# Do contemporaneous share repurchases influence managers and analysts framing stock compensation?

Henry Laurion
Leeds School of Business, University of Colorado Boulder
henry.laurion@colorado.edu

Scott Robinson
Lundquist College of Business, University of Oregon
scottrob@uoregon.edu

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Henry Laurion, Leeds School of Business, University of Colorado Boulder, Boulder, CO, USA

Scott Robinson, Lundquist College of Business, University of Oregon, Eugene, OR, USA

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# Do contemporaneous share repurchases influence managers and analysts framing stock compensation?

**Abstract**: Among firms with material recurring stock compensation expense, 34% have equal or greater contemporaneous cash outflows for share repurchases. Despite being treated as independent transactions by accounting standards, some managers and analysts act as if these transactions are connected. Managers with contemporaneous share repurchases are less likely to define non-GAAP earnings to exclude stock compensation expense and less likely to explicitly refer to stock compensation as a "noncash expense." Holding managers' non-GAAP exclusion choices constant, analysts are incrementally less likely to exclude stock compensation from Street earnings when firms engage in contemporaneous share repurchases. This study provides a new perspective on how managers and analysts view the economics of stock compensation in the presence of significant contemporaneous share repurchases.

## 1. Introduction

Firms recognize an expense for the estimated fair value of stock compensation earned by employees each period. Unlike cash-settled expenses, stock compensation is typically settled in shares, leading to its widespread characterization as a "noncash" expense. However, the share dilution caused by stock compensation motivates some firms to repurchase shares. We examine whether managers and analysts continue to view stock compensation as a noncash expense when firms spend cash on contemporaneous share repurchases.

Managers commonly disclose non-GAAP earnings measures that are defined to exclude stock compensation expense. The U.S. Securities and Exchange Commission's (SEC) guidance discourage non-GAAP adjustments that exclude any "normal, recurring, cash operating expenses" (SEC 2022). Since stock compensation is usually a normal, recurring, operating expense, managers must rely on framing stock compensation as noncash to justify its exclusion when presenting non-GAAP performance measures. For firms that engage in share repurchases to offset stock compensation's dilution, this justification becomes more tenuous. Therefore, to investigate whether share repurchases influence managers' and analysts' framing of stock compensation expense, we focus on their decisions to exclude stock compensation when defining non-GAAP measures.

Despite managers' widespread use of non-GAAP earnings, there is no consensus on whether or not to exclude stock compensation expense. In fact, there is a roughly-even split between those firms that define non-GAAP earnings to exclude stock compensation expense and those that do not (Griffin and McInnis 2025). This divergence suggests that managers may hold varying opinions regarding how stock compensation's economic cost should be reflected in voluntary measures of operating performance. Prior work investigating the determinants of

managers' decision to exclude stock compensation in defining non-GAAP measures highlight opportunistic earnings management incentives, such as increasing or smoothing earnings and meeting earnings benchmarks (e.g., Barth, Gow, and Taylor 2012). In contrast, we investigate a more informative explanation, whether managers are less likely to exclude stock compensation expense when the expense is connected to a contemporaneous cash outflow.

Anecdotally, some managers acknowledge the expense's connection with share repurchase cash flows. Firms such as Microsoft, Meta, Ford, eBay, Pinterest, Autodesk, Airbnb, and Salesforce explicitly link share repurchases to stock compensation in their public disclosures. For example, in its October 20, 2010 earnings conference call, eBay management stated, "Today, we announced that our Board of Directors has authorized an additional 2 billion stock repurchase program, which is intended to offset dilution from our equity compensation programs." Such an explicit linking of these transactions is curious considering the lack of a compelling value-maximizing rationale for managers to engage in share repurchases solely to offset stock compensation's dilution. In particular, prior research finds that stock-compensation-motivated share repurchases crowd out other productive uses of cash such as capital investment, are conducted at higher valuations, and are perceived unfavorably by investors with muted equity market reactions (e.g., Bens et al. 2002; Bens et al. 2003; Kahle 2002).

Analysts define and forecast their own non-GAAP performance measures, commonly referred to as "Street earnings," which sometimes deviate from managers' non-GAAP earnings definitions. Barth et al. (2012) find that analysts exclude stock compensation expense when the resulting earnings measure is a better predictor of future GAAP earnings. Mohanram, White, and Zhao (2020) document that analysts' decision to exclude stock compensation from Street earnings is positively associated with optimistically biased price targets and equity overvaluation.

Motivated by the economic consequences of excluding stock compensation, we aim to better understand the determinants of analysts' exclusion decision.

Some financial analysts acknowledge that share repurchases affect their perception of stock compensation expense. For example, a Morgan Stanley report by Callahan and Mauboussin (2023) notes that, "Buybacks that offset dilution turn SBC [stock-based compensation], a non-cash expense, into a cash expense. Companies should not get the benefit of adding back SBC expense without a full acknowledgement of the cost of buying back shares." Similarly, a Merrill Lynch report by Farmer and Milunovich (2004) describes these stock-compensation-motivated repurchases as an "invisible cash flow drain," highlighting that while such repurchases are not included in U.S. GAAP's definition of operating cash flow, they may be more accurately viewed as being economically connected to a recurring operating expense.

Stock compensation and share repurchases are significant transactions affecting a substantial proportion of public firms. As of 2021, 63% of large public firms report material stock compensation expense on their income statements, which is up from approximately 50% in 2006, the first year the FASB required expensing of stock option fair values. Over the same period, the aggregate magnitude of stock compensation expenses increased from 0.5% to 1.2% of aggregate pre-tax expenses. Share repurchases remain a popular use of cash flow for between 30% and 50% of large public firms. Stock compensation and share repurchases also have significant overlap. Among large public firms, 63% of stock compensation expense overlaps with contemporaneous share repurchase cash outflows in the same fiscal year. From the opposite perspective, 12% of share repurchase cash outflows overlap with contemporaneous stock compensation.[1] The

[1] These are firm-year level statistics. Aggregating across time within the same firm, approximately 81% of stock compensation expense can be tied to share repurchase cash outflows and approximately 16% of share repurchase cash outflows can be tied to stock compensation.

increasing frequency, materiality, and overlap of these two transactions makes understanding managers' and analysts' understanding of them central to the accounting discipline.

To examine whether share repurchases influence managers' and analysts' framing of stock compensation, we construct a sample of firms with material and recurring stock compensation expense between 2010 and 2021. In this sample, we examine the association between share repurchases and managers' and analysts' decision to exclude stock compensation in calculating non-GAAP earnings, as well as managers' explicit reference to stock compensation as a noncash expense. We define share repurchases as the cash outflows for share repurchases netted against the cash inflows for option exercises. We find that 34% of firms with material stock compensation expense have equal or greater cash outflows for share repurchases. For these firms, we assume there is a relatively higher likelihood that some of the repurchases are intended to offset the dilution caused by stock compensation.[2]

We find that some managers act as if they acknowledge the connection between stock compensation and share repurchases. In univariate analyses, when cash outflows from share repurchases exceed stock compensation expense, firms are 14% less likely (54% versus 68%) to define non-GAAP earnings to exclude stock compensation expense and 9% less likely (28% versus 37%) to explicitly refer to stock compensation as a "noncash" expense. We continue to find a negative relation between share repurchases and stock compensation's exclusion in multivariate regressions when we include control variables that have plausible associations with share repurchases and the non-GAAP exclusion of stock compensation. Consistent with firms in our sample having strong incentives to exclude stock compensation, our results also provide evidence

[2] To the extent managers at firms with material and recurring stock compensation engage in share repurchases for reasons unrelated to offsetting the impact of stock compensation, then our measures of share repurchases should bias our results toward there being no association between repurchases and stock compensation framing.

that a meaningful proportion of firms continue to frame stock compensation as a noncash expense despite substantial contemporaneous share repurchases. Although not violating the SEC's non-GAAP guidance, these firms are arguably framing stock compensation in a manner that disguises the underlying economics of the transaction. In a supplemental analysis, we find attenuated results in firms with CEOs who have greater financial expertise. Financial expert CEOs may be more likely to rely on their financial accounting training, which assumes no relationship between stock compensation and share repurchases. Therefore, financial expertise may increase managers' propensity to obscure the cash flow implications of stock compensation.

These results come with an important limitation. Because the decision to repurchase shares is determined by the firm and its managers, we cannot rule out the possibility that underlying factors influencing share repurchases also influence non-GAAP exclusion decisions. We include several control variables to address likely endogenous factors: (i) the magnitude and growth rate of stock compensation expense, since these factors may also provide motivation to repurchase shares, (ii) valuation and financing activities, since firms with high valuations or seeking to raise capital may attempt to inflate perceptions of earnings by excluding stock compensation expense, and also be less likely to repurchase shares, and (iii) financial leverage, which is associated with the reporting of EBITDA and may also place limitations on firms ability to repurchase shares. Moreover, in untabulated analyses, we find that our results are robust to entropy balancing on all control variables. We believe we address these observable potential confounding factors and provide novel evidence regarding the association between share repurchases and managers' framing of stock compensation.

Next, we examine whether contemporaneous share repurchases influence analysts' choice to exclude stock compensation in their calculation of Street earnings. Analysts' choice to exclude

stock compensation is less susceptible to confounding factors since analysts are not making the choice to conduct contemporaneous share repurchases. We use regressions to model analysts' exclusions (similar to Bentley et al. 2018) and find evidence that, holding managers' choice to exclude stock compensation expense constant, analysts are more sensitive to share repurchases. Among firms whose managers report a non-GAAP measure excluding stock compensation expense, analysts are approximately 40% less likely to agree with managers and exclude the expense when share repurchases exceed stock compensation expense. This finding suggests that analysts' decision to exclude stock compensation expense, an operating expense, from Street earnings depends on the relative level of share repurchases, a financing cash flow.

Lastly, prior research estimates non-GAAP earnings quality using a regression of future operating performance (proxied by future operating earnings and future operating cash flow) on current non-GAAP earnings and non-GAAP exclusions. We focus on the use of future operating cash flow as the dependent variable and stock compensation expense as a common non-GAAP exclusion. We find that current-period stock compensation expense is associated with higher future operating cash flow, yet lower future operating cash flow minus share repurchases. This finding suggests that adjusting operating cash flow to include cash outflows for share repurchases would reverse conclusions with respect to stock compensation's persistence on future cash flows.

Our study provides new systematic evidence on managers' and analysts' perception of the link between stock compensation and share repurchases. Prior research investigating this link focuses on the implications of stock compensation for managers' share repurchase decisions (e.g., Fenn and Liang 1998; Weisbenner 2000; Barth and Kasznik 1999; Bens, Nagar, and Wong 2002; Bens, Nagar, Skinner, and Wong 2003), and investors' responses to share repurchases (Kahle 2002). In contrast, we examine whether share repurchases have implications for managers' and

analysts' framing of stock compensation as a noncash expense. We find a negative association between share repurchases and managers' and analysts' exclusion of stock compensation in defining non-GAAP measures.

This study is relevant to the work of regulators, standard setters, and academics interested in understanding how managers and analysts perceive the economics of stock compensation and the associated implications on their financial reporting decisions. Although the SEC allows firms to exclude stock compensation in defining non-GAAP measures, we find that a significant proportion of firms use the afforded flexibility in non-GAAP reporting to frame stock compensation as a noncash expense despite its apparent connection to contemporaneous cash outflows for share repurchases. Our study may be informative to the Financial Accounting Standards Board's (FASB) projects; one on the statement of cash flows and another on non-GAAP measures, which they refer to as key performance indicators (KPIs). Despite current U.S. GAAP treating stock compensation and share repurchases as independent transactions, we provide evidence that some managers and analysts act as if they recognize these transactions are economically linked. We believe our findings can be viewed as input from managers and analysts regarding how share repurchases impact their perception of the economics of stock compensation expense. We also contribute to understanding why some managers and analysts choose to exclude stock compensation expense when defining their prominent KPIs. Finally, our findings are consistent with suggestions by Easton et al. (2018) and Bhojraj (2020) to treat stock compensation expense as an operating cash outflow and financing cash inflow.

## 2. Background and Related Literature

### *2.1 Stock Compensation*

Stock compensation is a large and growing expense on public firms' income statements. The two most common types of stock compensation used by firms are stock options and restricted stock. The cash inflows from stock option exercises are classified as financing activities in the statement of cash flows. Restricted stock, on the other hand, grants employees the right to receive a specified number of shares at some specified time in the future. Importantly, neither of the most common forms of stock compensation involve any significant cash settlement.[3]

Despite minimal direct cash flow implications, several factors motivate firms that use stock compensation to engage in share repurchases. (1) Stock compensation increases the number of shares outstanding, diluting the ownership interests of existing shareholders. Firms repurchase shares to offset the dilutive effect and to inflate diluted earnings-per-share (e.g., Bens et al. 2003; Brav et al. 2005; Skinner 2008; Young and Yang 2011; Kim and Ng 2018; Mohanram et al. 2020). (2) Some firms use treasury stock to satisfy their share issuances to employees, requiring frequent share repurchases to replenish treasury stock. (3) Firms that grant stock options receive nominal cash inflows when employees exercise their options, increasing equity and decreasing financial leverage ratios, and therefore some use those proceeds to repurchase shares to maintain stable leverage ratios (e.g., Dittmar 2000). (4) Finally, some evidence suggests that share repurchases are opportunistic attempts of managers to provide market liquidity for selling the shares with which they were compensated (see Bonaimé and Ryngaert 2013).

[3] One exception to this involves some firms that purchase some shares back from employees for tax withholding purposes or to provide employees liquidity to cover their own cost of taxes.

*2.2 Stock compensation framing*

Evidence on managers' framing of stock compensation is limited, but the bulk of evidence is consistent with opportunistic attempts to downplay the expense and inflate market perceptions of their firms' operating performance. Dechow, Hutton, and Sloan (1996) examine the characteristics of firms that lobby against the FASB's 1993 Exposure Draft, which proposed expense recognition for stock option fair values. They find that firms with executives that receive a larger proportion of their pay from stock compensation are more likely to lobby against expense recognition. Dechow et al.'s (1996) evidence suggests that opposition to treating stock compensation as an expense is partially explained by managers' perceived threat of higher public awareness of the value of their compensation.

In the post-SFAS 123R time period (i.e., mandatory expense recognition of stock option fair values), Barth et al. (2012) investigate managers' and analysts' decisions to present a non-GAAP earnings measure that excludes the effect of the newly-mandated stock compensation expense. They find that managers exclude stock compensation for opportunistic reasons: to increase non-GAAP earnings, smooth non-GAAP earnings, and meet non-GAAP earnings benchmarks. In contrast, analysts' exclusion of stock compensation expense is less frequent, and seems to be driven by their desire to use an earnings measure that predicts future GAAP earnings.

There is a nearly equal split between firms that do and do not exclude stock compensation in calculating non-GAAP measures. Barth et al. (2012) report an exclusion rate of 19% in 2006. Black et al. (2018) report exclusion rates of 15% to 20% between 2009 to 2014. In a more recent sample, Griffin and McInnis (2025) use a classification algorithm to estimate that 55.9% of firms exclude stock compensation expense. The lack of comparability between firms combined with the

increasing materiality of stock compensation poses a potentially significant valuation problem for investors.

Practitioners and financial media suggest that investors struggle incorporating these expenses into their valuations.[4] Mohanram, White, and Zhao (2020) find evidence consistent with this problem. They document that financial analysts who exclude stock compensation expense when calculating Street earnings produce optimistically biased price targets. Bhojraj (2020) and Core, Guay and Kothari (2002) further clarify the potential for misvaluation when relying on operating performance measures that exclude stock compensation expense. They argue that the dilution adjustment to earnings per share alone is not sufficient to capture the economic cost of stock compensation and can result in misvaluation of firms with significant and persistent stock compensation.

*2.3 Stock Compensation Related Share Repurchases*

Several studies examine the consequences of stock-compensation-related share repurchases. These studies generally conclude that share repurchases by firms that use stock compensation are more detrimental to firm value than share repurchases by other firms. Some studies find that these repurchases crowd out productive uses of cash, such as investing in capital assets or R&D (e.g., Bens et al. 2002; Bhargava 2013; Almeida et al. 2016). Bens et al. (2003) find that firms that use stock compensation repurchase shares at higher valuations. Hall and Murphy (2003) suggest that employees receiving stock compensation are generally risk averse and under-diversified, leading firms to grant, and therefore repurchase, a greater number of shares to reach the certainty-equivalent level of cash compensation. Kahle's (2002) evidence suggests that

[4] See the Wall Street Journal article, "How Companies Treat Stock Options When Tallying Cash Flow Perplexes Investors," written by Englesham (2022). See also the Morgan Stanley Consilient Observer article, "Stock-Based Compensation Unpacking the Issues," written by Callahan and Mauboussin (2023).

investors are aware of the motivations for stock-compensation-related share repurchases and react less positively to repurchase announcements by firms that use significant stock compensation.

*2.4 Hypotheses*

Stock compensation is settled in shares, not cash, leading to the common practice of framing the expense as noncash. However, the dilution caused by stock compensation motivates some firms with significant stock compensation to repurchase shares. Accounting standards define share repurchase cash flows as financing activities, not operating activities. Since accounting standards do not recognize any link between stock compensation and share repurchases, it is unclear why managers would acknowledge this link. Moreover, because stock-compensation-related share repurchases can crowd out other investments, managers may be hesitant to highlight any link. On the other hand, there is empirical and anecdotal evidence that managers are cognizant of the fact that their share repurchases are driven by the desire to offset stock compensation dilution. Barth and Kasznik (1999) report that 20% of share repurchase press releases cite obtaining shares for stock option plans as at least one motivation for the repurchase. For example, in a presentation on its share repurchase program, Salesforce announced in its Q1 2024 earnings announcement slides that it is, "Committed to offsetting dilution from FY24 Stock-Based Compensation."[5] To the extent managers recognize this connection, contemporaneous share repurchases may influence their perceptions of the economics of stock compensation expense.

*H1: Managers that conduct significant contemporaneous share repurchases are less likely to frame stock compensation as a noncash expense.*

[5] Firms are not required to disclose the rationales for their share repurchases. The SEC recently issued a rule increasing disclosure requirements for share repurchases, known as the "Share Repurchase Modernization Rule," which would have required firms to disclose the specific reasons share repurchases. However, in December 2023 the rule was vacated partially due to the lack of a full cost-benefit analysis.

Since analysts have less incentive to inflate investors' perceptions of firms' operating performance, they may be more likely than managers to frame stock compensation in a way that is consistent with the economics of the transaction. Prior academic evidence suggests that share repurchases conducted with the goal of offsetting stock compensation's dilution can be costly (e.g., Bens et al. 2002; Bens et al. 2003; Hall and Murphy 2003; Bhargava 2013; and Almeida et al. 2016). If analysts view share repurchases as a costly consequence of stock compensation, they may be more hesitant to use an earnings measure that ignores stock compensation expense. There are some explicit examples of equity analysts acknowledging the link between stock compensation and share repurchases (see Farmer and Milunovich 2004 and Callahan and Mauboussin 2023). Therefore, contemporaneous share repurchases may lead analysts to consider firms' utilization of stock compensation as a more relevant and costly expense and be less likely to agree with managers' noncash framing.

*H2: Analysts are less likely to frame stock compensation as a noncash expense when firms have significant contemporaneous share repurchases.*

## 3. Data and Sample

### *3.1 Sample Construction*

Figure 1 presents the prevalence of stock compensation and share repurchases within a broad sample of large public firms. Among the 4,000 largest firms each year by market capitalization, the percentage of firms with material stock compensation expense, defined as stock compensation expense greater than 5% of pretax income, increased from approximately 50% of firms in 2006 to 63% of firms in 2021. The percentage of firms with material repurchases, again defined using the 5% of pretax income threshold, is smaller, generally hovering between 30% and 50%. Figure 2 presents the overlap between stock compensation and share repurchases. Among

the 4,000 largest firms each year between 2006 and 2021 (i.e., 4,000 × 16 = 64,000 firm-years), aggregate stock compensation expense is approximately $2.5 trillion, of which approximately $1.6 trillion, or 63%, overlaps within the same firm-year as cash outflows for share repurchases. In the same sample, aggregate share repurchases are $12.8 trillion, and the same $1.6 trillion, or 12%, overlaps with contemporaneous stock compensation expense.[6]

Table 1 presents the attrition steps to arrive at our main sample we use to test our hypotheses. We begin with Compustat firms between 2010 and 2021. We choose 2010 as a starting point to avoid the first few years of SFAS 123R adoption, since some firms may define non-GAAP earnings to exclude newly-recognized expenses for the sake of consistency. Next, we match firms to their fourth quarter 8-K earnings announcement press releases. We require annual stock compensation expense greater than 5% of the absolute value of pretax income to ensure we are capturing firms where stock compensation is material. We also require each observation to be part of a three-year span with material cumulative stock-compensation expense (total three-year stock compensation expense greater than 3% of total assets). This criterion ensures stock compensation is not a transitory expense (i.e., to use the terminology in the SEC Compliance & Disclosure Interpretations on non-GAAP exclusions, stock compensation is a normal, recurring, operating expense) for firms in our sample. Therefore, the remaining justification for firms in our sample to exclude stock compensation in calculating non-GAAP performance measures is to frame the expense as noncash. The resulting sample is 7,188 firm-years, representing approximately 20% of Compustat firm-years with matching earnings announcements. We focus on this sample because

[6] Relaxing the requirement for stock compensation and share repurchases to occur in the same fiscal year, we find that 82% of stock compensation and 16% of share repurchases may arguably be characterized as cash-based stock compensation.

it represents a powerful subset of firms for which the framing of stock compensation is consequential, and where managers must rely on noncash framing to exclude stock compensation.

*3.2 Managers' non-GAAP exclusions and reference to stock compensation as "noncash"*

To examine managers' framing of stock compensation, we identify their use of non-GAAP measures that are defined to exclude stock compensation expense. We collect data on stock compensation as a non-GAAP exclusion by reading firms' annual earnings announcement press releases. In order to avoid excessive hand collection, for each firm we examine the first and last year they are in our sample. If firms define non-GAAP earnings the same way in both years, we assume it remains the same for the years in between. When firms define non-GAAP differently in the first and last years, we apply the same methodology to the years in between. We collect data on typical non-GAAP earnings measures and EBITDA-type measures (e.g., "adjusted EBITDA") separately. Our primary variable of interest is *ANY_EXCLUDE*, which is equal to one if any of a firm's non-GAAP measures exclude stock compensation expense (including EBITDA-type measures). We also define *NGE_EXCLUDE* as an indicator equal to one if a firm excludes stock compensation from their non-GAAP earnings measure (excluding EBITDA-type measures).

Figure 3 depicts the annual percentage of firms that define their non-GAAP performance measures to exclude stock compensation expense. We observe that the percentage of firms excluding the expense increases over our sample period, both among firms reporting just a non-EBITDA non-GAAP earnings measure, as well as those reporting any non-GAAP performance measure including EBITDA. Considering all firms in this sample have material stock compensation expense, this roughly even split underscores the lack of comparability and provides motivation to study the reasons behind this decision.

We also construct a variable that captures whether managers explicitly refer to stock compensation as a noncash expense in their annual earnings announcement press releases. We use two methods to collect this data. First, we programmatically scrape earnings announcement press releases for key terms indicating that stock compensation is explicitly labeled as a noncash expense.[7] Second, we manually examine earnings announcements for each firm within our sample to search for alternative ways firms refer to stock compensation as noncash.[8] To avoid excessive hand collection, for each firm we review their earnings announcement in the first year then every third year through the final year in our sample. If a firm's stock compensation disclosure remains consistent between reviewed observations, we assume their labeling of stock compensation remained consistent in the years we did not review. When a firm alters their stock compensation disclosures, we review the years in between. We then define *NONCASH*, as an indicator equal to one for observations where managers explicitly refer to stock compensation as a noncash expense, and zero otherwise.

Table 2 reports descriptive statistics for our main sample examining managers' framing of stock compensation. We find that *ANY_EXCLUDE* has a mean of 63%, *NGE_EXCLUDE* has a mean of 46%. These exclusion rates are generally higher than found in previous studies. Barth et al. (2012) report an exclusion rate of 19% in 2006. Black et al. (2018) report exclusion rates between 15% and 20% for years 2009 to 2014. We find our exclusion rates are similar to those estimated by Griffin and McInnis (2025). The higher exclusion rate in our sample is most likely because we restrict to observations where stock compensation is an economically significant cost

[7] We search earnings announcement press releases for the following phrases: "non-cash stock-based", "non-cash share-based", "non-cash equity-based", "non-cash stock", "non-cash share", "non-cash equity".
[8] For example, some firms state that stock compensation requires no cash settlement. Some firms refer to stock compensation as a noncash item when explaining its exclusion in the calculation of non-GAAP earnings.

to the business. This high rate of exclusion provides a powerful setting for examining managers' choice to exclude stock compensation expense.

We find that *NONCASH* has a mean of 34%. Among firms that exclude stock compensation expense, 47% explicitly frame the expense as noncash (untabulated). Among firms that do not exclude stock compensation expense, 11% explicitly frame the expense as noncash (untabulated). This correlation is partly due to the fact that firms that exclude stock compensation expense are required to explain why, and the noncash framing is commonly used as an explanation.[9] Among firms that do not exclude stock compensation but do explicitly refer to the expense as noncash, these references show up in the labelling of stock compensation as noncash on the income statement or statement of cash flows, in supplementary breakdowns of which income statement line items contain stock compensation expense, and sometimes in the text of the press release.

*3.3 Share repurchase activity*

We create two measures comparing repurchase activity to stock compensation expense to identify when share repurchases cash outflows are arguably attributable to stock compensation. First, we create an indicator, I(*REPURCH* ≥ *SBC*) equal to one if repurchase activity in year *t* meets or exceeds stock compensation in year *t*. We find that 34% of firms in our sample have contemporaneous share repurchase cash outflows exceeding stock compensation expense. This measure is intuitive in the sense that if firms want to fully offset the effect of stock compensation, then repurchase activity needs to roughly equal stock compensation expense. However, the

[9] Based on our hand collection, we identified additional explanations used to justify the non-GAAP exclusion of stock compensation expense. Many firms do not address stock compensation directly, but explain that the non-GAAP earnings measure presented is a measure of "core" operations or consistent with how managers define performance for internal planning purposes. Those who do specifically explain the exclusion frequently rely on the noncash framing, but sometimes mention that excluding stock compensation expense enhances comparability across years or with peers, and that variation in stock compensation expense is outside of management's control. Except for the noncash explanation, these alternative explanations do not appear consistent with the SEC's C&DIs, which generally state that only unusual or noncash items should be excluded.

drawback of this measure is that it does not capture firms that engage in stock-compensation-related repurchases but choose to not fully offset the effect of stock compensation each year. To address this issue, we create a continuous measure, *REPURCH* / *SBC*, which reflects the ratio of repurchase net cash flows to stock compensation expense.[10] The average ratio of repurchases to stock compensation is 1.46.

At the bottom of Table 2, Panel A, we present means of our main outcome variables conditional on the magnitude of repurchases. Here, we find univariate evidence consistent with the notion that contemporaneous share repurchases are associated with a lower likelihood of (1) excluding stock compensation in defining non-GAAP measures and (2) explicitly referencing stock compensation as a noncash expense. This univariate evidence suggests that contemporaneous share repurchases reduce managers' tendency to frame stock compensation as a noncash expense. Consistent with firms in our sample having strong incentives to exclude stock compensation, our results also provide evidence that a meaningful proportion of firms continue to frame stock compensation as a noncash expense despite substantial contemporaneous share repurchases. Although not violating the SEC's non-GAAP guidance, these firms are arguably framing stock compensation in a manner that disguises the underlying economics of the transaction.

Table 2, Panel B presents pairwise correlations between all main variables. Significant pairwise relations underscore the importance of considering endogenous factors when evaluating the relationship between share repurchases and the framing of stock compensation expense. In

[10] Prior studies examining the relation between income statement amounts and cash flows use a three-year span (e.g., Dechow and Dichev 2002), and stock compensation vesting periods last approximately three years, meaning that the expense recognition, share dilution, and potential share repurchases may be within approximately three years of each other. Therefore, as robustness we reconstruct our sample using firm-3-year windows as the unit of observation. In untabulated analyses we find our results are robust to using this alternative design.

particular, share issuances and financing needs are positively associated with non-GAAP exclusion of stock compensation and negatively associated with repurchases. This makes sense because firms may want to exclude more expenses to appear profitable when raising capital, and firms raising capital may be less likely to distribute capital through share repurchases.

## 4. Empirical Analyses

### *4.1 Managers' Framing of Stock Compensation Expense*

To test *Hypothesis 1* we estimate logistic regressions in which the dependent variables are indicators for managers' decision to exclude stock compensation in defining non-GAAP measures (*ANY_EXCLUDE* or *NGE_EXCLUDE*). The independent variables of interest are our relative measures of share repurchase activity (I*(REPURCH ≥ SBC)* or *REPURCH / SBC)*. Our controls include factors potentially causing managers to engage in share repurchase and exclude stock compensation expense. Specifically, we include controls for the level and growth of stock compensation, *SBC* and *SBC_GROWTH*. We also include controls for firms financing needs because firms may be more likely to exclude expenses to increase perceptions of their profitability when preparing to raise capital and may also be less likely to engage in share repurchases. We include a control for firm size with the natural log of a firm's market capitalization, *Log(MV)*, leverage ratio, *LEVERAGE*, recent debt or equity issuances, *ISSUANCES*, a firm's ability to finance its capital expenditures with existing cash flows, *NEED_FINANCING*. We also control for a firm's expected growth, *EP_RATIO,* and U.S. GAAP performance with an indicator equal to one if the firm reports a U.S. GAAP loss for the year, *LOSS*. Detailed variable definitions are provided in Appendix A. We also include Fama French 12 industry fixed effects and year fixed effects.[11]

[11] In untabulated analyses we find our results are robust to using two-digit SIC industries.

Table 3 Panel A presents our multivariate analysis of Hypothesis 1. Across several specifications, we find a significant negative relation between contemporaneous share repurchases and managers' non-GAAP exclusion of stock compensation expense. Column 1 suggests that when net cash outflows from share repurchases exceed stock compensation expense, managers are less likely to define non-GAAP earnings to exclude the effect of stock compensation expense. The coefficient suggests that the odds ratio of excluding stock compensation is 35% lower when repurchases exceed stock compensation.[12] Column 2 suggests that this relation also applies to a continuous independent variable of share repurchases as a percentage of stock compensation. Columns 3 and 4 examine whether managers define traditional non-GAAP earnings measures (i.e., not including EBITDA-like measures) to exclude the effect of stock compensation expense. Again, we find that managers are less likely to define non-GAAP earnings to exclude stock compensation when there are contemporaneous share repurchases.

Our main sample includes firms that present non-GAAP earnings measures as well as firms that do not. To the extent an endogenous relation exists between firms' share repurchase activity and the decision to present non-GAAP measures in the first place, this could bias our findings. For example, firms repurchasing shares may be less interested in inflating investors' perceptions of operating performance and therefore be less likely to report non-GAAP earnings at all. To alleviate this potential bias, we re-estimate the regressions presented in Panel A using the subsample of firms which disclose either non-GAAP earnings or an EBITDA-type performance measure. The results of these regressions are presented in Panel B of Table 3. Consistent with the results presented in Panel A, we find negative and significant coefficients for both measures of stock

[12] In an untabulated analysis, we exclude observations for which share repurchases are greater than five times annual stock compensation expense and find consistent results. These firms may have non-compensation-related reasons for some of their share repurchases.

compensation related share repurchases. Therefore, the negative relation between repurchases and the non-GAAP exclusion of stock compensation is not just a reflection of managers' decision to provide a non-GAAP earnings measure in the first place.

Next, we examine whether a CEOs level of financial expertise moderates the influence of contemporaneous share repurchases the framing of stock compensation as a noncash expense. On one hand, greater financial expertise may lead managers to acknowledge the underlying economics of the connection between stock compensation and share repurchases. On the other hand, financial training may instill the notion that these two transactions are unrelated: stock compensation is an operating expense, and share repurchases are a financing decision. Similar to Custódio and Metzger (2014) we construct an indicator variable capturing financial expertise at the CEO position based on BoardEx data on the CEOs work experience (*FIN_EXPERT*). Table 3, Panel C presents our regression models adding this indicator variable and interaction term with our repurchase variables. Coefficients on the stand-alone repurchase variables remain negative, suggesting that, among firms with non-financial-expert CEOs, those with contemporaneous share repurchases are significantly less likely to exclude stock compensation expense in defining non-GAAP measures. The positive, with varying statistical significance, coefficients on the interaction terms provide some evidence that CEOs with financial experience are less sensitive to share repurchases in their decision to frame stock compensation as a noncash expense. This finding suggests that financial training, which instills the notion that stock compensation and share repurchases are independent transactions, is positively associated with managers ignoring the link between these transactions when defining their non-GAAP measures.

The non-GAAP exclusion tests allow us to indirectly observe that managers frame stock compensation as noncash; however, we next test managers' explicit framing of stock

compensation. We modify our logistic regressions by replacing our non-GAAP exclusion measures with *NONCASH,* an indicator equal to one when managers explicitly refer to stock compensation as a noncash expense in their annual earnings announcement. We present the results in Table 4. Column 1 of Table 4 suggests that when net cash outflows from share repurchases exceed stock compensation expense, managers are significantly less likely to explicitly refer to stock compensation as a noncash expense. Similarly, column 2 shows that this relation also applies to a continuous independent variable of share repurchases as a percentage of stock compensation expense. These results are consistent with managers acknowledging the relation between cash outflows to repurchase shares and stock compensation.

In untabulated analyses we further explore the relation between share repurchases and managers' explicit stock compensation framing. We separately re-estimate these regressions for the subsets of firms that report and do not report non-GAAP performance measures. These small subsamples yield lower statistical power; however, we continue to observe negative coefficients, yet mostly statistically insignificant z-statistics. However, in the subset of firms that do not report non-GAAP performance measures, *REPURCH* / *SBC* is significantly negatively (z-statistic of -2.137) associated with *NONCASH*. Although the statistical evidence is relatively weak in this subsample, it is consistent with the notion that, even in the absence of non-GAAP performance reporting, share repurchases are negatively associated with managers framing of stock compensation as a noncash expense. In another untabulated analysis, we incorporate an interaction term for financial expertise of the CEO. We find positive, but insignificant, coefficients on the interaction terms suggesting that financial expertise at the CEO level does not significantly influence the likelihood of firms explicitly referring to stock compensation expense as noncash.

*4.2 Analysts' Framing of Stock Compensation Expense*

We next examine whether contemporaneous share repurchases influence analysts' framing of stock compensation expense. We retain 7,039 firm-years from our sample that are covered by I/B/E/S. Similar to Bentley et al. (2018) we analyze whether analysts exclude stock compensation in their calculations of Street earnings by modeling analysts' exclusions. This is because analysts' specific Street earnings exclusions are not available without significant hand-collection and access to individual analyst reports. We calculate analysts' Street earnings exclusions, *STREET_EXCLUSIONS*, as the difference between annual diluted earnings per share before extraordinary items less the consensus analyst annual Street earnings from I/B/E/S multiplied by fully diluted common shares then scale by total assets. Since analysts' expense exclusions are represented as negative values in our *STREET_EXCLUSIONS* measure, for these regressions we measure stock compensation expense as annual stock compensation expense scaled by total assets and multiplied by negative one (*SBC_EXP*). This reflects stock compensation expense as a negative value.

To test our second hypothesis, we estimate a multivariate OLS model with analysts' Street earnings exclusions as a function of stock compensation expense and special items. Table 5 presents descriptive statistics for our key variables. Analysts' Street earnings exclusions (*STREET_EXCLUSIONS*) average 3% of total assets, which is comparable to the magnitude of stock compensation expense (*SBC_EXP*). They are negative on average, reflecting the fact that they are generally expenses, reducing net income. Special items (*SPECIAL_ITEMS*) are only 1% of total assets on average, but can be large in magnitude for a small number of firms.

Table 6 reports our test of *Hypothesis 2*. In columns 1 and 2, we examine analysts' exclusion of stock compensation expense among firms whose managers exclude stock

compensation expense in calculating non-GAAP performance measures. Therefore, the results we observe in these tests are completely independent of managers' decision to exclude, which is held constant. The coefficient near one (0.836) on *SBC_EXP* suggests that analysts generally follow managers and exclude stock compensation expense in defining Street earnings when repurchases are low. In column 1, the negative coefficient on the interaction between *SBC_EXP* and I(*REPURCH* ≥ *SBC*) suggests that when net cash flows from repurchases exceed stock compensation expense, analysts are significantly less likely to define Street earnings to exclude stock compensation expense. The magnitude of the negative coefficient suggests that there is a 40% reduction (0.336 / 0.836 = 40.2%) in the exclusion of stock compensation expense when share repurchases are high. Column 2 shows that this relation also applies to our continuous measure of repurchases relative to stock compensation. Again, note that these results are incremental to managers' choices as all firms examined in columns 1 and 2 have chosen to present a non-GAAP performance measure which excludes the effect of stock compensation expense. In columns 5 and 6 we adjust our sample to examine where managers exclude stock compensation from their non-GAAP earnings measure excluding EBITDA-type measures. Consistent with columns 1 and 2 we continue to find a coefficient near one on *SBC_EXP*. Importantly, we continue to find a negative coefficient on the interaction terms suggesting that analysts are less likely to exclude stock compensation when contemporaneous repurchases are greater.[13] These results help mitigate the alternative explanation that managers conducting share repurchases are less motivated to inflate share price through non-GAAP reporting. Since analysts do not share those motivations, their

[13] The coefficient in column 5 is negative consistent with the coefficients reported in columns 1, 2, and 6. However the coefficient in column 5 is outside traditional significance levels with a p-value = 0.148.

Street exclusion choices are theoretically more likely to reflect their honest views of stock compensation.[14]

Columns 3, 4, 7, and 8 examine the subset of firms that do not define a non-GAAP earnings measure to exclude the effect of stock compensation. The near zero coefficients on *SBC_EXP* and its associated interactions suggest that when managers choose not to exclude stock compensation expense in defining non-GAAP earnings, analysts almost never break from management and independently exclude it in calculating Street earnings.

The results in Table 6 are consistent with the notion that analysts do not view stock-compensation-related share repurchases as solely a financing activity. Our empirical analyses suggest that analysts recognize the link between stock compensation and share repurchases even when managers do not. Importantly, we find that when managers exclude stock compensation from non-GAAP performance measures, analysts do not blindly follow managers' exclusions. Instead, analysts are incrementally less likely to exclude stock compensation from Street earnings when repurchases are greater, consistent with *H2*. These findings also provide systematic support for the Morgan Stanley research report by Callahan and Mauboussin (2023), which suggests that, "Buybacks that offset dilution turn SBC, a noncash expense, into a cash expense. Companies should not get the benefit of adding back SBC expense without a full acknowledgement of the cost of buying back shares." In these tests, we observe analysts breaking with managers' non-GAAP exclusion choices when they are inconsistent with the underlying economics of the transaction.

*4.3 Non-GAAP Exclusion Quality*

Our final analysis is to examine a common research design that academic researchers use to evaluate non-GAAP exclusion quality. The empirical design entails regressing future earnings

[14] We continue to find similar results when we estimate these regressions while including a control variable for amortization expense, which is another common recurring expense exclusion (e.g., Griffin and McInnis 2025).

and, separately, future cash flows on non-GAAP exclusions. A high coefficient on non-GAAP exclusions suggests that the exclusions are persistent and are inappropriate to exclude (i.e., low quality exclusions). We examine this empirical design, specifically focusing on the use of operating cash flow as the dependent variable and stock compensation expense as the exclusion. We explore whether the conclusion as to whether stock compensation is a high-quality exclusion is affected by the inclusion of share repurchases as an incremental future cash outflow.

Since share repurchases are a return of capital to investors, some might argue that these cash outflows are not necessarily akin to lower future operating performance. However, there are a few reasons academics should consider taking these cash outflows into account as implications of non-GAAP exclusions. First, multiple academic studies suggest that these share repurchases are more costly to the firm than share repurchases not motivated by stock compensation (e.g., Bens et al. 2002; Bens et al. 2003; Hall and Murphy 2003; Kahle 2002). Second, anecdotal evidence suggests that sophisticated capital market participants, such as equity analysts, view share repurchases motivated by stock compensation to be potentially an inefficient use of capital that investors should draw their attention to (Farmer and Milunovich 2004; Callahan and Mauboussin 2023). Finally, our previous results indicate that some managers and analysts do, on average, view share repurchases as a relevant factor in assessing the implications of stock compensation.

Table 7 presents our sample attrition steps to arrive at a large sample of firms with data available on current-year earnings components and future-year cash flows. Table 8 presents descriptive statistics. Operating cash flows (8% of total assets) are significantly higher than GAAP earnings (4% of total assets), due primarily to depreciation, amortization, and stock compensation expense. Average share repurchases are 2% of total assets, which reduces operating cash flows by approximately one quarter when netted against it.

In Table 9, we estimate the persistence of earnings excluding stock compensation expense and stock compensation expense into two different definitions of future cash flows. In these specifications we follow prior research (e.g., Kolev et al., 2008; Bentley et al., 2018), and control for characteristics associated with the persistence of earnings components. Column 1 suggests that current year's earnings before stock compensation expense persists significantly into next year's operating cash flows. The negative coefficient on *SBC_EXP* suggests that firms with higher stock compensation expense have higher future operating cash flows, which is consistent with the notion that accounting standards treat stock compensation as a noncash expense. However, this negative coefficient is troubling for the measurement of non-GAAP exclusion quality. All else equal, managers' exclusion of stock compensation expense decreases the persistence of exclusions into future operating cash flows, leading researchers to conclude managers are justified and even improving earnings by excluding this item. In fact, since the coefficient is negative, the exclusion of stock compensation may combine with and actually mitigate the exclusion of items that are highly persistent into future operating cash flows.

In column 2 when we adjust next year's operating cash flow to incorporate next-year's net cash flows from share repurchases, the coefficient on *SBC_EXP* increases significantly, becoming positive although not as positive as earnings excluding stock compensation. This positive yet lower persistence makes sense because not all firms with stock compensation engage in share repurchases. Overall, this evidence suggests that researchers who are interested in the near-term cash flow implications of stock compensation ought to consider incorporating net cash flows from share repurchases in their measure of future cash flows.

## 5. Conclusion

Managers' and analysts' understanding and framing of the economics of stock compensation is fundamental to the accounting discipline. Stock compensation expense is a large and growing expense on public companies' income statements. Many firms and analysts frame stock compensation as noncash expense as a way to downplay its economic significance to firms' operating performance. Although stock compensation requires no cash settlement, a large number of firms engage in contemporaneous share repurchases to mitigate the dilution caused by issuing shares below market value. While prior literature examining this relation has focused on how stock compensation influences share repurchase activity, we explore the implications of contemporaneous share repurchases' for managers' and analysts' framing of stock compensation expense. When share repurchases are large relative to the magnitude of stock compensation expense, managers and analysts are significantly less likely to frame the expense as noncash. Specifically, managers and analysts are less likely to exclude stock compensation when defining non-GAAP performance measures and managers are less likely to explicitly refer to stock compensation as a "noncash" expense.

Our results provide novel evidence that managers and analysts sometimes view transactions in ways that are not captured by accounting standards or disclosure rules. Specifically, we find evidence that a financing activity influences managers' and analysts' framing of an operating expense. These results may be interpreted as suggesting that stock-compensation-related share repurchases are better classified or disclosed as impacting operating activities. Under the current disclosure regime, U.S. firms are not required to provide detailed disclosures regarding why managers engage in a share repurchases. Our results suggest investors may benefit if firms were required to provide disclosures regarding share repurchases intended to offset stock

compensation dilution. In particular, share repurchase disclosures may enable investors to better assess the implications of stock compensation.

Our analyses also have implications for the SEC's current guidance on non-GAAP exclusions. Although contemporaneous share repurchases influence some managers and analysts to view stock compensation as akin to a cash-settled expense, many firms continue to frame the expense as noncash despite the contemporaneous cash outflows. Managers rely on the "noncash" clause within the SEC's Compliance & Disclosure Interpretations to exclude stock compensation because stock compensation has no direct impact on operating cash flows. However, for firms engaging in share repurchases to offset dilution, framing stock compensation as a noncash expense may obscure the underlying economics of the transaction.

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# Appendix A

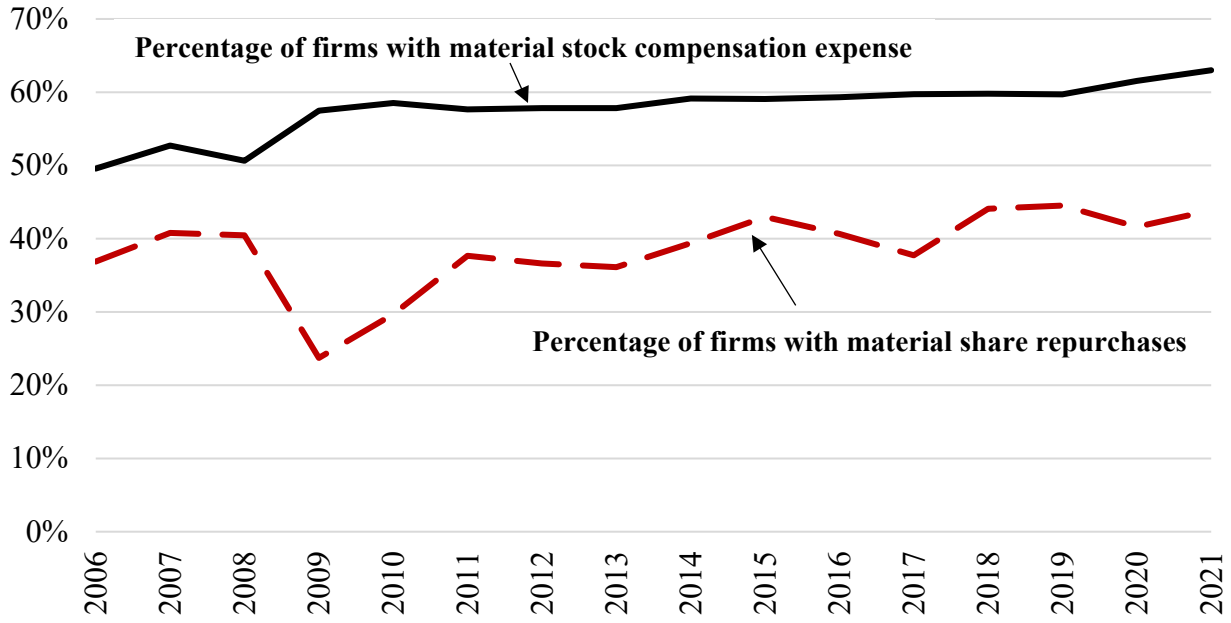
*Variable Definitions*

| | |
|---|---|
| *ANY_EXCLUDE* | Indicator variable equal to one if a firm excludes the effect of stock based compensation expense from any annual Non-GAAP earnings measure (i.e. Non-GAAP earnings or Adjusted EBITDA). |
| *BTM* | Book-to-Market of common equity. (*ceq*/( *prcc_f* × *csho*)) |
| *CFO* | Cash flows from operations scaled by total assets. (*oancf*/*at*) |
| *CFO – REPURCH* | Equal to *CFO – REPURCH* |
| *EARNINGS* | Net income scaled by total assets. (*ni*/*at*) |
| *EARNINGS – SBC* | Equal to *EARNINGS – SBC* |
| *EP_RATIO* | Earnings per share divided by share price as of fiscal yearend. ($epsfx_t$/$prcc\_f_t$) |
| *FIN_EXPERT* | Indicator variable equal to one if a CEO has financial work experience, and zero otherwise. Using BoardEx, we identify financial work experience as a CEO that meets at least one of the following three criteria: 1) previously employed for one of the Big 4 accounting firms, or predecessor firms 2) held a CFO position or 3) held a position where the job title included "treasurer", "finance", or "accountant". |
| *I(REPURCH ≥ SBC)* | Indicator variable equal to one if *REPURCH* is greater than or equal to *SBC*, and zero otherwise. |
| *ISSUANCES* | Equity issuances (*sstk*), less option exercise proceeds (*optprcex* × *optexd*), plus issuances of long-term debt (*dltis*), scaled by total assets from the previous fiscal year. This variable is ranked into 10 deciles for correlation table and regressions. |
| *LEVERAGE* | The fiscal year end leverage ratio ((*dltt* + *dlc*)/*at*). |
| Log(*AT*) | The natural log of total assets (*at*). |
| Log*(MV)* | The natural log of a firm's fiscal yearend market value of equity (*prcc_f* × *csho*). |
| *LOSS* | Indicator variable equal to one if net income is less than zero, and zero otherwise. (*ni* < 0) |
| *NEED_FINANCING* | An indicator variable for each year if operating cash flow less one-year lagged capital expenditures is less than zero. (i.e. for year *t* $NEED\_FINANCING_t$ = 1 if ($oancf_t - capx_{t-1}$) < 0) |
| *NGE_EXCLUDE* | Indicator variable equal to one if a firm-year excludes the effect of stock based compensation expense from their annual Non-GAAP earnings measure, and zero otherwise. **Note:** This measure does not consider EBITDA measures as a Non-GAAP earnings measure. |

| | |
|---|---|
| *NONCASH* | Indicator variable equal to one if a firm labels stock compensation expense as a "noncash" expense in an annual earnings announcement, and zero otherwise. |
| *REPURCH* | Share repurchases less proceeds received from the exercise of employee stock options scaled by lagged total assets. $((prstkc_t - (optprcex_t \times optexd_t))/at_{t-1})$ |
| *REPURCH/SBC* | Equal to *REPURCH* divided by *SBC*. |
| *SALES_GROWTH* | Annual sales growth scaled by lagged total assets. $((sale_t - sale_{t-1})/at_{t-1})$ |
| *SBC_EXP* | Stock based compensation expense multiplied by negative one scaled by total assets $((stkco/at) \times -1)$ |
| *SBC* | Stock based compensation expense scaled by total assets from the previous fiscal year prior. $(stkco_t / at_{t-1})$ |
| *SBC_GROWTH* | The change in stock based compensation expense as a percentage of total operating expense from the previous year. $(stkco_t/xopr_t)-(stkco_{t-1}/xopr_{t-1})$ |
| *SD_QROA* | The standard deviation of quarterly ROA over the most recent eight quarters. |
| *SPECIAL_ITEMS* | Income before extraordinary items less earnings from operations scaled by total assets. $((ib_t - (oprepsx_t \times cshfd_t))/at_t)$ |
| *STREET_EXCLUSIONS* | The difference between annual diluted earnings per share before extraordinary items less consensus analyst annual Street earnings from I/B/E/S multiplied by fully diluted common shares then scaled by total assets. $(((epsfx_t - (\text{I/B/E/S EPS}_t)) \times cshfd_t)/at_t)$ |

## Figure 1

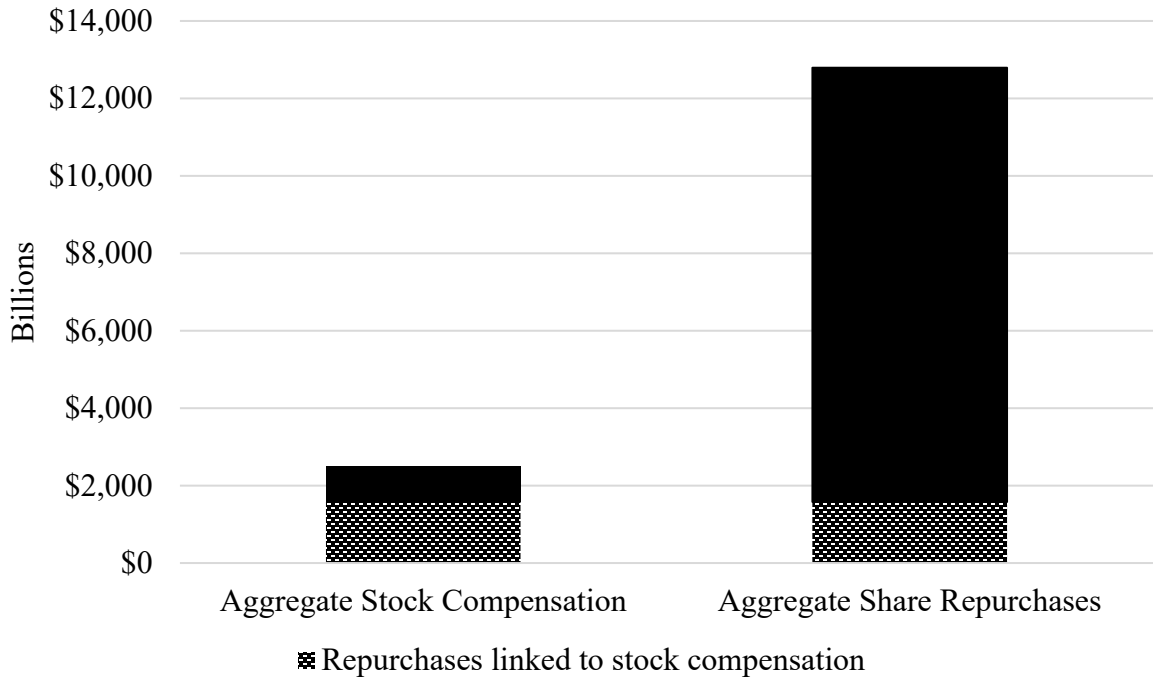
*Magnitude of Stock Compensation Expense Over Time*




This figure illustrates the percentage of firms with material share repurchases and stock compensation expense by fiscal year. Population is the largest 4,000 firms by market capitalization (Compustat variables: CSHO × PRCC_F) each fiscal year. Materiality is defined as share repurchases (Compustat variable: PRSTKC) and stock compensation expense (Compustat variable: STKCO) greater than 5% of the absolute value of pre-tax income (Compustat variable: PI).

## Figure 2

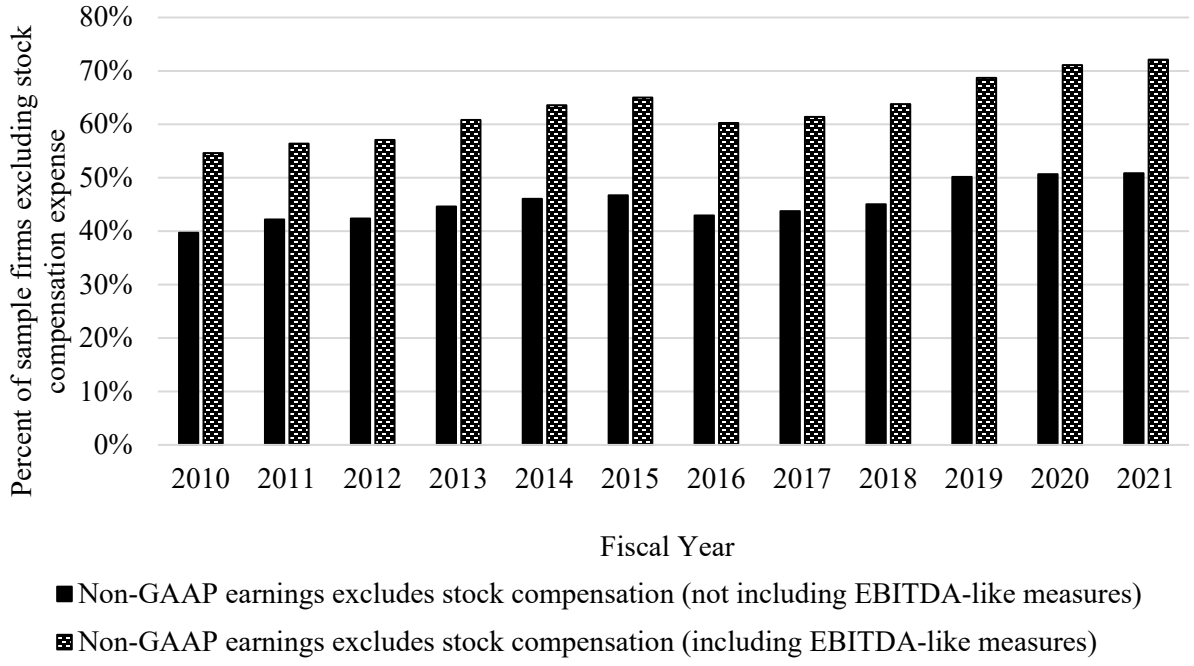
*Intersection of stock compensation and share repurchases*




This figure illustrates aggregate stock compensation expense and share repurchases for the largest 4,000 firms by market capitalization (Compustat variables: CSHO × PRCC_F) over the 2006 through 2021 period. Textured areas indicate the overlap between firm-year stock compensation expense and contemporaneous share repurchase cash outflows (i.e., textured area is the aggregated firm-year minimum of stock compensation expense and share repurchases). Textured area represents 63.3% of aggregate stock compensation expense and 12.3% of aggregate share repurchases.

## Figure 3

*Frequency of non-GAAP Exclusion of Stock Compensation Expense Over Time*




This figure illustrates the percentage of observations by year where managers exclude stock compensation from non-GAAP earnings measures. The black bar represents managers' exclusion of stock compensation in calculating non-EBITDA non-GAAP earnings measures (i.e., *NGE_EXCLUDE* = 1). The checkered bar represents any non-GAAP earnings measure including EBITDA (i.e., *ANY_EXCLUDE* = 1).

# Table 1

*Sample to Examine Managers' Framing of Stock Compensation*

| | |
|---|---|
| Compustat Firm-years between 2010 and 2021 with Assets, Sales, and Market Value > $75M | 42,767 |
| Firm-years matched to an 8-K annual earnings announcement | 32,435 |
| Firm-years with stock compensation expense greater than 5% of pre-tax income | 21,052 |
| Firm-years where 3-year stock compensation is greater than 3% of total assets | 7,188 |

This table documents our sample attrition steps to arrive at our main sample.

# Table 2

*Descriptive Statistics*

**Panel A: Distributional statistics**

| Variables | N | Mean | Sd | Min | 25% | Median | 75% | Max |
|---|---|---|---|---|---|---|---|---|
| *ANY_EXCLUDE* | 7,188 | 0.63 | 0.48 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| *NGE_EXCLUDE* | 7,188 | 0.46 | 0.50 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| *NONCASH* | 7,188 | 0.34 | 0.47 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| *REPURCH* | 7,188 | 0.03 | 0.08 | -0.30 | 0.00 | 0.00 | 0.04 | 1.49 |
| *SBC* | 7,188 | 0.03 | 0.03 | 0.01 | 0.01 | 0.02 | 0.04 | 0.18 |
| I(*REPURCH* ≥ *SBC*) | 7,188 | 0.34 | 0.47 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| *REPURCH* /*SBC* | 7,188 | 1.46 | 3.12 | -2.16 | -0.16 | 0.20 | 1.93 | 16.01 |
| Log(*MV*) | 7,188 | 7.57 | 1.53 | 4.70 | 6.46 | 7.41 | 8.45 | 12.04 |
| *LEVERAGE* | 7,188 | 0.21 | 0.21 | 0.00 | 0.01 | 0.16 | 0.34 | 0.92 |
| *ISSUANCES* (raw variable) | 7,188 | 0.19 | 0.42 | -0.21 | 0.00 | 0.02 | 0.23 | 12.50 |
| *NEED_FINANCING* | 7,188 | 0.19 | 0.39 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| *EP_RATIO* | 7,188 | 0.01 | 0.08 | -0.42 | -0.01 | 0.02 | 0.05 | 0.15 |
| *SBC_GROWTH* | 7,188 | 0.00 | 0.02 | -0.06 | 0.00 | 0.00 | 0.01 | 0.08 |
| *LOSS* | 7,188 | 0.29 | 0.46 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| *FIN_EXPERT* | 6,981 | 0.14 | 0.35 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| **Firms with REPURCH ≥ SBC** | | | | | | | | |
| *ANY_EXCLUDE* | 2,457 | 0.54 | 0.50 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| *NGE_EXCLUDE* | 2,457 | 0.40 | 0.49 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| *NONCASH* | 2,457 | 0.28 | 0.45 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| **Firms with REPURCH < SBC** | | | | | | | | |
| *ANY_EXCLUDE* | 4,731 | 0.68 | 0.47 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| *NGE_EXCLUDE* | 4,731 | 0.48 | 0.50 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| *NONCASH* | 4,731 | 0.37 | 0.48 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |

Panel A presents descriptive statistics for the main variables in our non-GAAP exclusion tests. Bolded sections indicate subsample descriptive statistics for selected variables based on whether or not repurchases exceed stock compensation expense. Refer to Appendix A for variable definitions presents sample pairwise correlations.

**Panel B: Pairwise correlations**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) *ANY_EXCLUDE* | | **0.70** | **0.36** | **-0.06** | **0.20** | **-0.14** | **-0.15** | **-0.05** | **0.05** | **0.09** | **0.05** | **-0.17** | **0.06** | **0.20** |
| (2) *NGE_EXCLUDE* | **0.70** | | **0.28** | -0.02 | **0.28** | **-0.07** | **-0.10** | **0.08** | **-0.08** | 0.00 | 0.00 | **-0.12** | **0.08** | **0.15** |
| (3) *NONCASH* | **0.36** | **0.28** | | **-0.07** | **0.12** | **-0.09** | **-0.10** | -0.01 | **0.06** | **0.07** | **0.06** | **-0.12** | 0.01 | **0.12** |
| (4) *REPURCH* | **-0.11** | **-0.06** | **-0.07** | | **-0.07** | **0.60** | **0.77** | **0.18** | **0.09** | 0.00 | **-0.17** | **0.14** | -0.01 | **-0.21** |
| (5) *SBC* | **0.27** | **0.36** | **0.16** | **-0.14** | | **-0.22** | **-0.20** | **0.10** | **-0.09** | **0.08** | **0.16** | **-0.18** | **0.25** | **0.35** |
| (6) I(*REPURCH* ≥ *SBC*) | **-0.14** | **-0.07** | **-0.09** | **0.79** | **-0.19** | | **0.71** | **0.27** | 0.03 | **-0.06** | **-0.25** | **0.25** | **-0.05** | **-0.30** |
| (7) *REPURCH* / *SBC* | **-0.14** | **-0.09** | **-0.08** | **0.96** | **-0.19** | **0.82** | | **0.23** | **0.13** | 0.01 | **-0.19** | **0.19** | **-0.05** | **-0.24** |
| (8) Log(*MV*) | **-0.05** | **0.09** | -0.01 | **0.20** | **0.07** | **0.26** | **0.22** | | **0.14** | **0.10** | **-0.19** | **0.24** | **0.06** | **-0.21** |
| (9) *LEVERAGE* | **0.05** | **-0.08** | **0.06** | **0.06** | **-0.21** | **0.03** | **0.08** | **0.20** | | **0.45** | **0.08** | **-0.10** | -0.01 | **0.11** |
| (10) *ISSUANCES* (deciles) | **0.09** | 0.00 | **0.07** | **-0.06** | -0.02 | **-0.06** | **-0.04** | **0.11** | **0.49** | | **0.14** | **-0.08** | **0.06** | **0.14** |
| (11) *NEED_FINANCING* | **0.05** | 0.00 | **0.06** | **-0.26** | **0.12** | **-0.25** | **-0.24** | **-0.20** | **0.07** | **0.14** | | **-0.44** | 0.02 | **0.47** |
| (12) *EP_RATIO* | **-0.28** | **-0.23** | **-0.16** | **0.32** | **-0.33** | **0.34** | **0.32** | **0.13** | **-0.06** | **-0.12** | **-0.43** | | 0.00 | **-0.66** |
| (13) *SBC_GROWTH* | **0.08** | **0.10** | 0.01 | **-0.04** | **0.19** | **-0.05** | **-0.05** | **0.06** | 0.00 | **0.05** | 0.01 | **-0.08** | | **0.06** |
| (14) *LOSS* | **0.20** | **0.15** | **0.12** | **-0.30** | **0.28** | **-0.30** | **-0.28** | **-0.21** | **0.10** | **0.14** | **0.47** | **-0.78** | **0.05** | |

Panel B presents Pearson correlations on upper right and Spearman rank correlations on lower left. *Italics*, underline, and **bold** represents statistical significance at the 10, 5 and 1 percent levels, respectively. Refer to Appendix A for variable definitions presents sample pairwise correlations.

# Table 3

*Share Repurchases and the Non-GAAP Exclusion of Stock Compensation*

**Panel A: Full sample**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable = | *ANY_EXCLUDE* | | *NGE_EXCLUDE* | |
| **I(*REPURCH* ≥ *SBC*)** | **-0.423*** ** | | **-0.208** ** | |
| | **(-4.295)** | | **(-2.048)** | |
| ***REPURCH /SBC*** | | **-0.070*** ** | | **-0.043*** ** |
| | | **(-4.935)** | | **(-2.719)** |
| *SBC* | 10.715*** | 10.802*** | 13.101*** | 13.026*** |
| | (3.545) | (3.630) | (5.003) | (5.025) |
| Log(*MV*) | -0.185*** | -0.187*** | 0.028 | 0.031 |
| | (-3.888) | (-3.915) | (0.551) | (0.603) |
| *LEVERAGE* | 0.945*** | 1.072*** | -0.253 | -0.195 |
| | (2.784) | (3.125) | (-0.813) | (-0.622) |
| *ISSUANCES* (deciles) | 0.038** | 0.039** | 0.007 | 0.008 |
| | (2.079) | (2.162) | (0.425) | (0.450) |
| *NEED_ FINANCING* | -0.367*** | -0.361*** | -0.375*** | -0.373*** |
| | (-3.175) | (-3.110) | (-2.902) | (-2.892) |
| *SBC_GROWTH* | 0.440 | 0.410 | -0.959 | -0.964 |
| | (0.251) | (0.235) | (-0.522) | (-0.526) |
| *EP_RATIO* | -2.086** | -2.103** | -1.521** | -1.513** |
| | (-2.331) | (-2.345) | (-2.229) | (-2.226) |
| *LOSS* | 0.264** | 0.263** | 0.273** | 0.271** |
| | (1.994) | (1.985) | (2.148) | (2.123) |
| Industry & Year Fixed Effects | Yes | Yes | Yes | Yes |
| AUC | 0.792 | 0.793 | 0.833 | 0.834 |
| N | 7,188 | 7,188 | 7,176 | 7,176 |

**Panel B: Subsample of firms that report a non-GAAP earnings measure**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable = | *ANY_EXCLUDE* | | *NGE_EXCLUDE* | |
| **I(*REPURCH ≥ SBC*)** | **-0.428*** ** | | **-0.179*** | |
| | **(-4.082)** | | **(-1.719)** | |
| ***REPURCH /SBC*** | | **-0.067*** ** | | **-0.037** ** |
| | | **(-4.517)** | | **(-2.276)** |
| Controls | Yes | Yes | Yes | Yes |
| Industry & Year Fixed Effects | Yes | Yes | Yes | Yes |
| AUC | 0.808 | 0.809 | 0.838 | 0.838 |
| N | 6,228 | 6,228 | 6,216 | 6,216 |

**Panel C: Financial expertise and the relation between repurchases and non-GAAP exclusion**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable = | *ANY_EXCLUDE* | | *NGE_EXCLUDE* | |
| I(*REPURCH ≥ SBC*) | -0.502*** | | -0.284** | |
| | (-4.604) | | (-2.543) | |
| *REPURCH /SBC* | | -0.085*** | | -0.054*** |
| | | (-5.424) | | (-3.091) |
| *FIN_EXPERT* | -0.028 | 0.022 | -0.191 | -0.100 |
| | (-0.145) | (0.121) | (-0.905) | (-0.488) |
| **I(*REPURCH ≥ SBC*) × *FIN_EXPERT*** | **0.502*** | | **0.499*** | |
| | **(1.912)** | | **(1.804)** | |
| ***REPURCH /SBC* × *FIN_EXPERT*** | | **0.081** ** | | **0.062** |
| | | **(2.182)** | | **(1.573)** |
| Controls | Yes | Yes | Yes | Yes |
| Industry & Year Fixed Effects | Yes | Yes | Yes | Yes |
| AUC | 0.790 | 0.800 | 0.840 | 0.840 |
| N | 6,981 | 6,981 | 6,972 | 6,972 |

This table presents logistic regressions. *ANY_EXCLUDE* is an indicator equal to one if a firm excludes the effect of stock based compensation expense from any annual Non-GAAP earnings measure (i.e. Non-GAAP earnings or Adjusted EBITDA), and zero otherwise. *NGE_EXCLUDE* is an indicator equal to one if a firm excludes the effect of stock based compensation expense from their annual Non-GAAP earnings measure (not including EBITDA-like measures), and zero otherwise. I(*REPURCH ≥ SBC*) is equal to one if repurchase net cash outflows exceed stock compensation expense, and zero otherwise. *REPURCH /SBC* is share repurchase net cash outflows divided by stock compensation expense. Panel A includes the full sample. Panel B is restricted to firms that report at least one non-GAAP earnings measure. Panel C examines the interaction of repurchases with CEOs' financial expertise. *FIN_EXPERT*, is an indicator equal to one if a CEO has financial expertise, and zero otherwise. Refer to Appendix A for variable definitions. Z-statistics are reported in parentheses below each coefficient estimate. *, **, *** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two-tailed tests. Standard errors are clustered by firm.

# Table 4

*Share Repurchases and Managers' Reference to Stock Compensation as a Noncash Expense*

| Dependent Variable = | (1) *NONCASH* | (2) |
|---|---|---|
| **I(*REPURCH* ≥ *SBC*)** | **-0.219**** | |
| | **(-2.262)** | |
| ***REPURCH* /*SBC*** | | **-0.058***** |
| | | **(-3.906)** |
| *SBC* | 4.410*** | 4.268** |
| | (2.587) | (2.507) |
| Log(*MV*) | -0.014 | -0.007 |
| | (-0.316) | (-0.151) |
| *LEVERAGE* | 0.620** | 0.699** |
| | (2.228) | (2.490) |
| *ISSUANCES* (deciles) | 0.025 | 0.025* |
| | (1.642) | (1.664) |
| *NEED_FINANCING* | -0.071 | -0.077 |
| | (-0.648) | (-0.705) |
| *SBC_GROWTH* | -2.066 | -2.089 |
| | (-1.283) | (-1.300) |
| *EP_RATIO* | -1.641*** | -1.635*** |
| | (-2.898) | (-2.885) |
| *LOSS* | 0.094 | 0.084 |
| | (0.755) | (0.676) |
| Industry & Year Fixed Effects | Yes | Yes |
| AUC | 0.641 | 0.643 |
| N | 7,188 | 7,188 |

This table presents logistic regressions. *NONCASH* is equal to one if the firm refers to stock compensation as a noncash expense, and zero otherwise. I(*REPURCH* ≥ *SBC*) is equal to one if repurchase net cash outflows exceed stock compensation expense, and zero otherwise. *REPURCH* /*SBC* is share repurchase net cash outflows divided by stock compensation expense. Refer to Appendix A for variable definitions. Z-statistics are reported in parentheses below each coefficient estimate. *, **, *** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two-tailed tests. Standard errors are clustered by firm.

# Table 5

*Descriptive Statistics for Analysts Treatment of Stock Compensation*

| Variables | N | Mean | Sd | Min | p25 | Median | p75 | Max |
|---|---|---|---|---|---|---|---|---|
| *STREET_EXCLUSIONS* | 7,039 | -0.03 | 0.06 | -0.30 | -0.05 | -0.01 | 0.00 | 0.18 |
| *SBC_EXP* | 7,039 | -0.03 | 0.03 | -0.14 | -0.04 | -0.02 | -0.01 | 0.00 |
| $SPECIAL\_ITEMS_t$ | 7,039 | -0.01 | 0.03 | -0.16 | -0.01 | 0.00 | 0.00 | 0.12 |
| I(*REPURCH* ≥ *SBC*) | 7,039 | 0.34 | 0.48 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| *REPURCH /SBC* | 7,039 | 1.46 | 3.13 | -2.16 | -0.17 | 0.20 | 1.95 | 16.01 |
| *ANY_EXCLUDE* | 7,039 | 0.63 | 0.48 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| *NGE_EXCLUDE* | 7,039 | 0.46 | 0.50 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |

This table presents descriptive statistics for key variables for firm-years where analyst Street earnings is available in IBES. Refer to Appendix A for variable definitions.

# Table 6

*Share Repurchases and the Analysts' Street Exclusion of Stock Compensation*

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Dependent Variable: | *STREET_EXCLUSIONS* | | | | | | | |
| Subsample: | *ANY_EXCLUDE* = 1 | | *ANY_EXCLUDE* = 0 | | *NGE_EXCLUDE* = 1 | | *NGE_EXCLUDE* = 0 | |
| *SBC_EXP* $_t$ | 0.836*** | 0.815*** | 0.077 | 0.057 | 0.923*** | 0.919*** | 0.003 | -0.018 |
| | (14.91) | (14.51) | ( 0.81) | ( 0.62) | (15.82) | (16.27) | ( 0.04) | (-0.24) |
| I(*REPURCH* ≥ *SBC*) | -0.004 | | -0.003 | | -0.000 | | -0.002 | |
| | (-1.14) | | (-0.88) | | (-0.10) | | (-0.58) | |
| ***SBC_EXP*$_t$ × I(*REPURCH* ≥ *SBC*)** | **-0.335**** | | **-0.221** | | **-0.219** | | **-0.163** | |
| | **(-2.24)** | | **(-1.07)** | | **(-1.51)** | | **(-0.94)** | |
| *REPURCH /SBC* | | -0.001 | | -0.000 | | -0.000 | | 0.000 |
| | | (-1.19) | | (-0.33) | | (-0.66) | | ( 0.02) |
| ***SBC_EXP*$_t$ × *REPURCH /SBC*** | | **-0.065**** | | **-0.026** | | **-0.058**** | | **-0.015** |
| | | **(-2.40)** | | **(-0.59)** | | **(-2.06)** | | **(-0.46)** |
| *SPECIAL_ITEMS* | 0.987*** | 0.988*** | 0.867*** | 0.867*** | 1.089*** | 1.090*** | 0.816*** | 0.816*** |
| | (22.39) | (22.43) | (10.27) | (10.31) | (23.40) | (23.37) | (12.93) | (12.97) |
| Industry & Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. R-Squared | 0.404 | 0.403 | 0.273 | 0.237 | 0.461 | 0.461 | 0.259 | 0.259 |
| N | 4,468 | 4,468 | 2,571 | 2,571 | 3,246 | 3,246 | 3,793 | 3,793 |

This table presents OLS regressions of firm-year observations. *STREET_EXCLUSIONS* is equal to GAAP earnings minus analysts' Street earnings, scaled by total assets, stated as a negative number when analysts exclude expenses. *SBC_EXP* is equal to stock compensation expense in year t, scaled by total assets, stated as a negative number when stock compensation reduces net income. I(*REPURCH* ≥ *SBC*) is equal to one if repurchase net cash outflows exceed stock compensation expense, and zero otherwise. *REPURCH /SBC* is share repurchase net cash outflows divided by stock compensation expense. Refer to Appendix A for variable definitions. T-statistics are reported in parentheses below each coefficient estimate. *, **, *** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two-tailed tests. Standard errors are clustered by firm.

# Table 7

*Persistence of Stock Compensation Sample Construction*

| | **Firm-Years** |
|---|---|
| Compustat Firm-Years from 2009 to 2020 | 112,231 |
| Firm-Years with Assets, Market Value, and Sales > $75 million | 42,359 |
| Non-Missing Stock Compensation Expense and Repurchase Data | 37,170 |
| Non-Missing Control Variables | 31,160 |

This table presents sample attrition steps to arrive at our sample for testing the cash flow implications of stock compensation expense.

# Table 8

*Persistence of Stock Compensation Descriptive Statistics*

| Variables | N | Mean | Sd | Min | p25 | Median | p75 | Max |
|---|---|---|---|---|---|---|---|---|
| $CFO_{t+1}$ | 31,160 | 0.08 | 0.08 | -0.15 | 0.03 | 0.08 | 0.12 | 0.32 |
| $REPURCH_{t+1}$ | 31,160 | 0.02 | 0.04 | -0.03 | 0.00 | 0.00 | 0.02 | 0.23 |
| $CFO_{t+1} - REPURCH_{t+1}$ | 31,160 | 0.07 | 0.07 | -0.18 | 0.02 | 0.06 | 0.11 | 0.29 |
| $EARNINGS_t$ | 31,160 | 0.04 | 0.10 | -0.35 | 0.01 | 0.04 | 0.08 | 0.36 |
| $SBC\_EXP_t$ | 31,160 | -0.01 | 0.02 | -0.09 | -0.01 | 0.00 | 0.00 | 0.00 |
| $EARNINGS_t - SBC\_EXP_t$ | 31,160 | 0.04 | 0.08 | -0.30 | 0.01 | 0.04 | 0.08 | 0.30 |
| Log($AT_t$) | 31,160 | 7.88 | 1.74 | 4.71 | 6.59 | 7.76 | 8.98 | 12.66 |
| $BTM_t$ | 31,160 | 0.56 | 0.46 | -0.48 | 0.26 | 0.48 | 0.77 | 2.46 |
| *LOSSt* | 31,160 | 0.20 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| $SALES\_GROWTH_t$ | 31,160 | 0.07 | 0.19 | -0.47 | -0.01 | 0.03 | 0.11 | 0.99 |
| $SD\_QROA_t$ | 31,160 | 0.02 | 0.02 | 0.00 | 0.00 | 0.01 | 0.02 | 0.14 |

This table presents descriptive statistics for key variables used in the subsequent table. Refer to Appendix A for variable definitions.

# Table 9

*Persistence of Stock Compensation Expense into Future Cash Flows*

| | (1) $CFO_{t+1}$ | (2) $CFO_{t+1} - REPURCH_{t+1}$ |
|---|---|---|
| $EARNINGS_t - SBC\_EXP_t$ | 0.489*** | 0.306*** |
| | (39.06) | (23.66) |
| ***$SBC\_EXP_t$*** | **-0.119**** | **0.142**** |
| | **(-2.02)** | **(2.18)** |
| Log($AT_t$) | -0.000 | -0.003*** |
| | (-1.18) | (-7.59) |
| $BTM_t$ | -0.026*** | -0.017*** |
| | (-18.83) | (-12.63) |
| $LOSS_t$ | 0.009*** | 0.002 |
| | (5.54) | (1.18) |
| $SALES\_GROWTH_t$ | -0.010*** | 0.007** |
| | (-3.18) | (2.14) |
| $SD\_QROA_t$ | 0.130*** | 0.048 |
| | (3.85) | (1.47) |
| Industry & Year Fixed Effects | Yes | Yes |
| Adj. R-Squared | 0.377 | 0.210 |
| N | 31,160 | 31,160 |

This table presents OLS regressions with firm-year observations. $CFO_{t+1}$ is equal to cash flow from operations in year *t+1*, scaled by total assets. $REPURCH_{t+1}$ is share repurchase net cash outflows in year *t+1*. $SBC\_EXP_t$ is equal to stock compensation expense in year *t*, scaled by total assets, stated as a negative number when stock compensation reduces net income. $EARNINGS_t - SBC\_EXP_t$ is equal to earnings before stock compensation expense. Refer to Appendix A for variable definitions. T-statistics are reported in parentheses below each coefficient estimate. *, **, *** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two-tailed tests. Standard errors are clustered by firm.