buybacks-2020-03-18>

¹¹ Reward Work Act is only a proposed law it has not yet passed.

proposed by Senators Cory Booker, Bob Casey, and 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 while others place significant restrictions. Restrictions include such things as “working dividends” tied to repurchases, disclosure of employee wages compared to repurchase amounts, layoffs, pension plan contributions, considerations of investments in research and development, worker training programs, hiring, and capital expenditures. The proposed laws demand certification from the CEO and the board of directors regarding the accuracy of the facts mentioned in the disclosure and affirmation that repurchase program is in the best interest of the company. These laws also want the SEC to review repurchase proposals and provide its stamp of approval.

We subject the above criticisms to the scrutiny of objective empirical investigation. This is important for several reasons. First, it is important that legislation repealing Rule 10b-18 outright or otherwise curbing/constraining firms’ ability to repurchase their stock is best done on an informed basis. If not, we may well suffer from the law of unintended consequences. Second, investors care about these criticisms as a number of them have implications for the ESG factors, which increasingly serve as the guiding principle for investing. Finally, the Conference Board in 2019 and other corporate leaders advocate that firms adopt a more expansive view of the stakeholders they serve including employees.

We do not attempt to investigate all of the criticisms leveled against stock repurchases. Our focus is on criticisms that have not been answered either directly or indirectly in prior literature and those that can be answered with accessible data. Specifically, the research questions we explore are the following:

- (1) Do stock repurchases make firms less resilient? We define resiliency in terms of adequacy of liquid resources, e.g., cash balances.
- (2) Are stock repurchases associated with less hiring?
- (3) Are stock repurchases associated with lower employee compensation?
- (4) Are stock repurchases associated with lower employee morale? We proxy for employee morale with available KLD proxies such as profit sharing, employee involvement, “other” strengths and health and safety strengths.
- (5) Are stock repurchases associated with lower retirement benefits? We use extent of underfunded pension liabilities as a proxy for strength of retirement benefits
- (6) Are stock repurchases associated with greater CEO compensation?

Our overall sample period of repurchases is from 1990 to 2019, however, sample size varies depending on the availability of data to answer each of the research questions. For example, we are able to utilize the entire sample period to answer the question of firm resiliency as the data required is mainly sourced from financial statements. At the other extreme, to answer questions regarding employee morale we had to rely on data sourced from KLD, which is much more limited, i.e., 1991 to 2018. One of our variables in the KLD database had data available from 2003 through 2018.

Our results in brief are as follows. With regard to firm resiliency, we find the stock repurchases do not compromise firm’s liquidity—our measure for resiliency. We find that stock repurchasing firms do not experience any cash shortfall relative to non-repurchasing firms. This holds true even if we consider extreme liquidity shock periods, i.e., sudden severe drop in sales. Our shortfall measure considers pro forma capital expenditures and dividend obligations. We also do not find that repurchases come at the expense of lower hiring or reduced employee

expenses. Our evidence indicates that repurchasing firms are associated with better employee morale. We also do not find that incidence of pension fund underinvestment is greater for repurchasing firms. Finally, our evidence does not reveal CEO compensation in excess of those for non-repurchasing firms. In sum, we find that popular criticisms leveled at corporate repurchases cannot be backed up by empirical data.

The remainder of the paper is laid out as follows. Section 2 discusses the sample and variable measurement. Section 3 discusses the results while section 4 considers some robustness tests. Finally, section 4 presents our conclusions.

2. Sample and variables

2.1 Data

Our sample consists of all firms in COMPUSTAT annual database from 1990 through 2019. We obtain majority of our variables from COMPUSTAT. In addition to COMPUSTAT, we also used the KLD database to obtain employee wellness variables. We used data from Barry Hirsch and David Macpherson's database (see website at <http://unionstats.com>) for labor unionization rates by industry. To calculate CEO total compensation, and option compensation, we use the EXECUCOMP database. The American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) provides CEO-to-median worker compensation ratio for year 2019. We used data from their website. We restrict our sample to firms without missing assets, sales, CUSIP, number of common shares, and book value of equity. Financials and utility firms were dropped 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.

2.2 Test Variables

In this section we focus on defining the test variables.

Repurchases: Researchers can choose between multiple proxies and their respective databases that are available to estimate repurchases. Proxies include cash spent on repurchases, decreases in shares outstanding, changes in treasury stock, actual repurchases data from the publicly filed 10-K and 10-Q statements. Databases include COMPUSTAT, CRSP, and SDC Platinum. Banyi, Dyl, and Kahle (2008) do a thorough assessment to determine the veracity of each measure and conclude that the COMPUSTAT measure that captures the purchases of common stock is the best estimate of repurchases. We follow their advice and use the purchases of common stock from COMPUSTAT. To adjust for the repurchases of preferred stock, we subtract the repurchases in preferred stock, and any decreases in the value of preferred stock (Banyi, Dyl, & Kahle, 2008; Grullon & Michaely, 2002).

Cash Shortfall: We use the Huang and Ritter's (2015) projected cash variable as our cash surplus measure. We define it as

$$Cash_{ex-post} = Cash_{t-1} + Internal\ Cash\ Flows_t - Investments_t - \Delta Noncash\ Net\ working\ Capital - Cash\ Dividends_t \quad (1)$$

We scale the cash shortfall measure¹² by total assets. A firm is able to meet its cash needs without issuing costly external debt or equity if cash surplus values are higher. Huang and Ritter (2015) find that the cash shortfall 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.

¹² Detailed definitions of each term in the equation are provided in Appendix A.

Hiring: We use the COMPUSTAT database variable Employees (measured in '000s) to calculate our hiring measure. *Hiring* is calculated as the change in the number of employees from year $t-1$ to t . We also calculate the percentage increase in number of employees *Hiring%*, which is defined as hiring scaled by the employment levels in the prior year.

Staff Expenses: We use COMPUSTAT to obtain the extended labor expenses (*XLR*), which is then scaled by total assets. Only 13% of the COMPUSTAT firm-years have information for the extended labor expenses variable (Hartman-Glaser, Lustig, & Xiaolan, 2019). To overcome this data limitation, we impute the extended labor expenses. We group firms into of Fama-French 12 industries and estimate the median labor cost per employee (*XLR/EMP*) for each industry-year using the available *XLR* observations. We use this estimate to impute labor costs for firms with missing *XLR* data as the number of employees times the median labor cost per employee for the respective industry-year.

Employee Wellness: We use four different dimensions from the KLD database to measure employee wellness. 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 work force. *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 is not covered by any other dimensions measured by KLD. These dimensions include reputable third party ranking and recognitions for excellent workforce management. *Health Safety Strength* dimension identifies companies with strong employee

health and safety 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.

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 pension liabilities. To calculate the extent of deficits, Rauh (2006) and Chen, Yu, and Zhang (2013) divide the difference between pension assets and liabilities by the market value of equity. We take a different path by scaling the difference between pension assets and liabilities by pension liabilities. Market value of equity is an externally determined firm characteristic which could distort the unfunded 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 is comprised of salary, bonus, other annual, total value of restricted stock granted, total 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 took an aim at the increasing pay inequality and supposed 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.

2.3 Summary Statistics

Table 1 provides the summary statistics of the test variables and other firm characteristics. All variables are winsorized at the 1% and 99% levels. On average, using the three-year moving average repurchase of repurchases or the yearly spending on repurchases we find that firms spend approximately 1% of assets on repurchasing shares. The repurchase dummy for three-year average repurchase shows that approximately half of the sample did repurchase shares. The repurchase dummy for the current year repurchases shows that 33% of the firm-years repurchase shares. 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. The *Hiring* variable is highly-right skewed with an average of 34.07% whereas the median value is only 1.20% mirroring the overall trend in the economy of slow hiring practices. Majority of the firms in the sample increase their workforce and don't layoff employees as shown by the twenty-fifth percentile value of -3.5%. At least half of the firms in the sample have unfunded pension liabilities. The average of pension unfunded liabilities is approximately -14.33% of the pension liabilities. Firms spend about 21% of total assets on staff expenses. Firms that score high on profit sharing are only 9% of the available firm years on the KLD database. About 12% of the firm-years score high on employee involvement, and 7% of firm-years score high on human capital development, and 5% of firm-years score high on health and safety strength. CEOs receive an average total compensation of \$5 million (median of \$2.87 million). The average CEO receives approximately 188 times more than the median employee compensation. The average firm size is \$2.3 billion (median of \$198 million) with 32% funded by leverage. Firms in the sample spend 5.94% of total assets on capital assets, and they enjoy fairly strong market-to-book ratios of 2.73. Firms have negative *ROA* of -0.39%

whereas the median *ROA* is 5.58%. Stock returns offer a different picture of the firms in the sample. The average one-year stock return is 65% (median is 7%). Panel B of table 1 presents the same firm characteristics for firms that repurchase and panel C of table 1 presents the firm characteristics for firms that do not repurchase. Mean and median values that are statistically different at the 1% level are presented in bold font. Firms that repurchase (8.08%) maintain higher cash surplus levels than firms that do not repurchase (5.74%). Repurchasing firms hire more than non-repurchasing (48.24% versus 21.64%) firms. Both class of firms maintain similar values of unfunded pension liabilities of around -15%. Repurchasing firms spend more on their workforce (25% of total assets) compared to non-repurchasing firms that spend only about 15% of their total assets on their workforce. CEOs of repurchasing firms are well compensated compared to non-repurchasing firms (\$5.6 million versus \$3.6 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 95 times more than the median worker's compensation. Repurchasing firms are bigger in size, 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]

3. Results

3.1 Cash Surplus

3.1.1 Univariate results

The cash stockpiling by US firms was the focus of the paper by Bates, Kahle and Stulz (2009). They find that the average cash-to-assets ratio has doubled from 1980 to 2006. They attribute the increase in cash to the increase in cash flow risk, fewer inventories and receivables, and highly uncertain R&D investments, which are classical reasons to support a precautionary motive of cash hoarding. Recent studies have also shown that US firms have accumulated large cash positions (Faulkender, Hankins, and Petersen 2016, Pinkowitz, Stulz and Williamson 2015). Due to capital market imperfections and information asymmetries firms may accumulate cash reserves, which is termed as the precautionary motive. President Obama in his 2015 State of the Union addressed the tax loop holes that allow US firms to keep cash abroad. He advocated eliminating the loop holes and rewarding firms that invest in the US. Under President Trump's term the 2017 Tax Cuts and Jobs Act (TCJA) was signed into law that reduced taxes and allowed firms to repatriate the cash held abroad. Foreign earnings held in cash and cash equivalents were taxed at 15.5% and those not held in cash and cash equivalents were taxed at 8%¹³. The TCJA also permits firms to pay taxes in installments over eight years. As a result of these tax incentives US firm's cash chest reached \$3.2 Trillion in Q2 of 2020, correspondingly US firms invested \$1.7 Trillion in Q2 of 2020¹⁴. The popular angst against US companies is that they are eager to fulfil short term incentives such as share repurchases, and that they don't invest enough for the future i.e., capital expenditure, research and development, and human capital. Following Huang

¹³ Refer the Tax Policy Center - <https://www.taxpolicycenter.org/briefing-book/what-tcja-repatriation-tax-and-how-does-it-work>

¹⁴ US Flow of Funds <https://www.federalreserve.gov/releases/z1/20200921/z1.pdf>

and Ritter (2015) we construct a *CASH SURPLUS* measure, which indicates whether a firm has enough cash for precautionary purposes. Positive values (negative values) for *CASH SURPLUS* indicate that the firm does (does not) have enough cash and will not raise external capital (will issue costly external debt or equity). Firm spending on share repurchase may reduce the cash surplus levels, which could be critical if the firm faces any cash crunches due to internal or external problems such as recession, product market developments, economic lockdowns that reduce demand for goods and services. In figure 1, we plotted cash surplus levels from 1991 to 2019 against repurchases. Until 2015, cash surpluses and repurchases follow an inverse trend. Cash surplus levels get depleted when repurchases peak. For instance, repurchase achieved a peak in 1998 and 2007 when cash surplus levels achieved a trough in 1999 and 2009. The 2007 – 2009 period coincided with the global financial crisis, which could explain the cratering of repurchases and cash surplus levels. Cash surpluses and repurchases recovered soon after every trough. The inverse trend between cash surplus levels and repurchase appears to be broken in the aftermath of the financial crisis.

[Insert figure 1 about here]

Internal and external factors influence firm financial policies. Dittmar (2000) presents a collection of firm-specific determinants that affect repurchases. Bliss, Cheng, and Denis (2015) find that during the financial crisis of 2008-2009 firms reduced payout to maintain cash levels and to finance investment. A macroeconomic shock affects all firms with varying degrees. However, internal shocks rattle only the affected firms. A firm that faces an internal crisis that could lead to a cash crunch may decide to build up cash reserves and reduce expenditures and payouts. For instance, firms that face declining sales are expected to draw down on cash surpluses, and reduce payouts to supplement cash surpluses. Without referring to the cause of the

decline in sales, we examine the trends in cash surplus and repurchases. We define *SALE DROP* as those firms that experience a 25% decline in sales compared to the previous year. Senators Chuck Schumer and Bernie Sanders claimed in their New York Times op-ed that public corporations have become obsessed with repurchases and that repurchases weaken the long-term strength of companies. According to their view such irresponsible firms when facing cash crunches should continue repurchasing shares as well as deplete their cash surpluses. In table 2, we partition the sample by repurchase quartiles each year and examine the cash surplus and repurchases. Panel A of table 2 presents cash surplus by repurchase quartiles when firms face sale decline and otherwise. Firms that face a sales decline and those that are members of the lowest repurchase quartile have 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 repurchase quartile 1 the cash surplus increases from 1% to 9.82%, and further to 10.99%. In 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 to 18.23% in two years after the sale drop. These numbers show that repurchasing firms that experience sale drops erase any cash shortfalls within the following two years. 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 two-periods forward compared to repurchasing firms in the third quartile that did not experience any sale drop (10.97% versus 5.11%). Panel B of table 2 replicates panel A with repurchase amounts. This panel underscores that repurchasing firms acted responsibly after any crisis with respect to repurchases. Repurchasing firms in any quartile that experienced a sale drop repurchased lower

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 repurchased 2.85% of their assets in the two-period forward after a sale drop compared to 3.96% of assets for repurchasing firms that did not experience a sale drop.

[Insert Table 2 about here]

3.1.2 Multivariate Regression Results

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

$$Cash\ Surplus_t = \alpha_{i,t} + \beta_{i,t}Repurchase_{i,t} + \gamma_{i,t}Controls_{i,t} + \varepsilon_{i,t} \quad (2)$$

The test variable in model 1 is *REPURDUM3* that takes the value of one if repurchases are positive based on a three-year moving average of repurchases. In model 2, the test variable is *REPURDUM* that takes the value of one if repurchases are positive during the current year. In models 3 and 4 we use the three-moving average of repurchases, and the current year repurchases respectively. Our control variables are drawn from Bates, Kahle, and Stulz (2009), Faulkender, Hankins, and Petersen (2016) and Huang and Ritter (2015). We do not control for any of the sources or uses of cash because those are already accounted for in equation (1) used to estimate cash surplus. In this specification we control for firm size using 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 find that the repurchase variables are all positive and statistically significant at the 1% level in three out of the four models, which suggests that repurchasing firms have better cash surpluses. Model 2 suggests 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 firms, highly levered firms, and firms with larger growth options maintain lower cash surpluses. Highly profitable firms maintain higher cash surpluses. Overall, table 2, and table 3 suggest that repurchases do not deplete cash surpluses.

[Insert table 3 about here]

3.1.3 Cash Surplus with Internal Risk

Cash surpluses can be depleted when firms face trouble – internally or externally. The impact of external factors impacting cash levels have been well documented. It is not a surprise that recessions, wars, natural calamities or health-care pandemics subdue business activity that can deplete cash reserves. We focus on internal issues that force firms to drawdown on their cash surpluses. In table 2, we presented the univariate analysis of cash surpluses and repurchase due to revenue loss situations. 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 repurchases against cash surpluses when not facing any sale drop and facing sale 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 regressions results with sale drops. Interestingly, we find that none of the repurchase variables are negatively related to cash surpluses. In fact, share repurchases are positively related to cash surpluses, which means that firms that repurchase shares act responsibly, they 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, and 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]

In table 5, we proceed to examine whether firms learn from their episodes of financial stress. If firms continue their path of share repurchases after a sale drop event they could eventually deplete cash surpluses that could take a few years to restore to levels before the sale drop event. If firms experience multiple episodes of sale drops and if firms do repurchase, then we expect share repurchases to be negatively related to cash surpluses. Human memory is short lived and so could firm memory. Firms may be cautious in the short term if they face another sale drop. If two sale drop events are separated within one year then firms could learn from their past mistakes and share repurchases may be pared down to improve cash surpluses. If sale drop events are separated by more than one year then if firms did not learn or if firms were reluctant to apply their learning from past mistakes then repurchases could be negatively related to cash surpluses. Panel A of table 5 presents the results for the repurchase dummies and panel B of table 5 presents the results for the repurchase levels. The dependent variable in model 1 of table 5 is cash surplus in the current year (t) if the sale drop occurred in the current year (t) conditional on a sale drop in the year ($t-1$). The dependent variable in model 2 of table 5 cash surplus in the following year ($t+1$) if the sale drop occurred in the following year ($t+1$) conditional on a sale drop in the year ($t-1$). The dependent variable in model 3 of table 5 cash surplus in the following year ($t+2$) if the sale drop occurred in the following year ($t+2$) conditional on a sale drop in the

year ($t-1$). The dependent variable in model 4 of table 5 cash surplus in the years ($>t+2$) if the sale drop occurred in the years ($>t+2$) conditional on a sale drop in the year ($t-1$). Except in model 1 of Table 5 panel A we don't find a negative relationship between cash surplus and repurchases. This negative relationship is not statistically significant. Models 2, 5, 6, and 8 of Table 5 panel A (Models 1, 2, 3, 5, and 7 of Table 5 panel B) rule out any irresponsibility on the part of firms that engage in repurchases following sale drops. All the models show that repurchases are positively related to cash surpluses after sale drops. These results prove that institutions act well by not depleting cash surpluses by repurchasing shares.

[Insert Table 5 about here]

3.2 Employee Hiring

In *the letter*, twenty-one U.S. senators alleged that share repurchases funneled corporate profits to wealthy shareholders instead of benefiting employees and long-term investment that sustain economic growth. Employee hiring and retention is a key ingredient to a successful firm.

Mitchell, Holtom, and Lee (2001) state that top-level executives, and human-resource departments spend resources to hire and retain talented employees. We found in table 1, median employee hiring is 1.20% for the overall sample, and 1.00% for repurchasing firms and 1.80% for non-repurchasing firms. If corporate profits were funneled to repurchase shares then repurchase should slow-down hiring and may as well induce repurchasing firms to layoff employees. Other determinants for employee hiring are drawn from an IMF working paper by Agarwal et.al. (2016) analyze clustering effects for layoffs in the S&P500 firms. They find that firm size, leverage, profitability, and the workforce strength influences employee hiring and layoffs. Specifically, we test the following model

$$Hiring_t = \alpha_{i,t} + \beta_{i,t}Repurchase_{i,t} + \gamma_{i,t}Controls_{i,t} + \varepsilon_{i,t} \quad (3)$$

The results are presented in table 6. In models 1, 3, 5, and 7 we use *HIRING* and in models 2, 4, 6, and 8 we use *HIRING%* as our dependent variable. Models 1, 3, and 5 show that repurchases increase hiring. Firms that repurchase hire at least 10% more employees than firms that do not repurchase shares. Based on the three-year moving average of repurchases we find that repurchasing firms hire at least 1% more than firms that do not repurchase shares. Repurchases are negatively related to *HIRING%* in models 2, and 4 but they are not statistically significant. Large firms hire more employees whereas firms that face bankruptcy risk attempt to reduce employees. Firms with a large workforce tend to limit hiring and they may be attempting to optimize the workforce levels. Profitability is negatively related to hiring which is puzzling given the results in Agarwal et.al. (2016).

[Insert Table 6 about here]

3.3 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. Stock options and equity grants are generally awarded to the top echelon of the company managers. The rank-and-file employees may not benefit from stock options or equity grants. *The letter* mentions that share repurchases do not benefit employees. In the previous section we explored one facet that affects employees viz. hiring. In this section we explore another facet that benefits employees – compensation. We are not interested in stock options or equity grants but we are interested in labor and related expense named as *XLR* in Compustat. We scale this by total assets and regress against known determinants of employee compensation. We test the following model –

$$Employee\ Compensation_t = \alpha_{i,t} + \beta_{i,t}Repurchase_{i,t} + \gamma_{i,t}Controls_{i,t} + \varepsilon_{i,t} \quad (4)$$

We use control variables motivated by Graefe-Anderson, Pyo, and Zhu (2018). The results of estimating equation (4) are presented in table 7. 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, whereas models 2, 4, 6, and 8 are regressions with industry and year fixed effects. In all models except 1, and 3 repurchases are associated with higher wages. One argument could be that repurchasing firms are larger. However, we have controlled for firm size using log of *SALE*. Model 2 and 4 show that firms that repurchase are associated with 4.5% or more of employee compensation. Model 5 (6) implies that firms that repurchase based on *REPUR3* have employee compensation that is at least \$3.9 million (\$23 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 (\$17 million) than firms that don't repurchase. Overall, the test variables show that repurchase don't hurt employee compensation. Large firms, and firms that do pay dividends have higher compensation. Employees in firms that have 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. Firms with large cash reserves, as argued in *The Letter* are retaining reserves for precautionary purposes and not increasing employee compensation. Payout policy does not diminish employee compensation.

[Insert table 7 here]

These regressions suffer a big drawback that only 13% of the COMPUSTAT years report data on *XLR*. Hence, we probe further by imputing the *XLR* based on industry ratios. To calculate the industry imputed staff expenditure, we take the median ratio of staff expenditure to total

employees for each year for all Fama-French twelve industries (j). Then we multiply the industry median ratios with the number of employees of each firm to arrive at the industry imputed staff expenditures. The equations are as follows –

$$\frac{XLRImputed}{Assets}_{i,t} = \left[\frac{\text{median} \frac{XLR}{EMP}_{j,t} \times EMP_{i,t}}{Assets_{i,t}} \right] \quad (5)$$

We use the assets scaled value of *XLRImputed* as our dependent variable and estimate specification (4) again and the results are presented in table 8. We employ firm and year level fixed effects in table 8 because industry effects are already adjusted using the imputation method. Models 1 and 2 show that staff expenses are higher in repurchasing firms by at least 3.3%. Models 3 and 4 show that staff expenses are higher in repurchasing firms by \$531 million and by \$363 million respectively. Control variables follow similar signs and statistical significance as in table 7. Results in table 7 and table 8 show that repurchasing firms are associated with higher staff expenses.

[Insert Table 8 about here]

3.4 Employee Wellness

The recently passed CARES act prevents companies that receive the bailout from share repurchases. President Trump viewed as a friend of businesses, also criticized companies that repurchase shares. *The letter* also accuses repurchasing firms of executive pay inflation and median workforce wages stagnation. In addition to stagnating wages, Senate Democrats claim that many companies that repurchased shares also laid-off workers. If share repurchasing firms are acting 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. Surveys, typically administered by the human resource department of the company or an external agency, are usually employed to measure employee morale. Such surveys are usually prone to

measurement errors, biases, and intimidation. We use the KLD Database and chose four variables to proxy for employee morale. Our proxies are not perfect. However, given the availability of data, we believe these variables closely capture employee morale – *PROFIT SHARING, EMPLOYEE INVOLVEMENT, OTHER STRENGTHS, HEALTH SAFETY STRENGTH*. We present the logit regression results in table 9. In panel A of table 9, 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

$$Employee\ Wellness_{i,t} = \alpha_{i,t} + \beta_{i,t}Repurchase_{i,t} + \gamma_{i,t}Controls_{i,t} + \varepsilon_{i,t} \quad (6)$$

In panel A, models 1, 2, 3, 5,6, and 7 show that repurchasing firms are more likely to have better employee wellness. Specifically, we find that repurchasing firms are more likely to have profit sharing schemes, employee involvement through stock options or stock grants, 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 they are more likely to have stock options or stock grants. In panel B, models we witness similar results are in panel A. Firms that repurchase more are 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. In the next section we examine pension contribution of firms with defined benefit pensions.

[Insert Table 9 about here]

3.5 Pension Unfunded Liabilities

Pension plans are a crucial in attracting, retaining, and motivating talented employees. In the US pension plans are classified into two types: defined contribution and defined benefit plans (Asthana 1999). Defined contribution plans are popular than defined contribution plans because the contribution by employers are defined by a formula and the employees bear all the investment risk and 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. Under-funding of defined benefit plans is a constant contentious issue (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 then these pension plans are termed to have unfunded liabilities. Pension unfunded liabilities heavily influence mergers and acquisition decisions. Target firms have high pension unfunded liabilities can become unattractive. We calculate the pension unfunded liabilities as in Rauh (2006) and Chen, Yu, and Zhang (2013) –

$$Unfunded\ Pension_{i,t} = \left[\frac{Fair\ Value\ Pension\ Assets_{i,t} - Present\ Value\ of\ Pension\ Obligations_{i,t}}{Present\ Value\ of\ Pension\ Obligations_{i,t}} \right] \quad (7)$$

Our control variables are motivated by Chen, Yu, and Zhang (2013). Besides the usual firm specific variables, we use *MARGINALTAX*, and *UNIONMEM* that are defined as marginal tax rates and the industry-specific percentage of union of 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 repurchases exacerbate the pension unfunded liabilities or not. We test the following specification

$$Pension\ Unfunded\ Liabilities_{i,t} = \alpha_{i,t} + \beta_{i,t}Repurchase_{i,t} + \gamma_{i,t}Controls_{i,t} + \varepsilon_{i,t} \quad (8)$$

The results of the regression are presented in table 10. All except model 1 show that repurchases are not negatively related to pension unfunded liabilities. On the contrary, repurchases are positive and statistically significant in all models except model 1. As we expected high union membership rate is positively associated with pension unfunded 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 10 about here]

3.6 CEO Compensation

Income inequality has drawn a lot of attention in the last two decades. The Economic Policy Institute¹⁵ estimates that CEO compensation has grown 940% since 1978 and during the same period worker compensation has only increased 12%. CEO pay seems exorbitant and is visibly the most egregious contributor to the widening inequality. Do CEOs extract this high compensation due to their superior talent or because of their power to extract such high compensation packages? Using a sample from 1993 to 2012 Song and Wan (2019) find that powerful CEOs are able to extract more compensation than less powerful CEOs¹⁶. Powerful CEOs may influence by hand-picking directors and placing them on compensation committees (Shivdasani and Yermack, 2002), which is likely to grow with longer tenure (Bebchuk et al.,

¹⁵ <https://www.epi.org/publication/ceo-compensation-2018/>

¹⁶ Also asserted by [Murphy, 1985](#); [Core et al., 1999](#); [Morse et al., 2011](#).

2010). Powerful CEOs can force the board to authorize repurchases and thereby favorably impact compensation benchmarks such as earnings-per-share. Thus, higher repurchases leading to better compensation benchmarks may increase CEO compensation. We test this proposition that share repurchases can lead to increases in CEO compensation. We use the total compensation variable from EXECUCOMP as our proxy for CEO compensation. We rely on the 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 independence. Specifically, our regression model is as follows –

$$F1. \text{CEO Compensation \% Change}_{i,t} = \alpha_{i,t} + \beta_{i,t} \text{Repurchase}_{i,t} + \gamma_{i,t} \text{Controls}_{i,t} + \varepsilon_{i,t} \quad (8)$$

The results of this regression model are presented in table 11. In panel A, our dependent variable 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 in turn determines CEO compensation. The popular criticism against CEO compensation is that CEO compensation has *increased* disproportionately. To achieve this, we took the logarithm of the total CEO compensation and calculated the change in the logarithm. Models 1, through 3 show that 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 a surprise. Older CEOs and CEOs who also serve the role of Board Chairman are associated with increase in CEO compensation. Large firms, firms with high

investments in R&D and capital expenditures are associated with decreases in CEO compensation. In panel B, the CEO-to-median worker compensation (*CEO-WORKER COMP RATIO*) replaces the percentage increases in CEO compensation as our dependent variable. Except in model 3, none of the repurchases variables are statistically significant, which implies that share repurchases are weakly associated with higher CEO-to-median worker compensation ratio. These results show that share repurchases are not associated with the pay inequality criticism that is levelled against share repurchases. 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. CEO compensation increases, and CEO pay inequality regressions show that share repurchases may not be the cause of increases in CEO compensation and pay inequality.

4. Robustness Checks

In this section we test our research questions using a difference-in-difference approach during the TCJA period. We also test the robustness 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.

4.1 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 and \$225 billion were 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 and they raised executive pay, increase repurchases, and laid-off workers. The letter mentions many popular 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 tried 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 year 2017 from our analysis because the TCJA was passed in 2017. We created a dummy variable *TCJA* that takes the value of one for year 2018 and 2019. Our maximum sample size is 14,246 observations. The results are presented in Table 12. Specifically, panels A & B presents the D-in-D results. We tested specifications (2, 3, 4, and 9). Panels A & B show that repurchasing firms were associated with higher cash surpluses and higher compensation during the sample period. Overall, TCJA period resulted in lower employment, better pension funding positions. Post-TCJA period is associated with higher levels of CEO compensation. However, share repurchases did not increase CEO compensation as the senators claim. In panels C & D we used the repurchase amounts instead of the repurchase dummies. We still find evidence that repurchases are associated with higher cash surpluses although we find marginal evidence (in Panel C) that repurchases were associated with lower cash surpluses during the post-TCJA period. In panels C & D we find that repurchases post-TCJA were associated with lower staff expenses, which lends some support to the Senators claim that cash savings were used to fund repurchases and reduce workforce and workforce compensation. In panels C&D we consistently find that pension funding positions improved in the post-TCJA period. As in panels A & B we find that TCJA period was associated with higher CEO compensation. However, share repurchases are 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 12 here]

4.2 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 include the *undervaluation hypothesis*. The undervaluation hypothesis argues that firms that insiders who believe that their firms are undervalued use repurchases as a signaling mechanism to convey the asymmetric information (Brav et.al (2005)). To control for undervaluation, we use the prior-year stock returns (*L1.RET*). The prior year stock returns are expected to be negatively related to repurchase dummies. Another popular theory to explain the decision to repurchase is the capital structure hypothesis, which argues that firms use repurchase to increase their leverage and move it closer to an optimum leverage ratio (Hovakimian et.al (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 et.al. (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 as a result of option vesting. To control for options compensation as in Cuny et. al (2009) we create *OPT*, which is defined as the sum of unexercised exercisable options and unexercised unexercisable options scaled by common shares outstanding. Furthermore, we control 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 –

$$\begin{aligned} \text{REPURDUM3}_{i,t} = & \alpha_{i,t} + \beta1_{i,t}\text{SIZE}_{i,t} + \beta2_{i,t}\text{LEVERAGE}_{i,t} + \beta3_{i,t}\text{AGENCY}_{i,t} + \beta4_{i,t}\text{CASH}_{i,t} + \beta5_{i,t}\text{MKBK}_{i,t} + \\ & \beta6_{i,t}\text{L1.STOCK RETURNS}_{i,t} + \beta7_{i,t}\text{OPT}_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (9)$$

$$\begin{aligned}
REPURDUM_{i,t} = & \alpha_{i,t} + \beta1_{i,t}SIZE_{i,t} + \beta2_{i,t}LEVERAGE_{i,t} + \beta3_{i,t}AGENCY_{i,t} + \beta4_{i,t}CASH_{i,t} + \beta5_{i,t}MKBK_{i,t} + \\
& \beta6_{i,t}L1.STOCK RETURNS_{i,t} + \beta7_{i,t}OPT_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{10}$$

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 even more robust estimation than matching based on size and other firm-specific fundamental variables, a practice that is quite common in the literature. With PSM, we re-estimate tables 3, 4, 6, 7, 9, 10¹⁷, and 11 and name the new tables as tables 3A, 4A, 6A, 7A, 9A, and 10A. In table 3A 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 results from 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 also repurchase shares. Next, we proceed to examine whether repurchasing firms increase hiring or not in a PSM environment. After matching, in Table 6 A, we don't find evidence to state that hiring is statistically higher in repurchasing firms compared to non-repurchasing firms. In table 7A, we re-estimate the staff expenditure regressions with PSM. With a matched sample, we find similar results as in table 7. Repurchasing firms compared with a matched sample of non-repurchasing firms spend more on staff expenses. Next, we turn our attention to the wellness regressions. In table 8A, we find similar results as in table 8. 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, which

¹⁷ We don't re-estimate table 10 panel B because we only have one year of data for CEO-to-median worker pay ratio.

was already revealed in table 9 without PSM. In table 10A, we tested the unfunded pension liabilities with PSM. In table 10 we found that in 3 out of 4 models repurchasing firms were associated with higher pension funding levels. In table 10A we find that one out of 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 11A. In three out of four 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. Overall, with matching samples we find that repurchasing firms had better cash surpluses, spent more on employees, were marginally better with higher pension funding levels, were not different from non-repurchasing firms on hiring, and had better employee wellness indicators, had lower salary increases¹⁸ for CEOs.

4.2 Instrumental Variable Regression

In this section, we perform instrumental variable regressions by instrumenting for the 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 diagnostic tests for endogeneity and identification revealed that the repurchase dummies and repurchase levels rejected the null-hypothesis for no-endogeneity, and the null-hypothesis for weak instruments were rejected. In summary, the diagnostic tests reveal that we have endogeneity, and our instruments are well-identified. We re-estimate tables 3, 6, 7, 9, 10¹⁹, and 11 and name them 3B, 6B, 7B, 9B, 10B, and 11B. We start with the cash surplus regressions in table 3B. Instrumental

¹⁸ Salary increases for non-repurchasing firms were 12.2% and for repurchasing firms it is 7.2%

¹⁹ We don't re-estimate table 10 panel B because we only have one year of data for CEO-to-median worker pay ratio

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 repurchases were negatively associated with cash surpluses but those relationships were not statistically significant. We, therefore, have mixed evidence of repurchasing firms being associated with lower cash surpluses. Table 6B presents the IV regression results with hiring as the dependent variable. Although we find that repurchases are negatively related to hiring, the relationship is not statistically significant. Next, we estimate the IV staff expenses regressions and present the results in Table 7B. Repurchases are positively associated with staff expenses and they are highly significant. In table 9B we present the results of the IV wellness regressions. We find similar results as in table 9 and 9A. Repurchases are positively associated with profit sharing, employee involvement, and other strengths, but not associated with safety and health strengths. In table 10 B, we present the results of the IV regressions with unfunded pensions as the dependent variable. The association between unfunded pensions and repurchases is negative but not statistically significant. Finally, in table 11B, we estimate the IV regressions with increases in CEO compensation as our dependent variable. Three out of the four models presented show that repurchases are associated with lower increases in CEO compensation. In sum, the IV regression method mostly supports our findings from the main tables.

5 Conclusions

Since the Securities Exchange Commission adopted Rule 10b-18 in 1982 granting “safe harbor” protection from claims of market manipulation, corporations have embraced stock repurchases to the point where it now exceeds dividends as the preferred method for disbursing cash to

shareholders. This growth in corporate repurchases has only been matched by an equally vigorous growth in popular criticism spearheaded by prominent politicians such as senators Chuck Schumer, Bernie Sanders and Elizabeth Sanders. These criticisms have led to several bills being considered in congress to either eliminate corporate repurchases or, at a minimum, impose significant constraints on the ability of corporations to buy back their stock. This paper examines some of the more salient criticisms leveled against stock repurchases. Specifically, we examine whether stock repurchases make firms less resilient, especially when confronted with a challenging financial environment. In addition, we also examine if repurchases take place at the expense of employee welfare—a charge often leveled against firms that are regular repurchasers of their stock. Our evidence suggests that these criticisms have little credence when subject to the rigor of empirical analysis. Using a cash shortfall model that considers pro forma cash needs, we find that repurchasing firms, compared to non-repurchasing firms, have adequate cash resources to meet future needs. If anything, the former appear to have a better liquidity position. Importantly, these results hold even when firms face financial distress, i.e., experience a sudden severe drop in profitability. With regard to employee welfare, we examine several dimensions. We find that repurchases do not come at the expense of reduced hiring or lower employee expenses. We also find that employee morale as measured by KLD’s qualitative ranking of health and safety strengths, employee involvement, and profit sharing are not diminished when firms buy back their shares. We also do not find that repurchases at the expense of underfunding pension benefits. Finally, we do not find any evidence to suggest that repurchases are associated with more aggressive CEO compensation.

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Appendix A – Variable Definitions

Variable Name	Variable Definition	Source
CASHSURPLUS	$(\text{Cash}_{t-1} + \text{ICF}_t - \text{Investments}_t - \Delta\text{Non-Cash NWC}_t - \text{Cash Dividends}_t) \div \text{Assets}_{t-1}$.	Compustat
CASH	Cash and Short Term Investments	Compustat
ΔCASH	$\text{Cash}_t - \text{Cash}_{t-1}$	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
$\Delta\text{Non-Cash NWC}$	$\Delta\text{NWC} - \Delta\text{Cash}$.	Compustat
ΔNWC	Change in Net Working Capital. For firms reporting format codes 1-3, $\Delta\text{NWC} = \text{Working Capital Change Other (WCAPC)} + \text{Cash and Cash Equivalents Increase (Decrease) (CHECH)}$. For firms reporting format code 7, $\Delta\text{NWC} = - \text{Accounts Receivable Decrease (Increase) (RECCH)} - \text{Inventory Decrease (Increase) (INVCH)} - \text{Accounts Payable and Accrued Liabilities Increase (Decrease) (APALCH)} - \text{Income Taxes Accrued Increase (Decrease) (TXACH)} - \text{Assets and Liabilities Other Net Change (AOLOCH)} + \text{Cash and Cash Equivalents Increase (Decrease) (CHECH)} - \text{Change in Short-Term Investments (IVSTCH)} - \text{Financing Activities Other (FIAO)}$.	Compustat
DVC	Cash dividends paid	Compustat
AT	Firms total assets	Compustat
SALE	Firms total sales	Compustat
LEVERAGE	$(\text{Short Term Debt} + \text{Long Term Debt}) / \text{Assets}$	Compustat

CAPX	Capital Expenses/Assets	Compustat
MKBK	Market Value of Equity/ CEQ	Compustat
Market Value of Equity	CSHO * PRICE	Compustat
CSHO	Common Shares outstanding	Compustat
PRICE	Market Price of Share adjusted by the adjustment factor	Compustat
CEQ	Book Value of Common Equity	Compustat
ROA	Earnings Before Interest and Tax/ Assets	Compustat
RET	$(PRICE_t + (DVT/CSHO)_t - PRICE_{t-1}) / (PRICE_{t-1})$	Compustat
DVT	Total Dividends per share	Compustat
EMP	Number of Employees (in Thousands)	Compustat
KZ	Kaplan Zingales Index	Compustat
WW	Whited-Wu Index	Compustat
REPUR	Repurchases/AT. Repurchases are defined as Purchase of Common and Preferred Stock less Change in Preferred Stock	Compustat
SALEDROP	Takes the value of 1 if a firm's salegrowth in the current year is less than 25%	Compustat
AGENCY	Takes the value of 1 if a firm's free cash flow is greater than the mean industry-year free cash flow	Compustat
FCF	Free Cash Flow is defined as $(OIBDP - (TXT - DELTATXDI) - XINT - UDVP - DVT) / AT$	
OIBDP	Operating Income Before Depreciation	Compustat
TXT	Total Income Taxes	Compustat
DELTATXDI	Change in Deferred Income Taxes	Compustat
XINT	Total interest and related expenses	Compustat
UDVP	Preferred Dividends	Compustat
HIRING	Change in Number of Employees	Compustat
UNFUNDPEN	Pension Assets Less Pension Liabilities scaled by Pension Liabilities	Compustat
XLR	Total Staff Expenses scaled by AT	Compustat
PROFITSHARING	Takes the value of 1 if firm is engaged in profit sharing	KLD
EMPLOYEE INVOLVEMENT	Takes the value of 1 if firm is rated high in employee involvement	KLD
OTHER STRENGTH	Takes the value of 1 if firm is rated high in other strength	KLD
HEALTH SAFETY STRENGTH	Takes the value of 1 if firm is rated high in health and safety	KLD
UNION MEMBERSHIP	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/
TAXES	Marginal tax rate before deducting interest expenses	Prof John Graham's homepage

Appendix B – Size Comparisons of firms that report pension contributions, staff expenses, and wellness

Firm-Years that Don't Repurchase							Firm-Years that have Repurchases							Mean Size Disparity	Median Size Disparity
Variable	p25	Mean	p50	p75	Sd	N	variable	p25	mean	p50	p75	sd	N		
ASSETS	42.78	1520.03	135.87	563.70	5858.09	65974	ASSETS	109.07	3752.73	480.10	2266.85	9532.29	59562	2.47	3.53
SALE	25.07	1256.58	104.27	487.84	4880.09	65974	SALE	104.63	3314.92	485.31	2144.91	8194.73	59562	2.64	4.65
ROA	-0.09	-0.04	0.04	0.10	0.25	65974	ROA	0.02	0.05	0.08	0.13	0.16	59562	-1.28	2.16
Firm-Years that report Pension Contribution and Don't Repurchase Stock							Firm-Years that report Pension Contribution and Repurchase Stock								
Variable	p25	Mean	p50	p75	Sd	N	Variable	p25	Mean	p50	p75	Sd	N		
ASSETS	462.26	6034.86	1480.80	5062.20	11797.09	6225	ASSETS	974.54	9606.01	3034.32	10499.55	14686.80	14076	1.59	2.05
SALE	469.47	5069.99	1346.80	4410.65	9644.79	6225	SALE	1004.33	8270.36	2843.33	8915.40	12395.09	14076	1.63	2.11
ROA	0.03	0.06	0.07	0.10	0.11	6225	ROA	0.05	0.09	0.09	0.13	0.07	14076	1.53	1.31
Firm-Years that report Staff Expenses and Don't Repurchase Stock							Firm-Years that report Staff Expenses and Repurchase Stock								
Variable	p25	Mean	p50	p75	Sd	N	Variable	p25	Mean	p50	p75	Sd	N		
ASSETS	48.12	4489.53	239.84	2076.00	11347.78	8527	ASSETS	269.53	9704.86	1714.02	10641.27	16172.01	6035	2.16	7.15
SALE	9.60	3546.07	139.69	1470.84	9339.57	8527	SALE	236.41	7880.01	1553.38	8694.20	13110.71	6035	2.22	11.12
ROA	-0.08	-0.03	0.03	0.09	0.23	8527	ROA	0.04	0.07	0.08	0.13	0.13	6035	-2.06	2.71
Firm-Years that report Employee Involvement and Don't Repurchase Stock							Firm-Years that report Employee Involvement and Repurchase stock								
Variable	p25	Mean	p50	p75	Sd	N	Variable	p25	Mean	p50	p75	Sd	N		
ASSETS	228.88	2730.01	620.96	2035.64	6522.05	6749	ASSETS	609.74	6531.84	1941.43	5943.50	11789.34	14628	2.39	3.13
SALE	131.41	2378.81	500.63	1831.55	5756.27	6749	SALE	565.78	5998.52	1813.75	5672.10	10565.10	14628	2.52	3.62
ROA	-0.02	0.00	0.06	0.12	0.22	6749	ROA	0.06	0.10	0.10	0.15	0.11	14628	21.18	1.55

Figure 1 - Repurchases and Cash Surplus

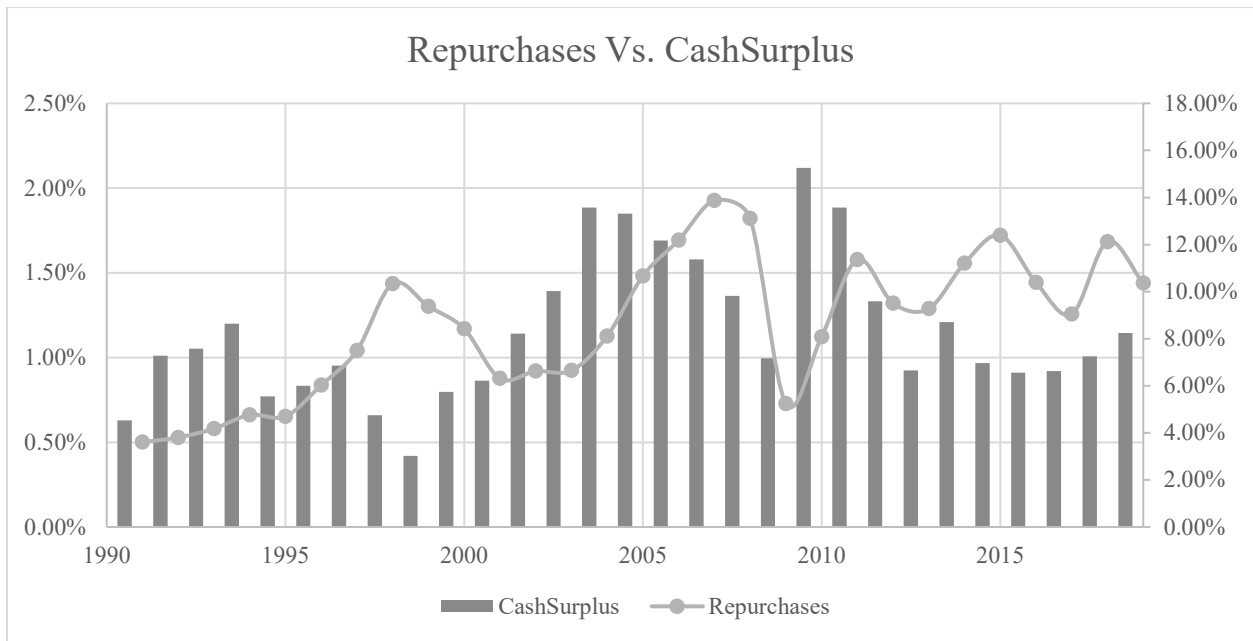


Table 1 – Summary Statistics of Key Variables

Panel A: Overall Sample

Variable	p25	Mean	p50	p75	Sd	N
REPUR3	0	0.01	0	0.007	0.03	141499
REPUR	0	0.01	0	0.002	0.03	141499
REPURDUM3	0	0.47	0	1	0.49	125536
REPURDUM	0	0.33	0	1	0.47	141499
CASHSURPLUS	-10.40%	8.17%	6.73%	27.86%	34.23%	124937
HIRING	-3.50%	34.07%	1.20%	19.30%	868.25%	119633
UNFUNDEDPENSION	-30.62%	-14.33%	-14.51%	3.11%	35.17%	34956
STAFF EXPENSES	5.68%	20.85%	15.36%	30.67%	19.01%	16336
PROFITSHARING	0.00	0.09	0.00	0.00	0.29	18670
EMPLOYEE INVOLVEMENT	0.00	0.12	0.00	0.00	0.33	21557
OTHER STRENGTHS	0.00	0.07	0.00	0.00	0.26	19990
HEALTH SAFETY STRENGTH	0.00	0.05	0.00	0.00	0.22	21763
CEO TOTAL COMPENSATION	1.27	4.99	2.87	6.08	9.03	34892
CEO-WORKER COMP RATIO	47	187.95	95	195	309.81	1403
ASSETS	49.29	2364.14	198.61	1019.90	7556.80	141499
SALE	35.57	2049.34	176.42	938.51	6451.83	141499
CASH	2.94%	20.54%	10.50%	29.66%	23.90%	141499
LEVERAGE	9.71%	32.09%	27.11%	49.86%	26.00%	141499
CAPX	1.66%	5.94%	3.61%	7.24%	7.10%	141499
MKBK	1.05	2.73	1.92	3.50	2.49	129768
ROA	-3.86%	-0.39%	5.58%	11.21%	22.57%	141499
RET	-31.91%	64.67%	6.93%	63.83%	219.57%	76061
EMP	0.21	10.23	1.00	5.05	43.15	129114
KZ	0.68	1.97	1.51	2.30	271.18	126928
WW	-0.35	-0.31	-0.26	-0.18	2.76	127865

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

VARIABLE	p25	Mean	p50	p75	sd	N
CASHSURPLUS	-12.03%	8.09%	5.74%	28.92%	35.31%	60112
HIRING	-2.20%	21.64%	1.00%	12.85%	517.62%	56936
UNFUNDEDPENSION	-32.24%	-15.30%	-15.41%	3.19%	36.40%	11754
STAFF EXPENSES	3.51%	18.03%	12.38%	26.16%	18.04%	8527
PROFITSHARING	0.00	0.06	0.00	0.00	0.23	5816
EMPLOYEE INVOLVEMENT	0.00	0.09	0.00	0.00	0.29	6749
OTHER STRENGTHS	0.00	0.03	0.00	0.00	0.17	6526
HEALTH SAFETY STRENGTH	0.00	0.03	0.00	0.00	0.17	6990
CEO TOTAL COMPENSATION	9.41	3.65	1.94	4.13	7.16	10443
CEO-WORKER COMP RATIO	22	94.49	42	93	218.64	229
ASSETS	42.78	1520.03	135.87	563.70	5858.09	65974

SALE	25.07	1256.58	104.27	487.84	4880.09	65974
CASH	3.02%	22.47%	11.41%	33.72%	25.65%	65974
LEVERAGE	9.03%	32.50%	26.46%	51.51%	26.92%	65974
CAPX	1.55%	6.27%	3.68%	7.74%	7.58%	65974
MKBK	0.98	2.70	1.85	3.50	2.55	61743
ROA	-9.08%	-4.04%	3.51%	9.75%	24.81%	65974
RET	-44.29%	56.97%	-0.15%	57.51%	223.62%	34313
EMP	0.15	6.31	0.56	2.73	28.33	60320
KZ	0.69	3.52	1.54	2.38	382.01	61630
WW	-0.31	-0.27	-0.23	-0.16	2.22	61329

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

VARIABLE	p25	Mean	p50	p75	sd	N
CASHSURPLUS	-7.47%	9.30%	8.08%	27.17%	31.98%	58205
HIRING	-6.70%	48.24%	1.80%	30.00%	1104.79%	56313
UNFUNDEDPENSION	-30.37%	-15.23%	-15.29%	1.21%	34.08%	21267
STAFF EXPENSES	9.81%	25.30%	19.91%	37.69%	19.57%	6035
PROFITSHARING	0.00	0.10	0.00	0.00	0.31	12717
EMPLOYEE INVOLVEMENT	0.00	0.14	0.00	0.00	0.34	14628
OTHER STRENGTHS	0.00	0.09	0.00	0.00	0.29	13314
HEALTH SAFETY STRENGTH	0.00	0.06	0.00	0.00	0.23	14599
CEO TOTAL COMPENSATION	1.51	5.56	3.42	6.93	9.69	24134
CEO-WORKER COMP RATIO	54	206.45	106	221	321.89	1171
ASSETS	109.07	3752.73	480.10	2266.85	9532.29	59562
SALE	104.63	3314.92	485.31	2144.91	8194.73	59562
CASH	2.89%	16.98%	9.44%	24.16%	19.33%	59562
LEVERAGE	15.71%	35.01%	31.33%	50.77%	23.81%	59562
CAPX	1.78%	5.26%	3.50%	6.50%	5.84%	59562
MKBK	1.13	2.67	1.96	3.38	2.33	57798
ROA	2.13%	5.16%	7.58%	12.64%	16.09%	59562
RET	-19.56%	68.35%	12.91%	66.67%	205.06%	37381
EMP	0.50	15.44	2.30	9.40	56.45	57502
KZ	0.73	1.49	1.50	2.22	14.40	57653
WW	-0.38	-0.31	-0.30	-0.22	1.31	58972

Table 2 CashSurplus by Repurchase Quartiles

Panel A – CashSurplus

Sale Drop Years					
Repurchase Quartiles	CashSurplus	One-Year Forward Cash Surplus	Two-Year Forward Cash Surplus		
	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 Sale Drop Years					
Repurchase Quartiles	Cash Surplus	One-Year Forward Cash Surplus	Two-Year Forward Cash Surplus		
	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	Repurchases	One-Year Forward Repurchases	Two-Year Forward Repurchases		
	1	0.00%	0.10%	0.24%	
	2	0.01%	0.25%	0.02%	
	3	0.30%	0.39%	0.54%	
	4	4.28%	3.77%	2.85%	

No Sale Drop Years					
Repurchase Quartiles	Repurchases	One-Year Forward Repurchases	Two-Year Forward Repurchases		
	1	0.00%	0.15%	0.37%	
	2	0.02%	0.11%	0.27%	
	3	0.29%	0.51%	0.78%	
	4	4.59%	4.33%	3.96%	

Table 3 – Cash Surplus Regressions

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*** (-13.4011)	-0.0343*** (-13.5375)	-0.0327*** (-12.9475)	-0.0329*** (-13.0431)
LEVERAGE	-0.3223*** (-33.4839)	-0.3117*** (-33.1368)	-0.3161*** (-33.6571)	-0.3127*** (-33.3422)
AGENCY	-0.0070 (-1.6252)	-0.0034 (-0.7760)	-0.0029 (-0.6585)	-0.0028 (-0.6433)
MKBK	-0.0041*** (-5.9440)	-0.0046*** (-6.7180)	-0.0051*** (-7.4721)	-0.0051*** (-7.4534)
ROA	0.4418*** (40.5243)	0.4443*** (41.0035)	0.4429*** (40.7676)	0.4391*** (40.4792)
Constant	0.3936*** (26.2815)	0.3869*** (26.7082)	0.3886*** (26.9204)	0.3875*** (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

VARIABLES	No SaleDrop	SaleDrop	No SaleDrop	SaleDrop	No SaleDrop	SaleDrop	No SaleDrop	SaleDrop
	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS
REPURDUM3	0.0001 (0.0511)	0.0366* (1.8546)						
REPURDUM			0.0286*** (11.2479)	0.0432** (2.3135)				
REPUR3					0.2390*** (4.8205)	0.4501 (1.1073)		
REPUR							0.4005*** (11.9151)	0.2806 (0.8603)
LOGASSETS	-0.0364*** (-13.4311)	-0.0143 (-1.1259)	-0.0370*** (-14.0483)	-0.0070 (-0.5512)	-0.0355*** (-13.5417)	-0.0048 (-0.3814)	-0.0357*** (-13.6111)	-0.0053 (-0.4245)
LEVERAGE	-0.3245*** (-31.7886)	-0.3159*** (-6.6829)	-0.3150*** (-31.4252)	-0.3054*** (-6.7450)	-0.3194*** (-31.9404)	-0.3088*** (-6.8014)	-0.3162*** (-31.6583)	-0.3093*** (-6.7938)
AGENCY	-0.0131*** (-2.9467)	0.0494 (1.5741)	-0.0101** (-2.2782)	0.0510 (1.6099)	-0.0095** (-2.1430)	0.0507 (1.6018)	-0.0095** (-2.1475)	0.0510 (1.6133)
MKBK	-0.0042*** (-5.7681)	-0.0133*** (-3.1009)	-0.0043*** (-5.9273)	-0.0145*** (-3.4726)	-0.0049*** (-6.6885)	-0.0146*** (-3.4996)	-0.0048*** (-6.6570)	-0.0147*** (-3.5051)
ROA	0.5138*** (39.7770)	0.2319*** (4.8597)	0.5256*** (41.3337)	0.2101*** (4.5332)	0.5243*** (41.0936)	0.2108*** (4.5446)	0.5189*** (40.7384)	0.2101*** (4.5240)
CONSTANT	0.4034*** (25.7518)	0.2153** (2.5078)	0.4016*** (26.4697)	0.2086** (2.5336)	0.4038*** (26.6930)	0.2064** (2.4878)	0.4028*** (26.6382)	0.2102** (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 – Post SaleDrop Regressions – Panel A

VARIABLES	1 Year	2 Years	3 Years	More Than 3	1 Year	2 Years	3 Years	More Than 3
	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	Years CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	Years CASH SURPLUS
REPURDUM3	-0.0036 (-0.3517)	0.0630*** (3.0849)	0.0086 (0.3420)	0.0183 (1.1437)				
REPURDUM					0.0655*** (5.8012)	0.0558** (2.3553)	0.0453 (1.6219)	0.0291* (1.7538)
LOGASSETS	0.0029 (1.0530)	-0.0029 (-0.4356)	0.0224*** (2.6039)	-0.0166*** (-3.9577)	0.0059** (2.1335)	0.0036 (0.5411)	0.0292*** (3.3076)	-0.0154*** (-3.6774)
LEVERAGE	-0.4863*** (-25.3402)	-0.3381*** (-8.8519)	-0.3953*** (-9.1643)	-0.4821*** (-15.7647)	-0.4367*** (-22.5837)	-0.3155*** (-8.2018)	-0.3620*** (-8.4701)	-0.4753*** (-15.5599)
AGENCY	0.0032 (0.2324)	0.0286 (0.9787)	0.1084*** (3.0640)	0.0987*** (3.4985)	0.0032 (0.2390)	0.0352 (1.2070)	0.1217*** (3.3689)	0.0929*** (3.2643)
MKBK	-0.0135*** (-5.3946)	-0.0097** (-2.0490)	-0.0094* (-1.9488)	-0.0130*** (-3.3355)	-0.0152*** (-6.1140)	-0.0105** (-2.2380)	-0.0097** (-2.0651)	-0.0149*** (-3.8681)
ROA	0.1349*** (6.3238)	0.1923*** (4.4851)	0.1221*** (2.7738)	0.2018*** (5.5121)	0.1437*** (6.7691)	0.1915*** (4.4751)	0.1229*** (2.7562)	0.2045*** (5.6565)
Constant	0.2246*** (7.2772)	0.1605** (2.1064)	0.2187** (2.1065)	0.4232*** (5.4084)	0.2644*** (8.7290)	0.1392* (1.8288)	0.1673 (1.5991)	0.4248*** (5.4754)
	0.0029	-0.0029	0.0224***	-0.0166***	0.0059**	0.0036	0.0292***	-0.0154***
Observations	4,247	1,366	1,058	1,835	4,624	1,398	1,088	1,858
R-squared	0.170	0.123	0.136	0.192	0.148	0.111	0.132	0.189
Adjusted R-squared	0.1634	0.1004	0.1081	0.1780	0.1420	0.0889	0.1048	0.1744
F test model	27.72	6.129	5.183	14	25.72	5.340	5.039	13.81

Table 5 – Post SaleDrop Regressions – Panel B

VARIABLES	Year 1	Year 2	Year 3	More Than 3	Year 1	Year 2	Year 3	More Than 3
	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS	CASH SURPLUS
REPUR3	0.9403*** (3.9604)	0.9412* (1.7894)	1.1865** (2.3059)	0.0592 (0.1617)				
REPUR					1.0326*** (5.3744)	0.7966 (1.5020)	1.2155*** (2.8692)	0.1793 (0.5492)
LOGASSETS	0.0074*** (2.7281)	0.0046 (0.6953)	0.0303*** (3.5132)	-0.0147*** (-3.4912)	0.0070*** (2.5929)	0.0051 (0.7721)	0.0295*** (3.4593)	-0.0148*** (-3.5397)
LEVERAGE	-0.4380*** (-22.5988)	-0.3131*** (-8.2116)	-0.3565*** (-8.2846)	-0.4804*** (-15.6570)	-0.4344*** (-22.4357)	-0.3185*** (-8.2945)	-0.3581*** (-8.3209)	-0.4787*** (-15.7023)
AGENCY	0.0039 (0.2907)	0.0339 (1.1607)	0.1204*** (3.3271)	0.0906*** (3.1938)	0.0035 (0.2566)	0.0336 (1.1507)	0.1234*** (3.4202)	0.0919*** (3.2398)
MKBK	-0.0161*** (-6.4699)	-0.0107** (-2.2717)	-0.0095** (-2.0539)	-0.0152*** (-3.9496)	-0.0159*** (-6.3882)	-0.0107** (-2.2754)	-0.0095** (-2.0615)	-0.0153*** (-3.9641)
ROA	0.1444*** (6.7390)	0.1939*** (4.5168)	0.1183*** (2.6438)	0.2124*** (5.9148)	0.1433*** (6.7518)	0.1935*** (4.4989)	0.1217*** (2.7254)	0.2101*** (5.8417)
Constant	0.2659*** (8.7254)	0.1402* (1.8602)	0.1661 (1.6056)	0.4340*** (5.5620)	0.2648*** (8.6887)	0.1436* (1.9034)	0.1699 (1.6395)	0.4318*** (5.5528)
Observations	4,624	1,398	1,088	1,858	4,624	1,398	1,088	1,858
R-squared	0.146	0.112	0.136	0.187	0.149	0.110	0.136	0.188
Adjusted R-squared	0.1396	0.0895	0.1086	0.1732	0.1424	0.0878	0.1089	0.1735
F test model	24.3	5.2	5.2	13.7	25.0	5.2	5.5	13.7

Table 6 – Hiring Regressions²⁰

VARIABLES	HIRING	HIRING%	HIRING	HIRING%	HIRING	HIRING%	HIRING	HIRING%
REPURDUM3	0.0902*	-0.0901						
	(1.7651)	(-0.3190)						
REPURDUM			0.1000*	-0.3030				
			(1.8541)	(-1.0162)				
REPUR3					2.2167**	8.4510		
					(2.1611)	(1.5018)		
REPUR							0.9084	3.9611
							(1.2063)	(1.0680)
LOGASSETS	0.6810***	0.3396	0.6124***	0.3475	0.6186***	0.3482	0.6168***	0.3425
	(4.0096)	(0.5142)	(4.2282)	(0.6276)	(4.2530)	(0.6263)	(4.2414)	(0.6154)
LEVERAGE	-1.8407***	-1.2854**	-1.6653***	-1.8924***	-1.6586***	-1.8035***	-1.6649***	-1.8225***
	(-10.6912)	(-2.3245)	(-11.2418)	(-3.3329)	(-11.1193)	(-3.1927)	(-11.2168)	(-3.2648)
ROA	-0.1066	-0.7934*	-0.0659	-1.1989***	-0.0925	-1.3651***	-0.0755	-1.3103***
	(-0.8733)	(-1.8181)	(-0.6317)	(-2.7872)	(-0.8923)	(-2.8890)	(-0.7358)	(-2.8296)
LOGEMP	-1.5326**	-0.2080	-1.3209**	-0.7814	-1.3286**	-0.8608	-1.3198**	-0.8317
	(-2.4025)	(-0.0706)	(-2.1795)	(-0.2965)	(-2.1987)	(-0.3298)	(-2.1804)	(-0.3175)
Constant	-0.7451*	0.3749	-0.7097**	0.9144	-0.7185**	0.8375	-0.7090**	0.8708
	(-1.8436)	(0.2556)	(-2.1274)	(0.7375)	(-2.1544)	(0.6694)	(-2.1283)	(0.6995)
Observations	103,585	102,969	113,247	112,518	113,247	112,518	113,247	112,518
R-squared	0.524	0.199	0.536	0.235	0.536	0.235	0.536	0.235
Adjusted R-squared	0.4648	0.0996	0.4783	0.1407	0.4783	0.1408	0.4783	0.1407
F test model	11.35	5.550	12.22	4.976	12.24	5.022	12.28	5.021

²⁰ We replaced year fixed effects with recession time dummy that takes the value of 1 for years 2000, 2001, 2008, and 2009

Table 7 – Staff Expenses Regressions

	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	XLR	XLR	XLR	XLR	XLR	XLR	XLR	XLR
REPURDUM3	0.0038 (1.0958)	0.0512*** (6.8759)						
REPURDUM			0.0038 (1.2446)	0.0461*** (6.3293)				
REPUR3					0.1507** (2.2155)	0.9633*** (6.5470)		
REPUR							0.1165*** (2.7479)	0.7436*** (6.6143)
CAPX	0.0260 (1.1909)	-0.0236 (-0.5767)	0.0292 (1.4356)	-0.0434 (-1.1885)	0.0299 (1.4842)	-0.0494 (-1.3540)	0.0302 (1.4902)	-0.0484 (-1.3189)
ROA	-0.1076*** (-8.4289)	-0.0028 (-0.1479)	-0.1194*** (-10.0649)	-0.0210 (-1.2191)	-0.1205*** (-10.1413)	-0.0270 (-1.5844)	-0.1207*** (-10.1199)	-0.0255 (-1.4859)
LEVERAGE	0.0133 (1.5725)	0.0562*** (3.2131)	0.0083 (1.0856)	0.0528*** (3.3466)	0.0089 (1.1699)	0.0596*** (3.8418)	0.0090 (1.1808)	0.0588*** (3.7820)
LOGSALE	0.0087*** (3.8259)	0.0041** (2.2999)	0.0095*** (4.3808)	0.0061*** (3.6722)	0.0095*** (4.3684)	0.0071*** (4.2221)	0.0095*** (4.3694)	0.0073*** (4.3390)
CASH	-0.0380** (-1.9932)	-0.0422** (-2.0058)	-0.0438*** (-2.7400)	-0.0540*** (-3.0469)	-0.0438*** (-2.7323)	-0.0533*** (-3.0336)	-0.0439*** (-2.7353)	-0.0545*** (-3.0920)
DIVIDENDS	0.3160*** (4.9214)	-0.1851 (-1.2126)	0.3279*** (5.3620)	-0.1365 (-0.9680)	0.3190*** (5.2434)	-0.1813 (-1.2614)	0.3198*** (5.2366)	-0.1634 (-1.1372)
Constant	0.1944*** (13.9819)	0.2165*** (14.3905)	0.1932*** (15.1822)	0.2094*** (15.1150)	0.1939*** (15.2610)	0.2101*** (15.2214)	0.1939*** (15.2725)	0.2114*** (15.2598)
Observations	14,558	14,558	16,332	16,332	16,332	16,332	16,332	16,332
R-squared	0.910	0.237	0.900	0.229	0.900	0.235	0.900	0.231
Adjusted R-squared	0.8951	0.2343	0.8828	0.2271	0.8830	0.2326	0.8830	0.2292
F test model	5.677	8.570	6.653	9.146	6.668	9.530	6.695	9.592

Table 8 – Industry-imputed Staff Expenses

VARIABLES	XLRImputed	XLRImputed	XLRImputed	XLRImputed
REPURDUM3	0.0413*** (2.7589)			
REPURDUM		0.0327*** (2.6327)		
REPUR3			0.9461*** (4.0866)	
REPUR				0.6592*** (4.4289)
CAPX	0.0009 (0.0096)	0.0943 (1.0370)	0.0957 (1.0536)	0.0956 (1.0522)
ROA	-0.0655* (-1.9233)	-0.0867*** (-2.7282)	-0.0950*** (-3.0215)	-0.0941*** (-2.9928)
LEVERAGE	0.0548 (1.4413)	0.0344 (0.9834)	0.0385 (1.1017)	0.0383 (1.0962)
LOGSALE	0.0351*** (3.4163)	0.0384*** (4.1077)	0.0386*** (4.1117)	0.0386*** (4.1138)
CASH	-0.3715*** (-8.4087)	-0.4093*** (-10.5265)	-0.4072*** (-10.4716)	-0.4092*** (-10.5236)
DIVIDENDS	0.9263** (2.2628)	0.9074** (2.5439)	0.8470** (2.3878)	0.8784** (2.4681)
Constant	1.3119*** (24.4469)	1.1516*** (24.6310)	1.1528*** (24.6860)	1.1552*** (24.7350)
Observations	117,803	129,093	129,093	129,093
R-squared	0.761	0.762	0.762	0.762
Adjusted R-squared	0.7313	0.7331	0.7333	0.7332
F test model	36.44	39.88	40.02	40.07

Table 9 – Wellness Regressions

Panel A – Repurchase Dummies

VARIABLES	Profit Sharing	Employee involvement	Other Strengths	Healthsafety Strengths	Profit Sharing	Employee Involvement	Other Strengths	Healthsafety Strengths
REPURDUM3	0.2195*** (3.2331)	0.1616*** (3.0155)	0.4187*** (4.8987)	-0.1346 (-1.5954)				
REPURDUM					0.1907*** (3.0712)	0.1439*** (2.9234)	0.2746*** (3.7143)	-0.1350* (-1.7728)
LOGASSETS	0.3903*** (17.1618)	0.4741*** (26.8035)	0.6980*** (26.9213)	1.0000*** (34.8677)	0.3876*** (17.0243)	0.4651*** (26.1316)	0.6974*** (26.6173)	1.0027*** (35.2464)
CASH	1.7260*** (11.0574)	1.6522*** (13.2192)	0.2139 (1.0514)	-0.5392* (-1.9203)	1.7024*** (11.0839)	1.6270*** (13.1075)	0.1456 (0.7253)	-0.5042* (-1.8042)
MKBK	-0.0481*** (-3.6753)	0.0210** (2.1536)	0.0141 (1.0154)	0.0383** (2.4081)	-0.0495*** (-3.8174)	0.0199** (2.0639)	0.0129 (0.9423)	0.0375** (2.3696)
LEVERAGE	-1.4634*** (-7.3228)	-1.5536*** (-9.8858)	-2.5748*** (-12.2420)	0.1668 (0.8159)	-1.4218*** (-7.1946)	-1.5282*** (-9.6986)	-2.5605*** (-12.2406)	0.1314 (0.6366)
Constant	-4.4608*** (-15.6483)	-5.9124*** (-19.6649)	-8.8641*** (-16.1300)	-11.3924*** (-35.1162)	-4.6555*** (-15.8703)	-6.0334*** (-17.4142)	-9.0718*** (-13.9288)	-11.4337*** (-35.3020)
Observations	17,862	20,587	19,132	21,066	18,228	20,996	19,514	21,261
LR χ^2	1312	1472	2197	1479	1324	1472	2195	1495

Panel B – Repurchase Levels

VARIABLES	Profit Sharing	Employee involvement	Other Strengths	Healthsafety Strengths	Profit Sharing	Employee Involvement	Other Strengths	Healthsa Strength
REPUR3	4.4218*** (6.8391)	4.4686*** (9.4757)	5.5008*** (8.2404)	1.3269 (1.5435)				
REPUR					2.5892*** (4.7103)	3.2343*** (7.9725)	3.3471*** (5.6900)	0.345 (0.466)
LOGASSETS	0.3815*** (16.9063)	0.4554*** (26.0485)	0.6943*** (26.9623)	0.9886*** (35.1848)	0.3881*** (17.2491)	0.4590*** (26.2346)	0.7019*** (27.2258)	0.9918*** (35.33)
CASH	1.6924*** (11.0767)	1.6673*** (13.5253)	0.0558 (0.2735)	-0.5123* (-1.8190)	1.6710*** (10.9911)	1.6448*** (13.3886)	0.0689 (0.3429)	-0.486 (-1.733)
MKBK	-0.0635*** (-4.8243)	0.0070 (0.7224)	-0.0062 (-0.4425)	0.0297* (1.8236)	-0.0570*** (-4.3723)	0.0113 (1.1655)	0.0021 (0.1499)	0.0342 (2.118)
LEVERAGE	-1.2662*** (-6.3682)	-1.3345*** (-8.4328)	-2.3494*** (-11.1067)	0.2740 (1.3042)	-1.3363*** (-6.7541)	-1.3686*** (-8.6454)	-2.4519*** (-11.6638)	0.219 (1.044)
Constant	-4.5888*** (-15.6751)	-5.9847*** (-17.2904)	-8.9649*** (-13.8315)	-11.4507*** (-35.2580)	-4.5955*** (-15.7142)	-5.9866*** (-17.3241)	-8.9757*** (-13.8188)	-11.4496 (-35.31)
Observations	18,228	20,996	19,514	21,261	18,228	20,996	19,514	21,26
LR χ^2	1361	1514	2212	1472	1342	1509	2188	1484

Table 10 – Unfunded Pension Liabilities

VARIABLES	UNFUNDPEN	UNFUNDPEN	UNFUNDPEN	UNFUNDPEN
REPURDUM3	0.0119 (1.6396)			
REPURDUM		0.0125** (2.2115)		
REPUR3			0.3006** (2.5473)	
REPUR				0.1927*** (2.7583)
LOGASSETS	-0.0098 (-1.1024)	-0.0126 (-1.4548)	-0.0114 (-1.3104)	-0.0113 (-1.2997)
ROA	0.1175* (1.7823)	0.0958 (1.5000)	0.0795 (1.2429)	0.0855 (1.3287)
FCF	0.0081 (0.1566)	0.0093 (0.1829)	0.0168 (0.3324)	0.0116 (0.2292)
MARGINALTAX	0.0001 (0.1210)	0.0004 (0.3419)	0.0004 (0.3238)	0.0003 (0.3142)
UNIONMEM	0.1999** (2.1225)	0.1943** (2.0417)	0.1919** (2.0138)	0.1918** (2.0093)
MKBK	-0.0013 (-0.6463)	-0.0013 (-0.6500)	-0.0018 (-0.9144)	-0.0015 (-0.7969)
KZ	-0.0001*** (-3.5410)	-0.0001*** (-3.3739)	-0.0001*** (-3.2037)	-0.0001*** (-3.2341)
Constant	0.0907 (1.4804)	0.1406** (2.3568)	0.1375** (2.2998)	0.1382** (2.3095)
Observations	17,189	17,919	17,919	17,919
R-squared	0.763	0.764	0.765	0.764
Adjusted R-squared	0.7327	0.7344	0.7346	0.7345
F test model	82.43	83.98	84.64	83.99

Table 11 – CEO Compensation

Panel A - Change in CEO compensation

VARIABLES	$\Delta\%$ CEO COMP	$\Delta\%$ CEO COMP	$\Delta\%$ CEO COMP	$\Delta\%$ CEO COMP
REPURDUM3	0.0057 (0.3482)			
REPURDUM		-0.0197 (-1.1923)		
REPUR3			-0.2396 (-1.3551)	
REPUR				-0.3540** (-2.0384)
LOGASSETS	-0.0958*** (-4.3825)	-0.0943*** (-4.3100)	-0.0974*** (-4.4353)	-0.0991*** (-4.5346)
LEVERAGE	0.0803 (1.3121)	0.0744 (1.2033)	0.0797 (1.3047)	0.0735 (1.1960)
MKBK	-0.0006 (-0.1676)	-0.0010 (-0.2745)	-0.0004 (-0.1220)	-0.0006 (-0.1566)
ROA	-0.1509 (-1.3492)	-0.1405 (-1.2597)	-0.1307 (-1.1486)	-0.1132 (-0.9976)
CASHFLOWVOL	0.0176 (0.1300)	-0.0058 (-0.0445)	-0.0044 (-0.0343)	-0.0006 (-0.0048)
LOG EMPLOYEES	0.0086 (0.3283)	0.0096 (0.3686)	0.0114 (0.4343)	0.0131 (0.4986)
STOCK RETURNS	0.0135** (2.5649)	0.0132** (2.5085)	0.0128** (2.4234)	0.0123** (2.3346)
R&D	-0.5786** (-1.9901)	-0.5700* (-1.9545)	-0.5562* (-1.9048)	-0.5441* (-1.8698)
CAPX	-0.9845*** (-4.1311)	-0.9815*** (-4.1196)	-0.9844*** (-4.1314)	-0.9872*** (-4.1366)
CEOAGE	0.0030** (2.1058)	0.0031** (2.1182)	0.0030** (2.0952)	0.0030** (2.1034)
TENURE	-0.0021 (-1.5880)	-0.0021 (-1.5867)	-0.0021 (-1.5930)	-0.0021 (-1.6030)
DUALITY	0.0390** (2.3063)	0.0390** (2.3060)	0.0388** (2.2964)	0.0388** (2.2901)
BOARDINDEPENDENCE	0.0767 (1.0366)	0.0798 (1.0798)	0.0803 (1.0855)	0.0829 (1.1242)
Constant	0.6952*** (4.0983)	0.6972*** (4.1122)	0.7051*** (4.1415)	0.7158*** (4.2067)
Observations	14,830	14,834	14,834	14,834
R-squared	0.051	0.051	0.051	0.052
Adjusted R-squared	-0.0357	-0.0356	-0.0356	-0.0354
F test model	7.180	7.392	7.239	7.499

Panel B – CEO Pay Ratio

VARIABLES	CEO-WORKER COMP RATIO	CEO-WORKER COMP RATIO	CEO-WORKER COMP RATIO	CEO-WORKER COMP RATIO
REPURDUM3	0.0057 (0.0439)			
REPURDUM		0.0338 (0.3194)		
REPUR3			2.0592** (1.9924)	
REPUR				1.3441 (1.3684)
LOGASSETS	-0.0841** (-2.1176)	-0.0836** (-2.0954)	-0.0754* (-1.9291)	-0.0817** (-2.0678)
LEVERAGE	0.4635** (2.3621)	0.4622** (2.3695)	0.4699** (2.4181)	0.4741** (2.4277)
MKBK	0.0245 (1.4536)	0.0245 (1.4505)	0.0205 (1.1895)	0.0225 (1.3176)
ROA	0.6090 (1.1156)	0.5857 (1.0640)	0.0513 (0.0866)	0.2169 (0.3880)
CASHFLOWVOL	0.7336 (1.1911)	0.7497 (1.2104)	0.6180 (0.9345)	0.6533 (1.0084)
LOG EMPLOYEES	0.5334*** (10.8775)	0.5327*** (10.8456)	0.5179*** (10.5687)	0.5260*** (10.6338)
STOCK RETURNS	0.1183 (1.1973)	0.1203 (1.2198)	0.1287 (1.2867)	0.1304 (1.3016)
R&D	-1.6592* (-1.7566)	-1.6489* (-1.7251)	-2.0844** (-1.9912)	-1.9201* (-1.8897)
CAPX	0.4180 (0.3476)	0.4050 (0.3366)	0.2050 (0.1714)	0.2398 (0.2017)
CEOAGE	0.0045 (0.6831)	0.0046 (0.7002)	0.0052 (0.8002)	0.0044 (0.6730)
TENURE	-0.0055 (-0.7340)	-0.0055 (-0.7354)	-0.0054 (-0.7214)	-0.0053 (-0.7070)
DUALITY	0.0071 (0.0920)	0.0074 (0.0964)	0.0175 (0.2259)	0.0166 (0.2142)
BOARDINDEPENDENCE	1.9169*** (3.4564)	1.9016*** (3.4043)	1.8815*** (3.4263)	1.8810*** (3.3983)
Constant	2.1023*** (3.8303)	2.0834*** (3.8089)	2.0669*** (3.8432)	2.1470*** (3.9168)
Observations	563	563	563	563
R-squared	0.467	0.468	0.473	0.470
Adjusted R-squared	0.4538	0.4540	0.4595	0.4564
F test model	35.16	34.95	36.02	35.34

Table 12 – 2017 Tax Cuts and Jobs Act (TCJA) Difference-in-Difference Regressions

Panel A – with REPURDUM3

VARIABLES	CASH SURPLUS	HIRING	HIRING%	XLR Firm Year FE	XLR Industry Year FE	UNFUNDED PENSION	CEOCOMP
REPURDUM3	0.0337*** (3.0011)	0.0857 (0.3616)	-1.9026 (-1.2928)	0.0046 (0.6794)	0.0475*** (3.9187)	-0.0018 (-0.1140)	0.0878 (1.2280)
TCJA	0.0137 (1.3656)	-0.1694 (-1.1113)	-1.1681* (-1.9268)	0.0004 (0.0801)	-0.0068 (-1.1699)	0.0640** (1.9691)	0.1792*** (2.6686)
REPURDUM3×TCJA	-0.0099 (-0.8369)	-0.1992 (-0.5646)	0.8427* (1.7984)	-0.0023 (-0.3437)	0.0004 (0.0384)	-0.0151 (-0.4343)	-0.0915 (-1.2865)
LOGASSETS	-0.0448*** (-3.6490)	-0.9340*** (-3.4362)	0.4761 (1.2480)			0.0249 (0.5038)	0.3624*** (4.3695)
LEVERAGE	-0.2785*** (-8.2949)	-1.1297** (-2.4057)	-0.1538 (-0.0903)	-0.0067 (-0.3982)	0.0456* (1.8225)		-0.9036*** (-4.8757)
AGENCY	0.0044 (0.2716)						
MKBK	-0.0013 (-0.5790)					-0.0001 (-0.0572)	0.0162* (1.9544)
ROA	0.2869*** (8.3607)	0.6116** (2.1021)	0.3769 (1.0603)	-0.1253*** (-5.5485)	-0.0746*** (-3.5150)	-0.1869 (-0.7442)	0.0600 (0.2288)
LOG EMPLOYEES		7.5762*** (5.9635)	0.2223 (0.1075)				0.0324 (0.2808)
FCF						0.1656 (1.1808)	
TAXES						0.0015 (0.8111)	
UNIONMEM						0.0250 (0.1606)	

KZ						-0.0003 (-0.7515)	
CAPX				0.0367 (0.9279)	-0.0667 (-1.0992)		1.8296*** (2.8822)
LOGSALE				0.0101*** (2.7601)	0.0062*** (3.1972)		
CASH				-0.0687** (-2.5497)	-0.0118 (-0.4277)		
DIVIDENDS				0.0475 (0.3982)	0.2848 (1.0997)		
CASHFLOWVOL							-0.0342 (-0.0885)
STOCKRET							0.0025 (0.1606)
RND							1.0224* (1.9527)
CEOAGE							-0.0089 (-1.3142)
CEOTENURE							0.0053 (0.4942)
BOARDINDEPENDENCE							0.0653 (0.1665)
DUALITY							0.0219 (0.2605)
Constant	0.4576*** (5.7317)	-3.4087*** (-3.4665)	-1.2128 (-0.4569)	0.1198*** (5.7253)	0.1024*** (7.3479)	-0.4914 (-1.2911)	5.9561*** (8.8541)
Observations	14,246	13,835	13,707	2,850	2,850	2,409	2,766
R-squared	0.723	0.491	0.544	0.950	0.226	0.784	0.854
Adjusted R-squared	0.5907	0.2443	0.3235	0.9238	0.2217	0.6759	0.7914
F test model	25.81	9.312	2.400	4.589	7.776	10.92	8.022

Panel B – with REPURDUM

VARIABLES	CASH SURPLUS	HIRING	HIRING%	UNFUNDED PENSION	XLR Firm Year FE	XLR Industry Year FE	CEOCOMP
REPURDUM	0.0544*** (5.1655)	0.0998 (0.2620)	-2.2630 (-1.2446)	0.0066 (0.5346)	0.0018 (0.3063)	0.0402*** (3.1735)	0.0010 (0.0195)
TCJA	0.0123 (1.3438)	-0.3735** (-2.3950)	-1.0073* (-1.6603)	0.0596*** (2.6066)	-0.0007 (-0.1620)	-0.0121** (-2.2418)	0.0988 (1.6285)
REPURDUM×TCJA	-0.0093 (-0.8210)	0.1295 (0.3674)	0.7756 (1.3639)	-0.0116 (-0.4436)	-0.0004 (-0.0545)	0.0042 (0.3633)	0.0019 (0.0291)
LOGASSETS	-0.0409*** (-3.2854)	-0.8876*** (-3.4145)	0.5859 (1.3889)	0.0256 (0.5153)			0.3725*** (4.5058)
LEVERAGE	-0.2559*** (-7.4999)	-1.1571** (-2.5089)	-0.3722 (-0.2223)		-0.0128 (-0.7257)	0.0435* (1.8086)	-0.8998*** (-4.8255)
AGENCY	-0.0034 (-0.2046)						
MKBK	0.0004 (0.1921)			-0.0000 (-0.0134)			0.0157* (1.9062)
ROA	0.2570*** (7.3869)	0.5464** (1.9791)	0.3621 (1.0085)	-0.1908 (-0.7494)	-0.1298*** (-5.4870)	-0.1042*** (-4.9385)	0.0881 (0.3312)
LOG EMPLOYEES		7.5112*** (5.9840)	0.1536 (0.0739)				0.0265 (0.2329)
FCF				0.1687 (1.2008)			
TAXES				0.0015 (0.8000)			
UNIONMEM				0.0273 (0.1763)			

KZ				-0.0003 (-0.7663)				
CAPX					0.0344 (0.9392)	-0.0810 (-1.4366)	1.8306*** (2.8644)	
LOGSALE					0.0089*** (2.7076)	0.0077*** (4.1727)		
CASH					-0.0769*** (-3.2745)	-0.0159 (-0.6236)		
DIVIDENDS					0.0946 (0.7426)	0.3825 (1.5817)		
CASHFLOWVOL							-0.0728 (-0.1869)	
STOCKRET							0.0037 (0.2401)	
RND							1.0091** (1.9760)	
CEOAGE							-0.0088 (-1.2962)	
CEOTENURE							0.0055 (0.5112)	
BOARDINDEPENDENCE							0.0774 (0.1947)	
DUALITY							0.0195 (0.2318)	
Constant	0.4087*** (5.0516)	-3.5013*** (-3.7280)	-1.6803 (-0.6373)	-0.5029 (-1.3044)	0.1325*** (7.2127)	0.1038*** (7.6139)	5.9471*** (8.8013)	
Observations	14,556	14,079	13,945	2,411	3,016	3,016	2,766	
R-squared	0.718	0.491	0.544	0.784	0.945	0.221	0.854	
Adjusted R-squared	0.5820	0.2442	0.3230	0.6758	0.9174	0.2170	0.7909	
F test model	25.17	9.519	2.442	10.49	5.052	9.111	8.012	

Panel C – with REPUR3

VARIABLES	CASH SURPLUS	HIRING	HIRING%	UNFUNDED PENSION	XLR Firm Year FE	XLR Industry Year FE	CEOCOMP
REPUR3	0.6606*** (3.7381)	10.1845 (0.9498)	-7.5654* (-1.7669)	0.2154 (0.8896)	0.3247** (2.2865)	0.9350*** (4.2329)	-0.3150 (-0.5508)
TCJA	0.0171*** (2.6223)	0.2647 (1.0968)	0.7584 (1.3264)	0.0516** (2.0092)	0.0023 (0.6594)	-0.0022 (-0.5056)	0.0960*** (2.9072)
REPUR3×TCJA	-0.2934** (-2.0701)	15.4307 (1.3154)	1.6907 (0.5416)	-0.2727 (-1.0736)	-0.2248** (-2.4667)	-0.3673* (-1.7372)	0.1121 (0.2219)
LOGASSETS	-0.0360*** (-2.8793)	2.9699* (1.8513)	-2.0863 (-0.9115)	0.0131 (0.5676)			0.3681*** (4.4099)
LEVERAGE	-0.2565*** (-7.5456)	0.0003 (0.0002)	-7.2065* (-1.7355)		0.0183 (1.0789)	0.0618** (2.5193)	-0.9003*** (-4.8698)
AGENCY	-0.0032 (-0.1948)						
MKBK	0.0002 (0.0890)			0.0018 (0.9046)			0.0155* (1.8624)
ROA	0.2533*** (7.2362)	-1.4539* (-1.7335)	-0.4084 (-0.3037)	-0.1576 (-1.4984)			0.1014 (0.3812)
LOG EMPLOYEES		-18.7476** (-2.2007)	-6.8398 (-1.2456)				0.0296 (0.2582)
FCF				0.0852 (1.3374)			
TAXES				0.0017 (1.1732)			
UNIONMEM				-0.1757 (-1.4573)			

KZ				-0.0003 (-0.9213)			
CAPX					0.0731* (1.7351)	-0.0905 (-1.4709)	1.8584*** (2.8849)
L1.ROA					-0.0708*** (-3.6338)	-0.0490** (-2.1927)	
LOGSALE					0.0039 (1.0621)	0.0070*** (3.8142)	
CASH					-0.0853*** (-2.8792)	-0.0037 (-0.1331)	
DIVIDENDS					0.0300 (0.2402)	0.2313 (0.8676)	
CASHFLOWVOL							-0.0880 (-0.2233)
STOCKRET							0.0032 (0.2126)
RND							1.0176** (1.9728)
CEOAGE							-0.0088 (-1.3026)
CEOTENURE							0.0056 (0.5147)
BOARDINDEPENDENCE							0.0793 (0.2001)
DUALITY							0.0191 (0.2280)
Constant	0.3906*** (4.8090)	5.8800** (2.2210)	25.6863 (1.6169)	-0.3784** (-2.0312)	0.1474*** (6.8490)	0.1035*** (7.3316)	5.9866*** (8.8075)
Observations	14,556	10,240	10,150	1,749	2,850	2,850	2,766
R-squared	0.717	0.600	0.812	0.778	0.947	0.224	0.854
Adjusted R-squared	0.5810	0.3213	0.6810	0.6189	0.9190	0.2189	0.7910

F test model	22.95	3.403	0.628	1.182	3.472	6.726	7.907
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Panel D – with REPUR

VARIABLES	CASH SURPLUS	HIRING	HIRING%	UNFUNDED PENSION	XLR Firm Year FE	XLR Industry Year FE	CEOCOMP
REPUR	0.4676*** (3.8396)	-11.6124 (-1.4216)	-7.1596 (-1.2213)	0.2479* (1.7151)	0.3175*** (3.1135)	0.9266*** (4.6427)	-0.3240 (-0.6958)
TCJA	0.0130** (2.0335)	-0.4626** (-2.5051)	-0.9084* (-1.7471)	0.0570*** (6.7755)	0.0008 (0.2390)	-0.0048 (-1.1440)	0.0907*** (2.9802)
REPUR×TCJA	-0.0740 (-0.6030)	9.6852 (0.7714)	7.3770* (1.7285)	-0.2376 (-1.2449)	-0.2016** (-2.4533)	-0.4354*** (-2.6185)	0.2643 (0.6178)
LOGASSETS	-0.0355*** (-2.8387)	-0.9421*** (-3.8618)	0.4577 (1.3578)	0.0278 (0.5465)			0.3642*** (4.2985)
LEVERAGE	-0.2546*** (-7.4719)	-1.1445*** (-2.7141)	-0.4089 (-0.2413)		-0.0102 (-0.5787)	0.0519** (2.1680)	-0.9003*** (-4.8617)
AGENCY	-0.0037 (-0.2211)						
MKBK	0.0002 (0.0771)			0.0001 (0.0398)			0.0153* (1.8471)
ROA	0.2521*** (7.1874)	0.7141*** (3.0210)	0.3300 (0.9458)	-0.2016 (-0.7753)	-0.1300*** (-5.5009)	-0.1106*** (-5.2745)	0.1083 (0.4077)
LOG EMPLOYEES		7.5278*** (6.0494)	0.2527 (0.1226)				0.0345 (0.3045)
FCF				0.1731 (1.2019)			
TAXES				0.0015 (0.8415)			
UNIONMEM				0.0193			

				(0.1228)			
KZ				-0.0003			
				(-0.7526)			
CAPX					0.0324	-0.1017*	1.8612***
					(0.9011)	(-1.8154)	(2.9114)
LOGSALE					0.0087***	0.0091***	
					(2.6578)	(4.9418)	
CASH					-0.0757***	-0.0171	
					(-3.2931)	(-0.6755)	
DIVIDENDS					0.0823	0.3604	
					(0.6399)	(1.4586)	
CASHFLOWVOL							-0.0869
							(-0.2235)
STOCKRET							0.0023
							(0.1468)
RND							0.9902*
							(1.9498)
CEOAGE							-0.0089
							(-1.3117)
CEOTENURE							0.0057
							(0.5295)
BOARDINDEPENDENCE							0.0826
							(0.2089)
DUALITY							0.0192
							(0.2287)
Constant	0.3908***	-2.9195***	-1.8880	-0.5217	0.1302***	0.0980***	6.0062***
	(4.8102)	(-3.0685)	(-0.7013)	(-1.3137)	(7.0728)	(7.2327)	(8.6524)
Observations	14,556	14,079	13,945	2,411	3,016	3,016	2,766
R-squared	0.717	0.492	0.544	0.784	0.946	0.228	0.854
Adjusted R-squared	0.5811	0.2456	0.3225	0.6762	0.9184	0.2233	0.7910
F test model	23.82	11.30	2.290	10.07	5.677	10.54	7.928

Table 3 A – Baseline with propensity scored matched firms