Is Retained Earnings Meaningless?
Evidence from Accounting for Stock Repurchases

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ABSTRACT

Current financial reporting standards for stock repurchases grant firms significant discretion in whether and to what extent they charge the cost of stock repurchases to retained earnings. Using Compustat and hand-collected data from the statement of shareholders' equity, we document three consequences of this discretion: (1) inconsistency across firms in how they charge stock repurchase costs to shareholders' equity accounts, (2) vast ranges within which firms are permitted to report retained earnings, and (3) reported retained earnings balances that significantly overstate firms' income available for distribution to shareholders. Accordingly, we argue that financial reporting standards for stock repurchases effectively render reported retained earnings meaningless in that it appears to primarily reflect arbitrary stock repurchase accounting choices. Our study raises questions about the costs and benefits of the permitted discretion in accounting for stock repurchases and the requirements for shareholders' equity presentation under current financial reporting standards.

I. SYNOPSIS AND INSIGHTS FOR PRACTICE

Firms distribute income via stock repurchases when the cost of the repurchase exceeds the amount received from the original issuance of the shares. Current financial reporting standards, however, grant firms considerable discretion in whether and to what extent they charge the cost of stock repurchases to their retained earnings accounts. Firms may, at one extreme, charge stock repurchase costs entirely to retained earnings, or at the other extreme, charge stock repurchase costs entirely to the paid-in capital or treasury stock accounts regardless of the amount of income distributed. The objective of this study is to provide evidence on how firms utilize this discretion in practice and how it affects reported retained earnings.

We first examine the consistency with which firms charge stock repurchase costs to shareholders' equity accounts both across firms and within firms over time. To obtain information about the shareholders' equity accounts to which firms charge stock repurchase costs, we hand collect data from statements of shareholders' equity reported in Form 10-K filings for a sample of the 500 largest firms (as measured by market capitalization) over fiscal years 2013 to 2019.

We find considerable variation across firms in how stock repurchase costs are charged to shareholders' equity accounts. For instance, consider that there are seven possible ways to split stock repurchase costs across retained earnings, paid-in capital, and treasury stock (all retained earnings, all paid-in capital, all treasury stock, retained earnings/paid-in capital mix, retained earnings/treasury stock mix, paid-in capital/treasury stock mix, and treasury stock/paid-in capital/retained earnings mix). We observe instances of all seven. Additionally, we note that only 28.7% of the observations in our sample charge at least some portion of total stock repurchase costs to retained earnings. In contrast to the variation seen across firms, we find that firms are generally consistent over time in how they charge stock repurchase costs to their shareholders' equity accounts. Specifically, 95.4% of the observations in our sample either charged retained earnings in both years *t* and *t-1* or did not charge retained earnings in either years *t* or *t-1*. Additionally, we find that 88.4% of observations charged the same combination of shareholders' equity accounts in year *t* as they did in year *t-1*.

Next, we examine how the discretion in accounting for stock repurchases accumulates in reported retained earnings. We measure (1) the range of balances within which firms are permitted to report retained earnings under alternative stock repurchase accounting scenarios ("retained earnings range") and (2) the amount by which a firms' reported retained earnings deviates from income available for distribution to their shareholders ("retained earnings deviation"), consistent with definitions and descriptions of retained earnings commonly provided in financial accounting textbooks (e.g., Spiceland, Nelson, Thomas, and Winchel 2025a; Spiceland, Thomas, and Hermann 2025b; Kieso, Weygandt, and Warfield 2022).

To estimate retained earnings range, we recalculate retained earnings assuming that the firm (1) charges *no* stock repurchase costs to retained earnings ("maximum retained earnings")

and (2) charges *all* stock repurchase costs to retained earnings ("minimum retained earnings"). Retained earnings range is equal to the difference between maximum retained earnings and minimum retained earnings. To estimate retained earnings deviation, we subtract an estimate of income available for distribution from reported retained earnings. We estimate income available for distribution by recalculating retained earnings assuming that the firm charges distributions of income from stock repurchases to retained earnings (i.e., excess repurchase costs over amounts received at issuance).

Across a sample of firm-quarter observations from Compustat over fiscal years 1984 to 2023, we find that the mean maximum retained earnings is 35.0% of total assets, whereas the mean minimum retained earnings is 4.5% of total assets, which translates to a mean retained earnings range of 30.6% of total assets. We find that the mean reported retained earnings is 24.5% of total assets, whereas the mean estimate of income available for distribution is 13.0% of total assets, which translates to a mean retained earnings deviation of 11.5% of total assets. This suggests that, on average, reported retained earnings balances overstate income available for distribution, consistent with our observation from the hand-collected data that most firms do not charge stock repurchase costs to retained earnings.

In time-series trends, we document a significant increase in both retained earnings range and deviation over our sample period. Specifically, the mean retained earnings range increases from 3.6% of total assets in 1984 to 54.0% of total assets in 2023, and the mean retained earnings deviation increases from 0.4% in 1984 to 17.8% of total assets in 2023. Cross-sectionally, we find that retained earnings range and retained earnings deviation increase with stock repurchase activity. Specifically, the mean retained earnings range (deviation) is 125.6% (50.3%) of total assets for observations in the highest quintile of stock repurchase activity, compared with just

10.5% (1.4%) for observations in the lowest quintile of stock repurchase activity.

As an illustration of the extremes to which stock repurchase accounting can push retained earnings range and retained earnings deviation, our Compustat sample includes (1) 14,650 observations (16.5% of the sample) for which maximum retained earnings is positive but minimum retained earnings is negative, (2) 7,224 observations (8.1% of the sample) for which reported retained earnings is positive and estimated income available for distribution is negative, (3) 5,729 observations (6.4% of the sample) for which retained earnings range exceeds total assets, and (4) 1,774 observations (2.0% of the sample) for which retained earnings deviation exceeds total assets. As an illustration of the effects on the paid-in capital and treasury stock accounts, we note 1,871 observations (2.1% of the sample) for which reported treasury stock exceeds total assets and 3,318 observations (3.7% of the sample) for which the reported balance across the paid-in capital accounts equals zero or total par value.

In summary, we find that (1) there is inconsistency across firms in the specific shareholders' equity accounts to which they charge stock repurchase costs, (2) there are vast ranges within which firms that repurchase stock are permitted to report retained earnings, and (3) reported retained earnings balances for firms that repurchase stock overstate income available for distribution to shareholders. We conclude that financial reporting standards for stock repurchases effectively render reported retained earnings meaningless for firms that engage in significant stock repurchase activity. Rather, reported retained earnings for these firms appears to reflect the arbitrary and economically trivial choice of where they charge stock repurchase costs.

To supplement our findings, we sought perspectives of standard setters and institutional financial statement users on the usefulness of retained earnings in informal conversations. The perspectives shared in these conversations (presented in Section IV) are consistent with the view

that retained earnings is not particularly useful to financial statement users. However, this leaves open the question of whether retained earnings is meaningless because the underlying information it purports to represent (i.e., the amount of income available for distribution) is itself meaningless. The answer to this question suggests one of two financial reporting problems.

On the one hand, if the amount of income available for distribution is meaningless to financial statement users, then current financial reporting standards for shareholders' equity presentation are requiring firms to report meaningless information. What is the benefit to financial statement users of requiring firms to present separate shareholders' equity accounts that justifies the costs imposed on preparers, auditors, financial statement users, academics, and students? To address this problem, standard setters could consider simplifying the presentation requirements for shareholders' equity (e.g., only require presentation of total shareholders' equity).

On the other hand, if the amount of income available for distribution is meaningful to financial statement users, then current financial reporting standards for stock repurchases are distorting this information by permitting firms to report retained earnings balances that deviate from income available for distribution. To address this problem, standard setters could consider making reporting standards for stock repurchases more restrictive by requiring all firms to reduce retained earnings when the cost of a stock repurchase exceeds the amount originally received at the issuance of the repurchased shares and to reduce the paid-in capital or treasury stock accounts by the amount originally received at issuance.

We shared our findings with several FASB Board members, and within a short time, the Board proposed and approved modifications to its Codification. These modifications represent a quick fix that legitimizes existing diversity in practice, rather than a comprehensive overhaul. We hope that the attention this paper brings to the issue will prompt further consideration of more

substantive changes to the accounting standards, whether by simplifying presentation standards for shareholders' equity or by reducing the discretion in accounting for stock repurchases. Perhaps echoing this sentiment, FASB Board Member Frederick Cannon stated the following at a FASB Board Meeting on July 23, 2025:

> *[…] I think the optionality that we have in where to put repurchases has meant that most investors don't believe there is a meaningful difference for use between [additional paid-in capital] and retained earnings. And most investors, as a result, combine those two categories […] But I think as we go down the road and think about topics like liabilities and equities, we need to rethink […] the optionality here to make these line items more useful to investors, because they are not today.* (FASB Board Meeting, July 23, 2025).[1]

This study is organized as follows. We provide motivation for our study in Section II. We present the methodology and results of our analyses in Section III. We conclude by discussing the implications for financial reporting standards and opportunities for future research in Section IV.

II. MOTIVATION

A stock repurchase is, in essence, the termination of the contract between the issuing firm and the shareholders of the repurchased shares. Specifically, the firm pays cash to the applicable shareholders, and in exchange, is released from the shareholder claims underlying the shares. While the release from the shareholder claims clearly represents a reduction in shareholders' equity, current financial reporting standards for stock repurchases grant firms considerable discretion in how they record this reduction in shareholders' equity. Most financial accounting textbooks suggest that firms have two choices in how to account for stock repurchases: (1) hold the repurchased shares in treasury stock or (2) retire the repurchased shares (e.g., Miller, Searfoss,

[1] The comment made by Fredrick Cannon can be seen at the following publicly available video recording at 13 minutes and 42 seconds: https://youtu.be/WwTvgpglNss?si=qQfcYxVmJi2oYtCU&t=822.

and Smith 1985; Spiceland et al. 2025a; Hanlon, Hodder, Nelson, Roulstone, and Dragoo 2020).[2] Under the former, firms reduce shareholders' equity by charging (i.e., debiting) the cost of the repurchase to treasury stock (FASB n.d., ASC 505-30-45-1), whereas under the latter, firms reduce shareholders' equity by charging the cost of the repurchase to some combination of the paid-in capital accounts (i.e., common stock and additional paid-in capital) and retained earnings.

In practice, however, the standards are more permissive. First, the standards do not require firms to be consistent in their choice between holding shares in treasury stock and retiring them. While some might argue that the choice between treasury stock and retirement is meaningful in that holding repurchased shares in treasury stock reflects a firm's intent to reissue the shares in the future,[3] financial reporting standards do not require that firms reissue treasury stock, nor do they limit the length of time shares may be held in treasury stock. Additionally, consider that the economic distinction between shares held in treasury stock and retired shares is trivial.[4] Both treasury shares and retired shares are excluded from dividend and voting rights, and both may be

[2] This choice refers only to how firms account for stock repurchases and not necessarily the legal status of the repurchased shares. Current financial reporting standards do not require the accounting choice to align with the legal status. As an example of this distinction between legal status and accounting choice, PepsiCo, Inc., which is incorporated in a state that does not acknowledge the concept of treasury stock (North Carolina), reports a shareholders' equity account labeled "repurchased common stock," which functions as a treasury stock account from a financial reporting perspective.

[3] This interpretation of treasury stock is articulated in academic articles published in the mid-20th Century. For example, Rankin (1940, 76) describes the treasury stock account as an "unallocated item in suspense." Ballantine (1946) states that a firm recording repurchased shares as treasury stock is regarded as an "intermediate transferee" between shareholders from which the shares were repurchased and the shareholders to whom shares are resold. Similarly, Ray (1962, 754) summarizes this rationale as the firm being "merely in the process of transferring the shares from one stockholder to another." Rudolph (1959, 326) states that "treasury stock will constitute a sort of floating deduction from net worth. It will continue to 'float' until a final disposition is made of the treasury shares, either by cancellation or resale." More recently, Spiceland et al. (2025a), an intermediate accounting textbook, states that the repurchase of shares and their assumed future reissuance are considered a single transaction under this interpretation.

[4] This point is made in several academic articles. For example, Paton (1969, 277) states that "the first step in grappling with the subject of 'treasury' shares is to recognize that such shares have substantially the same status as stock that has never been issued." Similarly, Rankin (1940, 72) asserts that "a corporation 'purchasing' its shares has acquired nothing more than the power to recreate similar shares." Ballantine (1946, 537) goes so far as to assert that treasury stock is "a masterpiece of legal magic, the creation of something out of nothing." Finally, ASC 505-30-25-7 notes that there is "no essential difference between the following: (a) The repurchase and retirement of a corporation's own common stock and the subsequent issue of common shares (b) The repurchase and resale of its own common stock" (FASB n.d.).

reissued in the future.[5]

Second, the standards do not specify how to split stock repurchase costs between paid-in capital and retained earnings under the retirement choice. ASC 505-30-30-8 states that "When a corporation's stock is retired… *an excess of repurchase price over par or stated value* may be allocated between additional paid-in capital and retained earnings. Alternatively, the excess may be charged entirely to retained earnings in recognition of the fact that a corporation can always capitalize or allocate retained earnings for such purposes" (FASB n.d.; emphasis original). The standards thus implicitly permit firms, at one extreme, to charge the entire repurchase cost to the paid-in capital accounts, or at the other extreme, to charge the entire repurchase cost to the retained earnings account.[6, 7]

Taken together, current financial reporting standards extend firms broad discretion in how they charge stock repurchase costs to shareholders' equity. In this study, we explore how firms utilize this discretion in practice and how it, in turn, accumulates in reported retained earnings. We explore three potential consequences of this discretion. First, accounting for stock repurchases may lack consistency both across firms and within firms over time. If some firms charge stock

[5] Consistent with this notion, Banyi and Caplan (2016) find evidence that the choice to record repurchased shares as treasury stock does not necessarily reflect a firm's intent to subsequently reissue shares. Spiceland et al. (2025a) note that the choice between holding shares as treasury stock or formally retiring them is not determined by the nature of the stock repurchase, but by the motivation of the company in making the repurchase.

[6] It is not explicitly clear from ASC 505-30-30-8 if the excess may be charged entirely to paid-in capital. However, we note that the FASB's Current Text, a non-authoritative summary of GAAP, explicitly states that the excess "may be reflected [entirely as a deduction from] additional paid-in capital" (FASB 2008, Section 23, Paragraph 102a). We thank Rich Jones, FASB Chair, for bringing this reference material to our attention. Following our discussions with Rich Jones, the FASB proposed that similar language be explicitly added to the Codification. This modification was approved by the Board in its meeting on July 23, 2025 (FASB 2025). While our goal was not to uncover practices inconsistent with GAAP, conversations with a FASB board member confirm that these modifications to the Codification are a direct result of our research. These recent changes to the Codification help ensure that firm practices, as documented in this paper, will not be viewed as inconsistent with the standards.

[7] This speaks only to the range of what is permitted under current financial reporting standards, and not necessarily the range of what firms do in practice. In practice, firms may feel limited by the corporate laws of the state in which they are incorporated. For example, 34 U.S. states have adopted the Model Business Corporation Act, which notably eliminated the concept of treasury stock in 1979 (ABA 1979). Accordingly, firms incorporated in these states may be less likely to charge the cost of repurchases to a treasury stock account. The majority of the firms we examine in this study are incorporated in Delaware, which legally acknowledges the concept of treasury stock.

repurchase costs entirely to retained earnings while others charge stock repurchase costs entirely to paid-in capital or treasury stock, then reported retained earnings will lack comparability across firms. Alternatively, if a firm charges stock repurchase costs entirely to retained earnings one year and entirely to paid-in capital or treasury stock in the next year, then its change in retained earnings in the first year will (i.e., earnings net of dividends and stock repurchase costs) not be comparable to the change in retained earnings in the next year (i.e., earnings net of dividends).

The second potential consequence of the discretion in accounting for stock repurchases is that it creates a range of acceptable balances within which firms can report retained earnings that equals their cumulative stock repurchase costs. Specifically, firms can report retained earnings at the maximum amount within the range by charging stock repurchase costs entirely to paid-in capital and treasury stock or at the minimum amount within the range by charging stock repurchase costs entirely to retained earnings. We refer to the difference between the maximum and minimum amounts as "retained earnings range."

Finally, the third potential consequence of the discretion in accounting for stock repurchases is that it allows for reported retained earnings to deviate from the amount of income available for distribution to shareholders. Financial accounting textbooks generally define retained earnings as cumulative income yet to be distributed to the firm's shareholders, or in other words, income available for distribution (e.g., Spiceland et al. 2025a; Spiceland et al. 2025b; Kieso et al. 2022). Under this definition, a firm's retained earnings balance equals its cumulative earnings less cumulative distributions of income to shareholders. Firms distribute income to shareholders either *via* traditional cash dividends or *via* stock repurchases. Distributions of income from stock repurchases occur when the cost of the repurchase exceeds the shareholders' original investment in the shares (i.e., the amount received by the firm at issuance).

While financial reporting standards require firms to reduce retained earnings when they distribute income to shareholders *via* traditional cash dividends, there is no such requirement for distributions of income *via* stock repurchases. On the one hand, if a firm charges stock repurchase costs entirely to retained earnings, its reported retained earnings balance will understate the amount of income available for distribution to shareholders because it charges the return of the shareholders' original investment to retained earnings instead of paid-in capital. On the other hand, if a firm charges stock repurchase costs entirely to paid-in capital or treasury stock, its reported retained earnings balance will overstate the amount of income available for distribution to shareholders because it charges the distribution of income to paid-in capital or treasury stock instead of retained earnings. We refer to this potential overstatement or understatement of income available for distribution as "retained earnings deviation."[8]

To provide a real-world illustration of these consequences, consider the home improvement retailers The Home Depot, Inc. ("Home Depot") and Lowe's Companies, Inc. ("Lowe's"). According to their 10-K filings, Home Depot charges stock repurchase costs entirely to treasury stock, whereas Lowe's splits stock repurchase costs between paid-in capital and retained earnings

[8] To illustrate retained earnings range and retained earnings deviation, consider a hypothetical example of a firm that issues 100 shares of common stock at $10 per share ($1,000 total) and then subsequently repurchases 10 shares at $15 per share ($150 total). The amount received from the original issuance of the shares is $100 (10 shares at $10 per share), and therefore, the repurchase includes a $50 distribution of income. Suppose that the firm has earned and retained $400 of earnings between the issuance and repurchase of the shares and has not distributed income to shareholders. Therefore, the firm reports $400 in its retained earnings account immediately prior to the repurchase. Prior to the repurchase, the firm has retained $400 of earnings and made no distributions, and therefore, has no discretion over its retained earnings balance. As such, retained earnings range and retained earnings deviation are zero. After the repurchase, current financial reporting standards allow the firm may to a maximum retained earnings of $400 by opting to charge the stock repurchase cost to paid-in capital or treasury stock and a minimum retained earnings of $250 by charging the entire $150 repurchase cost to retained earnings. Income available for distribution, however, is $350, which is the $400 of cumulative earnings less the $50 of income distributed in the stock repurchase. Therefore, after the stock repurchase, the firm's retained earnings range is $150. Its retained earnings deviation depends on how it chooses to account for the stock repurchase. At the extremes, it would have a retained earnings deviation of $50 if it opts to report the maximum retained earnings (i.e., reported retained earnings overstates income available for distribution) or of -$100 if it opts to report the minimum retained earnings (i.e., reported retained earnings understates income available for distribution).

(predominantly retained earnings since its paid-in capital accounts have been previously reduced to equal par value). Over fiscal years 2002 to 2023, Home Depot repurchased stock at a cost of $122.3 billion (159.8% of total assets at the end of 2023), resulting in maximum retained earnings of $107.9 billion (141.0% of total assets) and minimum retained earnings of -$14.4 billion (-18.8% of total assets) at the end of fiscal year 2023. Similarly, Lowe's repurchased stock at a cost of $80.4 billion over fiscal years 2004 to 2023 (192.4% of total assets at the end of 2023), resulting in maximum retained earnings of $56.0 billion (134.1% of total assets) and minimum retained earnings of -$24.4 billion (-58.4% of total assets) at the end of fiscal year 2023.

Given the differences in how they charge stock repurchase costs to their shareholders' equity accounts, we note that Home Depot's reported retained earnings overstates income available for distribution much more severely than does Lowe's. Specifically, Home Depot reported retained earnings of $83.7 billion at the end of fiscal year 2023 (109.3% of total assets), whereas we estimate that its income available for distribution at the end of fiscal year 2023 was -$7.7 billion (-10.1% of total assets). In contrast, Lowe's reported retained earnings of -$15.6 billion (-37.4% of total assets), and we estimate that its income available for distribution at the end of fiscal year 2023 was -$19.8 billion (-47.3% of total assets).[9] The differences in how Home Depot and Lowe's, two economically similar firms, charge stock repurchase costs to shareholders' equity accounts result in two drastically different retained earnings balances with no clear way to compare their income available for distribution.

III. METHODOLOGY AND RESULTS

[9] The negative income available for distribution for these two firms is attributable to cumulative distributions to shareholders in excess of the cumulative earnings of the firm. Perhaps a more appropriate term for this is distributions in excess of income instead of income available for distribution. The association between this payout dynamic and the agency conflicts between the firm's stakeholders presents an opportunity for future research.

Hand-collected data from statements of shareholders' equity

We begin by documenting how firms utilize the discretion afforded them under current financial reporting standards in accounting for stock repurchases. In other words, we examine the consistency with which firms account for stock repurchases both across firms and within firms over time. We hand-collect data from statements of shareholders' equity for the 500 largest U.S. firms (in terms of market capitalization) for each year from 2013 to 2019, regardless of whether Compustat data indicates that a stock repurchase was made. In this way, our sample selection is not reliant on estimates of stock repurchases based on Compustat data.

We collect stock repurchase costs charged to retained earnings (RP^{RE}), the paid-in capital accounts common stock and additional paid-in capital (RP^{PIC}), and treasury stock (RP^{TS}). Using these three variables, we calculate total repurchase costs (RP^{TOT}) as the sum of the amounts charged to retained earnings, paid-in capital, treasury stock:

$$RP^{TOT} = RP^{RE} + RP^{PIC} + RP^{TS} \quad (1)$$

We calculate the percentages of the total repurchase costs charged to retained earnings (PCT^{RE}), paid-in capital (PCT^{PIC}), treasury stock (PCT^{TS}) as the portion charged to each respective account (i.e., RP^{RE}, RP^{PIC}, and RP^{TS}) divided by total repurchase costs (RP^{TOT}). In addition to year *t* repurchase data, we require hand-collected repurchase data for year *t-1* so that we can examine the consistency with which firms account for stock repurchases over time. The resulting sample consists of 2,769 firm-year observations for 627 firms. Table 1 presents descriptive statistics for the repurchase variables. RP^{TOT} is scaled by total assets matched from Compustat (Compustat: *AT*). See Appendix A for variable definitions.

The mean (median) annual cost of stock repurchases is 6.2% (3.4%) of total assets (RP^{TOT}). The mean (median) percentages of repurchase costs charged to retained earnings (PCT^{RE}), paid-in

capital (PCT^{PIC}), and treasury stock (PCT^{TS}) are 22.8%, 18.5%, and 58.7% (0%, 0%, and 100%), respectively. These medians imply that most of the firms in our hand-collected sample charge stock repurchase costs entirely to treasury stock, and therefore, avoid charging retained earnings.[10]

Next, we examine consistency across firms in accounting for stock repurchases. Table 3 presents descriptive statistics for our sample observations categorized first on whether they charge stock repurchase costs to retained earnings ($PCT^{RE} = 0$ or $PCT^{RE} > 0$), and second, on the specific combination of shareholders' equity accounts to which they charge stock repurchase costs. We find considerable variation across firms in how stock repurchase costs are charged to shareholders' equity. Specifically, consider that there are seven possible ways to split stock repurchase costs across retained earnings, paid-in capital, and treasury stock: (1) all retained earnings, (2) all paid-in capital, (3) all treasury stock, (4) retained earnings/paid-in capital mix, (5) retained earnings/treasury stock mix, (6) paid-in capital/treasury stock mix, and (7) treasury stock/paid-in capital/retained earnings mix. We observe instances of all seven.

Of the 2,769 observations in our sample, we note that only 794 (28.7%) charge at least some portion of their total stock repurchase costs to retained earnings. Of these 794 observations, 660 split stock repurchase costs between retained earnings and paid-in capital (RE/PIC mix), 79 charge stock repurchase costs entirely to retained earnings (All RE), 36 split stock repurchase costs between retained earnings, paid-in capital, and treasury stock (RE/PIC/TS mix), and 19 split stock repurchase costs between retained earnings and treasury stock. Of the 1,975 observations in our sample that *do not* charge any stock repurchase costs to retained earnings, we note 1,498 that

[10] In untabulated statistics, we note two (36) observations in which PCT^{TS} is less than zero (greater than one), 33 (three) observations in which PCT^{PIC} is less than zero (greater than one), and six (one) observations in which PCT^{RE} is less than zero (greater than one). These extreme values are generally due to shares repurchased for less than the repurchase price or the netting of subsequent reissuances in the paid-in capital account. For simplicity, PCT^{TS}, PCT^{PIC}, and PCT^{RE} are bounded between zero and one.

charge stock repurchase costs entirely to treasury stock (All TS), 349 that charge stock repurchase costs entirely to paid-in capital (All PIC), and 128 that split stock repurchase costs between paid-in capital and treasury stock (PIC/TS mix). Consistent with the descriptive statistics presented in Table 1, the statistics presented in Table 2 indicate that most of the firms in our hand-collected sample (54.1%) charge repurchase costs entirely to treasury stock.

In the previous section, we interpreted current financial reporting standards for stock repurchases as permitting firms to, at one extreme, charge stock repurchase costs entirely to retained earnings, and at the other extreme, charge stock repurchase costs entirely to the paid-in capital or treasury stock accounts. The evidence presented in Table 2 suggests that these extremes are not only permitted by financial reporting standards but also observable in practice. We observe instances of each of the seven possible ways firms can split stock repurchase costs between retained earnings, paid-in capital, and treasury stock. We therefore conclude that there is significant inconsistency across firms in how they charge stock repurchase costs to shareholders' equity accounts.

Finally, we examine consistency over time within firms in accounting for stock repurchases. Table 3 presents a comparison of how our sample observations charge stock repurchase costs to shareholders' equity accounts in year *t* (rows) and year *t-1* (columns). As with Table 2, observations are categorized first on whether they charge stock repurchase costs to retained earnings ($PCT^{RE} = 0$ or $PCT^{RE} > 0$), and second, on the specific combination of shareholders' equity accounts to which they charge stock repurchase costs. The numbers reported along the diagonal represent observations that are in the same category in both years *t* and *t-1*; the cells with bold and italic font indicate the same specific shareholders' equity account category, whereas the cells with bold font only indicate the same retained earnings category.

We find that firms are generally consistent over time in how they account for stock repurchases and especially in whether they charge stock repurchase costs to retained earnings. We note 2,643 observations (95.4% of the sample) that are in the same retained earnings category in both year *t* and year *t-1*. More specifically, 97.5% of observations that *did not* charge retained earnings in year *t* also did not charge retained earnings in year *t-1* (1,926 of 1,975 observations), whereas 90.3% of observations that charged retained earnings in year *t* also charged retained earnings in year *t-1* (717 of 794 observations). In terms of shareholders' equity accounts, we note 2,447 observations (88.4% of the sample) that are in the same shareholders' equity account category in year *t* as in year *t-1*.

Compustat analysis

In the next phase of our analysis, we examine how the discretion under current financial reporting standards for stock repurchases accumulates in reported retained earnings using a sample of quarterly observations from Compustat. Specifically, we estimate both the range within which firms are permitted to report retained earnings under current financial reporting standards for stock repurchases (i.e., retained earnings range) and the amount by which reported retained earnings deviates from income available for distribution (i.e., retained earnings deviation).

We define retained earnings range (RE^{RANGE}) as the difference between "maximum retained earnings" (RE^{MAX}) and "minimum retained earnings" (RE^{MIN}), and retained earnings deviation (RE^{DEV}) as the difference between reported retained earnings (RE^{REP}) and income available for distribution (RE^{DIST}):

$$RE^{RANGE} = RE^{MAX} - RE^{MIN} \tag{2a}$$

$$RE^{DEV} = RE^{REP} - RE^{DIST} \tag{2b}$$

Maximum retained earnings is the retained earnings balance that would result from charging all

stock repurchase costs to treasury stock, minimum retained earnings is the retained earnings balance that would result from charging all stock repurchase costs to retained earnings, and income available for distribution is the retained earnings balance that would result from charging distributions of income from stock repurchases to retained earnings. See Appendix B for details on how we estimate maximum retained earnings, minimum retained earnings, and income available for distribution.

Our Compustat sample consists of quarterly observations for firms incorporated in the United States between fiscal years 1984-2023. We begin with all observations with non-missing data for the following variables from the Compustat Fundamentals Quarterly database: quarter *q* total assets (Compustat: *ATQ*), quarter *q* retained earnings (Compustat: *REUNAQ*), quarter *q* paid-in capital (Compustat: *CSTKQ* + *CAPSQ*), and quarter *q* common shares outstanding (Compustat: *CSHOQ*). See Appendix A for variable definitions.

After performing our calculations of RE^{MAX}, RE^{MIN}, and RE^{DIST}, we impose additional sample restrictions. We exclude firms in the financial services (SIC: 6000-6999) and utilities industries (SIC: 4900-4949), small-cap firms, defined as observations with average market value of equity ranks within NYSE market value of equity distribution below the 30th percentile over the sample period,[11] and firms with cumulative stock repurchases over the sample period totaling less than 10% of their average market value of equity over the sample period. The resulting sample consists of 88,895 firm-quarter observations across 1,282 unique firms.

Table 4 presents descriptive statistics for the retained earnings variables, which are all scaled by average total assets for quarter *q*. The sample mean (median) for maximum retained earnings is 35.0% (38.7%) of total assets, whereas the mean (median) for minimum retained

[11] If we were to include small-cap firms, they would represent roughly two-thirds of the sample observations but account for only about 2% of total stock repurchase activity.

earnings is 4.5% (15.6%) of total assets. The sample mean (median) for retained earnings range is 30.6% (15.1%) of total assets, indicating an economically significant range of acceptable balances within which our sample firms are permitted to report retained earnings. The mean (median) for reported retained earnings and income available for distribution is 24.5% and 13.0% (30.9% and 20.2%) of total assets, respectively. The sample mean (median) for retained earnings deviation is 11.5% (5.1%) of total assets, which suggests that reported retained earnings balances in our sample, on average, overstate income available for distribution by 11.5% of total assets.

In untabulated analysis, we note that average stock repurchase costs increase from an average of $189.4 million across the four quarters of fiscal year 1985 to an average of $307.6 million across the four quarters of fiscal year 2023,[12] consistent with trends identified in both academic research (e.g., Ikenberry, Lakonishok, and Vermaelen 1995; Jagannathan, Stephens, and Weisbach 2000; Grullon and Michaely 2002; Skinner 2008) and popular press articles (e.g., Lazonick 2014; Denning 2018; Wursthorn 2018; Miao 2023).

Next, we examine how retained earnings range and retained earnings deviation vary with time-series and cross-sectional trends in stock repurchase activity. Figure 1 Panel A plots quarterly means for the retained earnings variables as a percentage of total assets from Q4 1984 to Q4 2023. The upper dotted line is maximum retained earnings, the lower dotted line is minimum retained earnings, the solid black line is reported retained earnings, and the solid gray line is income available for distribution. Retained earnings range is represented by the space between the two dotted lines, whereas retained earnings deviation is represented by the space between the black and gray lines. Consistent with the time-series trends in stock repurchase activity, we find that both retained earnings range and retained earnings deviation have increased over our sample period.

[12] Dollar values are expressed in 2023 dollars according to the Consumer Price Index Inflation Calculator from the U.S. Bureau of Labor Statistics (https://www.bls.gov/data/inflation_calculator.htm).

Specifically, the mean retained earnings range increases from 3.6% of total assets in 1984 (mean RE^{MAX}: 39.3%, mean RE^{MIN}: 35.7%) to 54.0% of total assets in 2023 (mean RE^{MAX}: 42.2%, mean RE^{MIN}: -11.8%). Similarly, the mean retained earnings deviation increases from 0.4% (mean RE^{REP}: 36.7%, mean RE^{DIST}: 36.3%) in 1984 to 17.8% of total assets in 2023 (mean RE^{REP}: 21.4%, mean RE^{DIST}: 3.6%).

To examine cross-sectional variation in retained earnings range and retained earnings deviation, we split the sample of repurchase firms into quintiles of cumulative stock repurchases as a percentage of average total assets over the sample period, where firms in the top (bottom) quintile repurchased the most (least) over the sample period. Because the quintiles are based on cumulative stock repurchase activity over the sample period, the quintiles consist of firm observations rather than firm-quarter observations. Thus, we split our sample of 1,282 unique firms into quintiles, each consisting of 256 or 257 firms. The retained earnings variables for each firm represent those from the last year of available data in the sample period.

Figure 1 Panel B plots means for the retained earnings variables as a percentage of total assets across quintiles of cumulative stock repurchase activity over the sample period. We find that both retained earnings range and retained earnings deviation increase across quintiles of stock repurchase activity. Specifically, the mean retained earnings range increases from 10.5% of total assets in the bottom quintile (mean RE^{MAX}: 8.2%, mean RE^{MIN}: -2.3%) to 125.6% of total assets in the top quintile (mean RE^{MAX}: 97.9%, mean RE^{MIN}: -27.7%). Similarly, the mean retained earnings deviation increases from 1.4% of total assets in the bottom quintile (mean RE^{REP}: 4.2%, mean RE^{DIST}: 2.8%) to 50.3% of total assets in the top quintile (mean RE^{REP}: 47.7%, mean RE^{DIST}: -2.6%). The magnitude of these values in the top quintile is striking; retained earnings range exceeds total assets, and retained earnings deviation surpasses 50% of total assets.

Taken together, the statistics presented in Figure 1 illustrate the extent to which the discretion in accounting for stock repurchases accumulates in reported retained earnings. Firms are permitted to report retained earnings within ranges of economically significant magnitude, and reported retained earnings balances significantly overstate the amount of income available for distribution to shareholders.

Next, we provide further detail on where firms report retained earnings and where income available for distribution falls within retained earnings range. We split our sample of firm-quarter observations into 10 groups first based on the distance of reported retained earnings from minimum retained earnings as a percentage of retained earnings range and again based on the distance of income available for distribution from minimum retained earnings as a percentage of retained earnings range. Observations are assigned to group 1 for reported retained earnings (income available for distribution) if the distance from the minimum retained earnings is less than 10% of retained earnings range and group 10 if the distance from the minimum is greater than 90% of retained earnings range. The groups between 1 and 10 represent intervals of 10% of retained earnings range.[13]

Figure 2 charts the number of observations across the ten reported retained earnings and income available for distribution groups. We note that 53.3% of the sample observations (47,359 firm-quarter observations) fall within group 10 for reported retained earnings, whereas 53.4% of the sample observations (47,428 firm-quarter observations) fall within groups 1 and 2 for income available for distribution. This suggests that while most sample observations report retained earnings near maximum retained earnings, income available for distribution for most sample

[13] Observations are placed into group 2 if the distance from reported retained earnings (income available for distribution) to the minimum is between 10% and 20% of retained earnings range, group 3 if the distance from reported retained earnings (income available for distribution) to the minimum is between 20% and 30% of retained earnings range, and so on.

observations falls near minimum retained earnings.[14] Additionally, these frequencies are consistent with the findings in our hand-collected data that show a majority of sample firms charging stock repurchase costs entirely to treasury stock, and therefore, nothing to retained earnings.

Finally, we highlight some noteworthy examples within our Compustat sample of the extremes to which stock repurchase accounting can push retained earnings and the other shareholders' equity accounts. First, we note observations in which retained earnings range and retained earnings deviation include positive and negative values. Specifically, we note 14,650 observations (16.4% of all sample observations) for which maximum retained earnings is positive but minimum retained earnings is negative and 7,224 observations (8.1% of all sample observations) for which reported retained earnings is positive and income available for distribution is negative. Figure 3 plots instances of each over our sample period. In Panel A, we note that instances of positive maximum retained earnings and negative minimum retained earnings increase from just five in Q4 1984 to 182 in Q4 2023. In Panel B, we note that instances of positive reported retained earnings and negative income available for distribution increase from just four in Q4 1984 to 89 in Q4 2023. Additionally, we note that approximately 90% of these instances of each occur after fiscal year 2000, consistent with the time-series trend in stock repurchase activity.

Second, we note observations in which retained earnings range and retained earnings deviation exceed total assets. Specifically, we note 5,729 observations (6.4% of all sample observations) for which retained earnings range exceeds total assets and 1,774 observations (2.0% of all sample observations) for which retained earnings deviation exceeds total assets. Figure 4 plots instances of each over our sample period. In Panel A, we note a single instance of retained

[14] In cross-tabulations of the two sets of groups (not presented), we note that 48.2% of the observations in group 10 for reported retained earnings are in groups 1 and 2 for income available for distribution (25.6% of all sample observations).

earnings range exceeding total assets in Q1 1985 but 83 instances in Q4 2023. In Panel B, we note that instances of retained earnings deviation exceeding total assets did not appear consistently until 1998 but have increased to 26 in Q4 2023. Consistent with the trends presented in Figure 3, we note that instances of retained earnings range and retained earnings deviation exceeding total assets occur more frequently later in the sample period with more than 90% of the instances of the former occurring after fiscal year 2005 and more than 90% of the instances of the latter occurring after fiscal year 2007.[15]

IV. DISCUSSION

Implications for financial reporting standards

This study highlights the considerable discretion afforded firms in accounting for stock repurchases under current financial reporting standards and its effects on reported retained earnings. We find (1) inconsistency across firms in accounting for stock repurchases, (2) vast ranges within which firms are permitted to report retained earnings, and (3) reported retained earnings that overstate income available for distribution to shareholders. Accordingly, we conclude that financial reporting standards for stock repurchases effectively render reported retained earnings meaningless for firms that engage in significant stock repurchase activity. In other words, reported retained earnings does not appear to represent any relevant economic information, but rather, reflects the economically trivial choice of where they charge stock repurchase costs.

To supplement our findings and get a sense of how retained earnings and the distinction

[15] We also note that the effects of stock repurchase accounting on retained earnings can also be observed in the treasury stock and paid-in capital accounts. For example, if a firm charges no stock repurchase costs to retained earnings, it must charge them to some combination of the treasury stock and paid-in capital accounts, which should manifest as large treasury stock balances and small paid-in capital balances. Our sample includes 1,871 observations (2.1% of all sample observations) for which reported treasury stock exceeds total assets, the largest of which is 1,118.5% of total assets, and 3,318 observations (3.7% of all sample observations) for which the reported balance across the paid-in capital accounts is zero or equal to total par value (i.e., the balance in additional paid-in capital is zero).

between shareholders' equity accounts are viewed in practice, we sought the perspectives of standard-setters and institutional financial statement users in informal conversations. While we cannot necessarily conclude that the perspectives shared in these conversations are representative of practitioners at large, these conversations were unanimously consistent with the view that reported retained earnings and the distinction between shareholders' equity accounts are meaningless to financial statement users. One FASB Board Member stated that they were unaware of any situation where the division between retained earnings and paid-in capital offers significant insight to financial statement users. From an equity analyst perspective, a financial reporting policy advocate from the CFA Institute stated that the breakdown of shareholders' equity, including the mix of paid-in capital and retained earnings, does not significantly influence their evaluation of a company. From a creditor's perspective, a senior loan covenant officer at Moody's Investor Service stated that they were not aware of any debt covenants in loans within their area (speculative grade loans) that reference a company's retained earnings balance.

These perspectives raise an important question: do financial statement users ignore reported retained earnings because the underlying information it purports to represent (i.e., income available for distribution) is itself meaningless to financial statement users? In other words, would financial statement users continue to ignore reported retained earnings even if it accurately reflected the amount of income firms have available for distribution to shareholders?

If financial statement users *would ignore* reported retained earnings even if it accurately reflected income available for distribution, then financial reporting standards for shareholders' equity presentation are requiring firms to report meaningless information. In other words, for what purpose do the standards require firms to disaggregate shareholders' equity into separate accounts on the balance sheet and show changes in their balances in a separate statement of shareholders'

equity if the distinction between them is meaningless to financial statement users? The FASB's Conceptual Framework states that "reporting financial information imposes costs, and it is important that those costs are justified by the benefits of reporting that information" (FASB 2024, QC35). In this case, it is difficult to see the benefits of splitting shareholders' equity into paid-in capital and retained earnings that would justify the costs to preparers, users, as well as those in academia charged with teaching and learning this information.

To address this problem, standard setters could consider simplifying the presentation requirements for shareholders' equity by requiring firms to report only what is meaningful to financial statement users. One possibility for simplifying shareholders' equity presentation requirements is requiring that firms report only total shareholders' equity and making subclassifications within shareholders' equity voluntary or relegating them to the notes of the financial statements. This would reduce costs to financial statement preparers and users and enhance both the relevance and understandability of the balance sheet and statement of shareholders' equity by removing superfluous information.

Alternatively, if financial statement users *would utilize* reported retained earnings if it accurately reflected income available for distribution, then financial reporting standards for stock repurchases are significantly distorting economically meaningful information by allowing reported retained earnings to deviate from income available for distribution. Theory and empirical evidence in academic research suggest that income available for distribution could be meaningful to financial statement users. In terms of theory, the "pecking order theory" in corporate finance (Myers 1984; Myers and Majluf 1984; Shyam-Sunder and Myers 1999) asserts that firms prefer to finance projects internally (i.e., with retained earnings) rather than externally (i.e., issuing debt or stock) and that, among external financing options, firms prefer to issue debt rather than stock.

Hill, Price, and Ruch (2021) argue that retained earnings should receive a distinct liability-equity classification from paid-in capital because the two stem from two fundamentally distinct activities (i.e., issuing stock to shareholders versus selling goods and services to customers, respectively). In terms of empirical evidence, research finds that retained earnings balances are associated with a firm's propensity to pay dividends (H. DeAngelo, L. DeAngelo, and Stulz 2006), its credit risk and likelihood of bankruptcy (Altman 1968; Das, Hanouna, and Sarin 2009), and the cross-section of stock returns (Ball, Gerakos, Linnainmaa, and Nikolaev 2020).

If income available for distribution is meaningful to financial statement users, then standard setters could consider making financial reporting standards for stock repurchases more restrictive. One possibility is to require firms to split the cost of a stock repurchase into a return of the original investment and a distribution of income and charge the former to the paid-in capital or treasury stock accounts and the latter to retained earnings. This ensures that firms reduce retained earnings when they distribute income, and in turn, that reported retained earnings balances reflect income available for distribution. Additionally, this requirement would drastically reduce unnecessary diversity in practice in accounting for stock repurchases.

Based on the evidence presented in this study and the perspectives shared by standard setters and institutional financial statement users, we believe that some action by standard setters is warranted to address the lack of meaning in the distinction between shareholders' equity accounts by either simplifying presentation standards for shareholders' equity presentation or reducing the discretion in accounting for stock repurchases.

Opportunities for future research

The findings in this study present opportunities for future research. We consider three avenues for future research in this area. First, future research could help provide clarity on the

question of whether a firm's income available for distribution is meaningful to financial statement users. In other words, to what extent do investors and creditors consider retained earnings in making investing and lending decisions? Further, what are the determinants and consequences of cumulative distributions to shareholders exceeding cumulative earnings, and how does this payout dynamic relate to agency conflicts between the firm's stakeholders?

Second, future research could explore the determinants and real effects of firms' stock repurchase accounting decisions. For instance, what are the determinants of firms' initial decisions to charge stock repurchase costs to a specific combination of shareholders' equity accounts, and if applicable, what motivates them to change from one year to the next? To what extent do state corporate laws, agency conflicts, and firm characteristics impact stock repurchase accounting decisions?[16] Additionally, future research could investigate whether firms are incentivized to show higher retained earnings balances, all else equal, and if so, why? If such an incentive exists, to what extent does it affect stock repurchase decisions?

Third, future research could extend the findings of prior studies on retained earnings by considering the impact of stock repurchase accounting. For example, does retained earnings deviation from income available for distribution distort the ability of reported retained earnings balances to serve as an indicator of the propensity to pay dividends (DeAngelo et al. 2006) or credit/bankruptcy risk (Altman 1968; Das et al. 2009)? Additionally, has the proliferation of stock repurchase activity dampened the ability of the retained earnings-to-market ratio to predict the cross-section of stock returns (Ball et al. 2020)? Relatedly, are these findings stronger when using estimates of income available for distribution in place of reported retained earnings?

[16] Bratten, Huang, and Payne (2025) find that stock repurchases activity is higher and of lower quality for firms with more passive ownership. To what extent do stock repurchase accounting decisions play a role in this relationship?

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APPENDIX A: VARIABLE DEFINITIONS

Variables from hand-collected data:

RP^{RE}: Repurchase costs charged to retained earnings (hand-collected from the statement of shareholders' equity).

RP^{PIC}: Repurchase costs charged to the paid-in capital accounts (hand-collected from the statement of shareholders' equity).

RP^{TS}: Repurchase costs charged to treasury stock (hand-collected from the statement of shareholders' equity).

RP^{TOT}: Total repurchase costs obtained from hand-collected data ($RP^{RE} + RP^{PIC} + RP^{TS}$).

PCT^{RE}: The percentage of total repurchase costs charged to retained earnings (RP^{RE}/RP^{TOT}).

PCT^{PIC}: The percentage of total repurchase costs charged to retained earnings (RP^{PIC}/RP^{TOT}).

PCT^{TS}: The percentage of total repurchase costs charged to retained earnings (RP^{TS}/RP^{TOT}).

Variables used in retained earnings calculations:

RE^{REP}: Reported retained earnings (Compustat: *REUNAQ* or *REQ – ACOMINCQ – SEQOQ* if *REUNAQ* is missing). If quarterly values for retained earnings are missing, we interpolate quarterly values based on the annual change in retained earnings from the Compustat Fundamentals Annual database. Interpolated quarterly retained earnings is prior-year retained earnings plus 25% of the annual change for fiscal Q1, 50% of the annual change for fiscal Q2, 75% of the annual change for fiscal Q3, and 100% of the annual change for fiscal Q4.

DIV: Total dividends (Compustat: *DVT*) divided by four; As the *DVT* variable is only available on the Compustat Fundamentals Annual database, we divide by four to approximate a quarterly variable.

NI: Net income (Compustat: *NIQ*).

RP^{TOTC}: Total repurchase cost obtained from Compustat (Compustat: *PRSTKCY* for Q1; *PRSTKCY* less prior quarter value for Q2-4).

PRC^{ISS}: Average issuance price; paid-in capital (Compustat: *CSTKQ* + *CAPSQ*) divided by common shares outstanding (Compustat: *CSHOQ*). If quarterly values for common shares outstanding are missing, we interpolate quarterly values based on the annual change in common shares outstanding from the Compustat Fundamentals Annual database. Interpolated quarterly common shares outstanding is prior-year common shares outstanding plus 25% of the annual

change for fiscal Q1, 50% of the annual change for fiscal Q2, 75% of the annual change for fiscal Q3, and 100% of the annual change for fiscal Q4.

PRC^{RP}: Repurchase price per share; Weighted-average daily stock price for the quarter (CRSP: *PRC*). Stock price is divided by the cumulative factor to adjust stock prices for stock dividends and splits (CRSP: *CFACPR*).

RP^{INV}: Return of original investment portion of stock repurchase; an estimate of the amount shareholders originally invested upon issuance of the repurchased shares (RP^{TOTC} x [PRC^{ISS}/PRC^{RP}]).

RP^{DIST}: Distributions of income from stock repurchases ($RP^{TOTC} - RP^{INV}$).

RE^{MAX}: Maximum retained earnings; assumes no stock repurchase costs are charged to retained earnings ($RE^{MAX}_q = RE^{MAX}_{q-1} + NI_q - DIV_q$).

RE^{MAX}: Minimum retained earnings; assumes all stock repurchase costs are charged to retained earnings ($RE^{MIN}_q = RE^{MIN}_{q-1} + NI_q - DIV_q - RP^{TOTC}_q$).

RE^{DIST}: Income available for distribution; assumes distributions of income from stock repurchases are charged to retained earnings ($RE^{DIST}_q = RE^{DIST}_{q-1} + NI_q - DIV_q - RP^{DIST}_q$)

RE^{RANGE}: Retained earnings range; difference between maximum retained earnings and minimum retained earnings ($RE^{MAX} - RE^{MIN}$).

RE^{DEV}: Retained earnings deviation; difference between reported retained earnings and income available for distribution ($RE^{REP} - RE^{DIST}$).

APPENDIX B: RECALCULATING RETAINED EARNINGS

To estimate maximum retained earnings, minimum retained earnings, and income available for distribution, we recalculate retained earnings over N-quarter intervals starting with each sample firm's first stock repurchase quarter and ending in the last quarter of available data on Compustat. To recalculate retained earnings at the end of first stock repurchase quarter (quarter q=1), we add net income (NI) to and subtract dividends (DIV) and the applicable stock repurchase cost (RP*) for quarter q=1 from *reported* retained earnings (RE^{REP}) at the end of quarter $q=0$. We perform the same calculation for each subsequent quarter over an N-quarter interval (i.e., quarters q=2 to q=N), except that we replace reported retained earnings with the applicable recalculated retained earnings balance for the prior quarter (RE*). We can thus generically express recalculated retained earnings for each quarter q=1 to q=N as follows:[17]

$$RE^*_{q=1} = RE^{REP}_{q=0} + NI_{q=1} - DIV_{q=1} - RP^*_{q=1}$$

$$RE^*_{q=2} = RE^*_{q=1} + NI_{q=2} - DIV_{q=2} - RP^*_{q=2}$$

$$RE^*_{q=3} = RE^*_{q=2} + NI_{q=3} - DIV_{q=3} - RP^*_{q=3}$$

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$$RE^*_{q=\mathrm{N}} = RE^*_{q=\mathrm{N-1}} + NI_{q=\mathrm{N}} - DIV_{q=\mathrm{N}} - RP^*_{q=\mathrm{N}} \quad (4)$$

Where RE* is either RE^{MAX}, RE^{MIN}, or RE^{DIST}. When RE* is RE^{MAX}, RP* is equal to zero. When RE* is RE^{MIN}, RP* is equal to total repurchase cost, which we obtain from Compustat (RP^{TOTC}).

[17] This method of recalculating retained earnings omits other items such as the effects of mergers and acquisitions and cumulative effect adjustments from accounting changes because we are unable to reliably identify and distinguish them from the effects of stock repurchases with Compustat variables. The omission of these other items results in understated (overstated) calculations of RE^{MAX}, RE^{MIN}, and RE^{DIST} for other items that increase (decrease) retained earnings. To address the concern that these other items may materially affect our results, we perform our retained earnings calculations on a sample of firms with no stock repurchase activity over our sample period with the idea that any observable deviation from reported retained earnings within this sample indicates the presence of other items in retained earnings. Across a sample of 69,754 firm-quarter observations, we find that the mean, first quartile, median, and third quartile retained earnings deviations are 0.631%, -0.063%, 0.000%, and 0.099% of total assets, respectively (untabulated). If we assume that the presence of other items in this sample of non-stock repurchase firms is a reasonable approximation of the presence of other items in our sample of stock repurchase firms, then these statistics suggest that other items in retained earnings do not appear to be significant enough to influence our findings. Additionally, we note that our estimates of retained earnings range and retained earnings deviation vary predictably with stock repurchase activity (see Figure 1), which suggests that our findings are very likely driven by accounting for stock repurchases rather than a failure to account for other items in retained earnings.

When RE^* is RE^{DIST}, RP^* is equal to the distribution of income portion of the stock repurchase (RP^{DIST}). Individual expressions for RE^{MAX}, RE^{MIN}, and RE^{DIST} for quarter q are as follows:

$$RE^{MAX}_q = RE^{MAX}_{q-1} + NI_q - DIV_q \tag{5a}$$

$$RE^{MIN}_q = RE^{MIN}_{q-1} + NI_q - DIV_q - RP^{TOTC}_q \tag{5b}$$

$$RE^{DIST}_q = RE^{DIST}_{q-1} + NI_q - DIV_q - RP^{DIST}_q \tag{5c}$$

We estimate RP^{DIST} based on the idea that the total cost of a stock repurchase can be split into a return of the shareholders' original investment (received by the firm at issuance) and a distribution of income. We therefore define RP^{DIST} as the difference between total repurchase cost obtained from Compustat (RP^{TOTC}) and the return of the shareholders' original investment (RP^{INV}). To estimate RP^{INV}, we multiply RP^{TOTC} by the ratio of the original issuance price (PRC^{ISS}) to the stock repurchase price (PRC^{RP}):[18]

$$RP^{INV} = RP^{TOTC} \text{ x } (PRC^{ISS}/PRC^{RP}) \tag{6}$$

We estimate PRC^{ISS} as the average issuance price per share of all outstanding shares at the end of quarter q-1, which is the total reported balance across the paid-in capital accounts divided by the number of common shares outstanding and PRC^{RP} as the weighted average daily stock price adjusted for stock splits and dividends during quarter q, which we obtain from the CRSP database.[19] See Appendix A for specific Compustat and CRSP variable definitions.

[18] To illustrate the intuition behind this calculation, consider the hypothetical example from footnote #8 in Section II in which the firm repurchases 10 shares of stock at $15 per share that was originally issued at $10 per share. We can obtain the return of the original investment by multiplying the total repurchase cost of $150 ($15 x 10 shares) by the ratio of the original issuance price ($10) to the stock repurchase price ($15) (i.e., $150 x [$10/$15] = $100).

[19] Using reported paid-in capital to estimate the average issuance price introduces measurement error into our calculation of RP^{INV}, and by extension, RP^{DIST} and RE^{DIST} because reported paid-in capital is similarly affected by stock repurchase accounting choices. In an untabulated sensitivity analysis, we replace the reported paid-in capital variable with a recalculated paid-in capital variable obtained from a cumulative rollforward estimate of paid-in capital that mirrors our retained earnings calculations. Using this recalculated paid-in capital variable does not meaningfully affect our calculation of income available for distribution, and therefore, we opt for using reported paid-in capital to estimate average issuance price.

Table 1: Descriptive statistics (hand-collected sample)

	Mean	Std Dev	Min	Q1	Median	Q3	Max
				(N = 2,769)			
RP^{TOT}	0.062	0.098	-0.001	0.009	0.034	0.077	1.980
PCT^{RE}	22.8%	38.2%	0.0%	0.0%	0.0%	48.2%	100.0%
PCT^{PIC}	18.5%	34.6%	0.0%	0.0%	0.0%	15.4%	100.0%
PCT^{TS}	58.7%	48.7%	0.0%	0.0%	100.0%	100.0%	100.0%

Description: This table presents univariate statistics for our hand-collected sample. RP^{TOT} is scaled by total assets matched from Compustat (Compustat: *AT*). See Appendix A for variable definitions.

Table 2: Observations categorized based on how they charge stock repurchase costs to shareholders' equity accounts

	N	%	RP^{TOT}	PCT^{TS}	PCT^{PIC}	PCT^{RE}
$PCT^{RE} = 0$						
1 All TS	1,498	54.1%	0.051	100.0%	0.0%	0.0%
2 All PIC	349	12.6%	0.039	0.0%	100.0%	0.0%
3 TS/PIC mix	128	4.6%	0.078	84.4%	15.6%	0.0%
Total $PCT^{RE} = 0$	1,975	71.3%	0.051	81.3%	18.7%	0.0%
$PCT^{RE} > 0$						
4 PIC/RE mix	660	23.8%	0.094	0.0%	21.1%	78.9%
5 All RE	79	2.9%	0.072	0.0%	0.0%	100.0%
6 TS/PIC/RE mix	36	1.3%	0.091	21.8%	64.4%	13.8%
7 TS/RE mix	19	0.7%	0.062	58.7%	0.0%	41.3%
Total $PCT^{RE} > 0$	794	28.7%	0.091	2.4%	20.4%	77.2%
Total sample	2,769	100.0%				

Description: This table tabulates observations from our hand-collected sample based on whether they charge stock repurchase costs to retained earnings ($PCT^{RE} = 0$ versus $PCT^{RE} > 0$) and by the specific combinations of shareholders equity accounts to which they charge stock repurchase costs (treasury stock – TS, paid-in capital – PIC, or retained earnings – RE). Variable definitions are provided in Appendix A.

Table 3: A comparison of how stock repurchase costs are charged to shareholders' equity accounts in current and prior years

	$PCT^{RE} = 0$ in year *t-1*				$PCT^{RE} > 0$ in year *t-1*					
	1	2	3	Total	4	5	6	7	Total	Total sample
$PCT^{RE} = 0$ in year *t*										
1 All TS	***1,410***	9	44	1,463	23	2	4	6	35	1,498
2 All PIC	20	***305***	11	336	12	1	0	0	13	349
3 TS/PIC mix	48	7	***72***	127	1	0	0	0	1	128
Total $PCT^{RE} = 0$	1,478	321	127	**1,926**	36	3	4	6	49	1,975
$PCT^{RE} > 0$ in year *t*										
4 RE/PIC mix	31	31	2	64	***576***	8	10	2	596	660
5 All RE	2	1	0	3	18	***58***	0	0	76	79
6 TS/PIC/RE mix	4	1	0	5	13	0	***17***	1	31	36
7 TS/RE mix	4	0	1	5	0	2	3	***9***	14	19
Total $PCT^{RE} > 0$	41	33	3	77	607	68	30	12	**717**	794
Total sample	1,519	354	130	2,003	643	71	34	18	766	2,769

Description: This table tabulates observations from our hand-collected sample based on whether they charge stock repurchase costs to retained earnings ($PCT^{RE} = 0$ versus $PCT^{RE} > 0$) in year *t* and year *t-1* and by the specific combinations of shareholders equity accounts to which they charge stock repurchase costs (treasury stock – TS, paid-in capital – PIC, or retained earnings – RE) in year *t* and year *t-1*. Variable definitions are provided in Appendix A. Observations tabulated on the diagonal (bold italic font) indicate that the firm charged the same combination shareholders' equity accounts in year *t* and it did in year *t-1*. Observations tabulated on the diagonal in the subtotals for $PCT^{RE} = 0$ and $PCT^{RE} > 0$ (bold font) indicate that the firm was consistent in whether it charged retained earnings in years *t* and *t-1*.

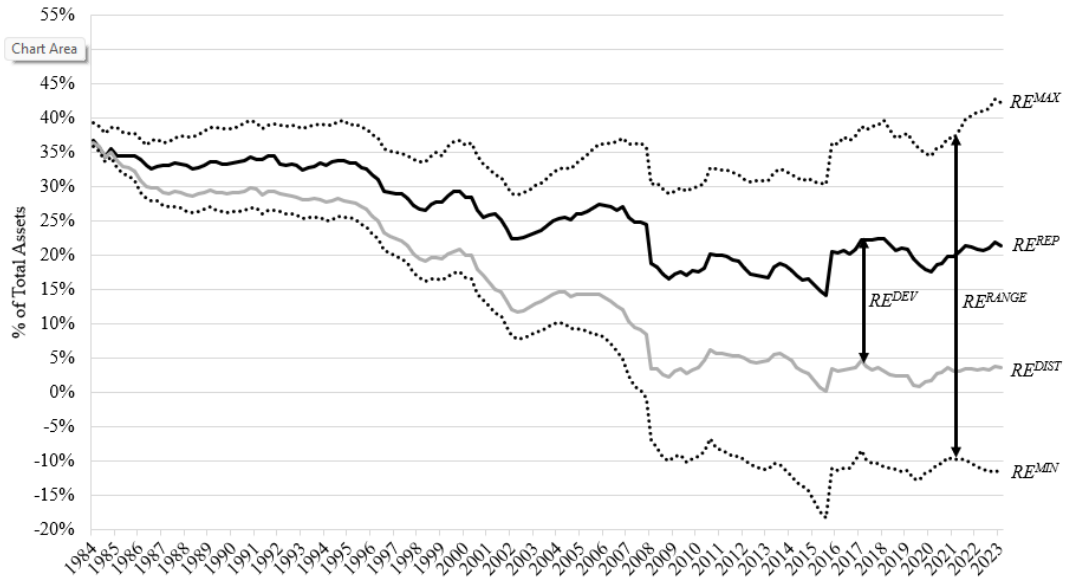
Table 4: Descriptive statistics for retained earnings variables (Compustat sample)

	Mean	Std Dev	P25	P50	P75
			N = 88,895		
RE^{MAX}	0.350	1.237	0.175	0.387	0.629
RE^{MIN}	0.045	1.259	(0.027)	0.156	0.329
RE^{RANGE} ($RE^{MAX} - RE^{MIN}$)	0.306	0.453	0.046	0.151	0.378
RE^{REP}	0.245	1.224	0.127	0.309	0.502
RE^{DIST}	0.130	0.878	0.043	0.202	0.355
RE^{DEV} ($RE^{REP} - RE^{DIST}$)	0.115	0.535	0.003	0.051	0.186

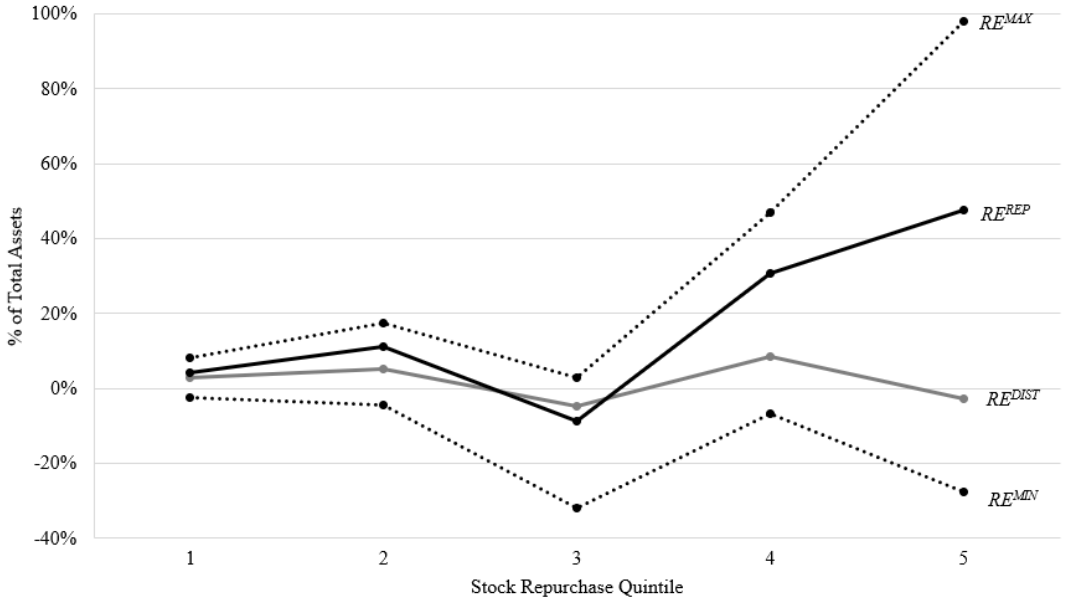
Description: This table presents descriptive statistics for the retained earnings variables as a percentage of total assets for our sample of 88,895 firm-quarter observations repurchase firms. The sample includes quarterly observations for firms that have repurchased at least 10% of their average market value over the sample period. See Appendix A for variable definitions.

Figure 1: Time-series and cross-sectional variation in retained earnings variables

Panel A: Time-series trends

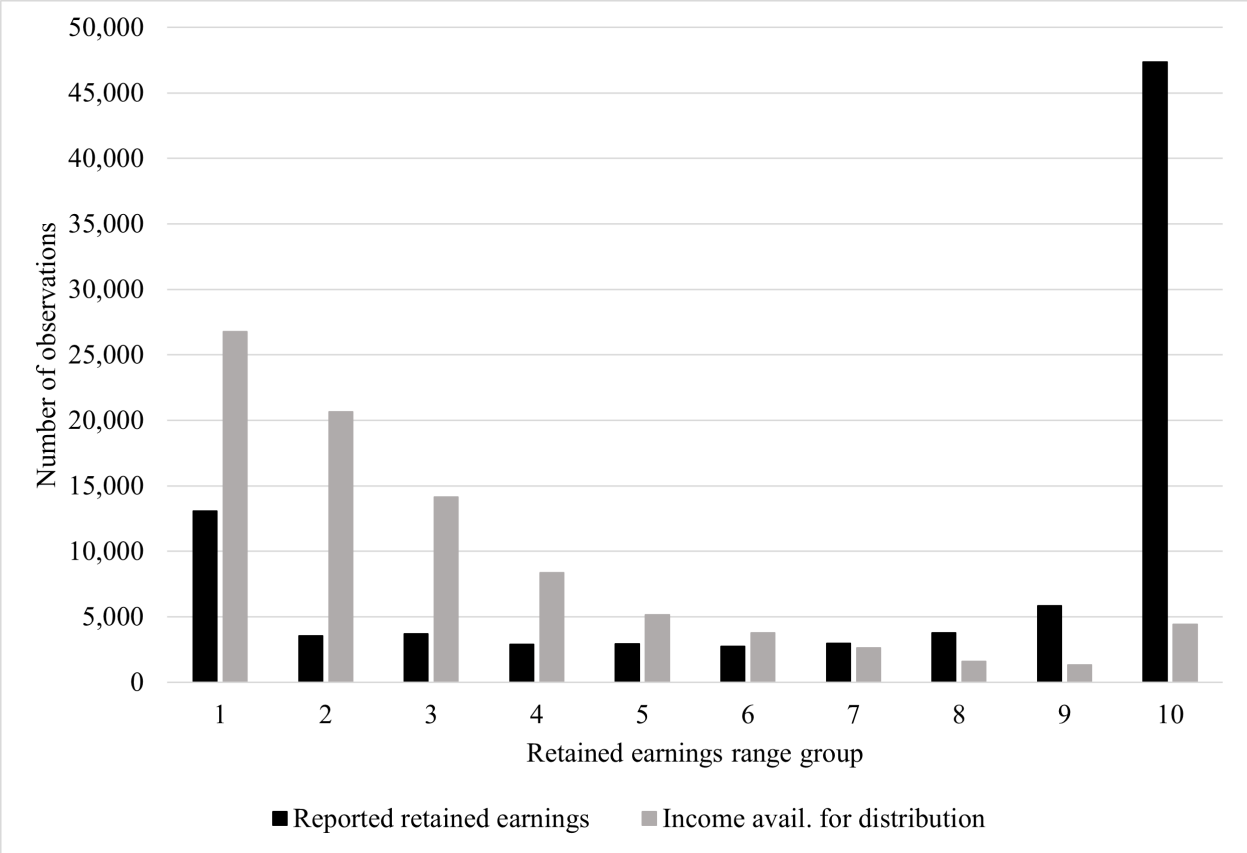


Panel B: Retained earnings variables across quintiles of stock repurchase activity



Description: This figure plots mean maximum retained earnings (RE^{MAX}), minimum retained earnings (RE^{MIN}), reported retained earnings (RE^{REP}), and estimated income available for distribution (RE^{DIST}) as a percentage of total assets. Panel A presents these amounts over fiscal years 1984 to 2023 for 88,895 firm-quarter observations in our sample. Retained earnings range (RE^{RANGE}) is represented as the space between the RE^{MAX} and RE^{MIN} lines, and retained earnings deviation (RE^{DEV}) is represented as the space between the RE^{REP} and RE^{DIST} lines. Panel B presents these amounts across quintiles of cumulative stock repurchase activity for 1,282 unique firms in our sample. Quintile assignments and sample means reflect each firm's most recent quarterly observation from our sample. Retained earnings range (RE^{RANGE}) is represented as the space between the RE^{MAX} and RE^{MIN} lines, and retained earnings deviation (RE^{DEV}) is represented as the space between the RE^{REP} and RE^{DIST} lines.

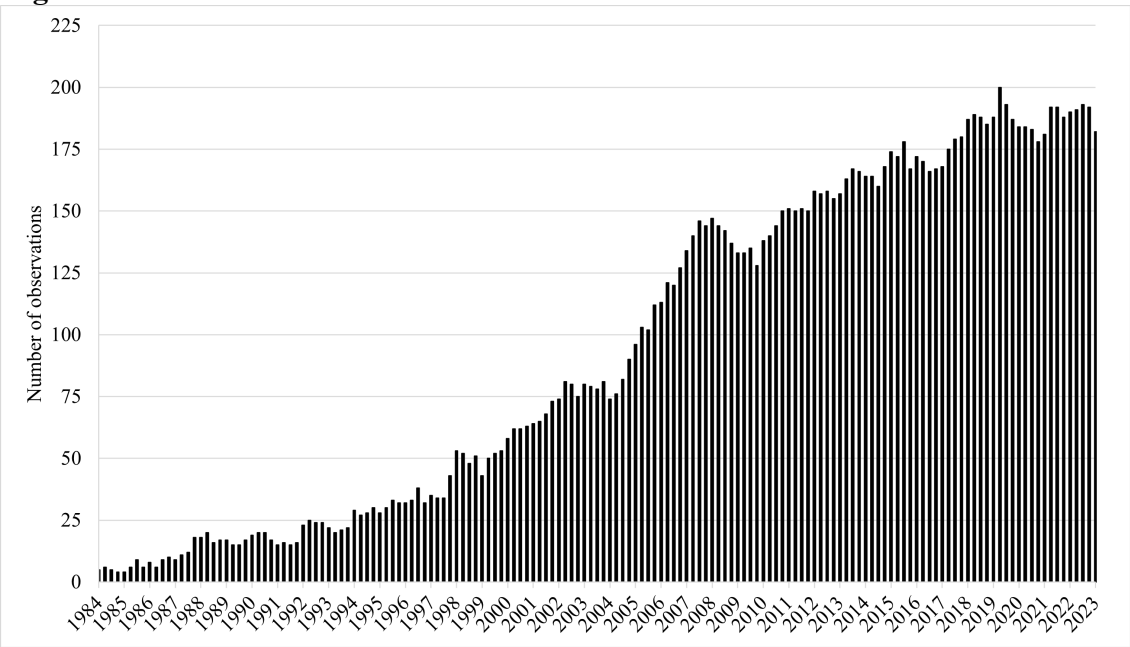
Figure 2: Reported retained earnings and income available for distribution within retained earnings range



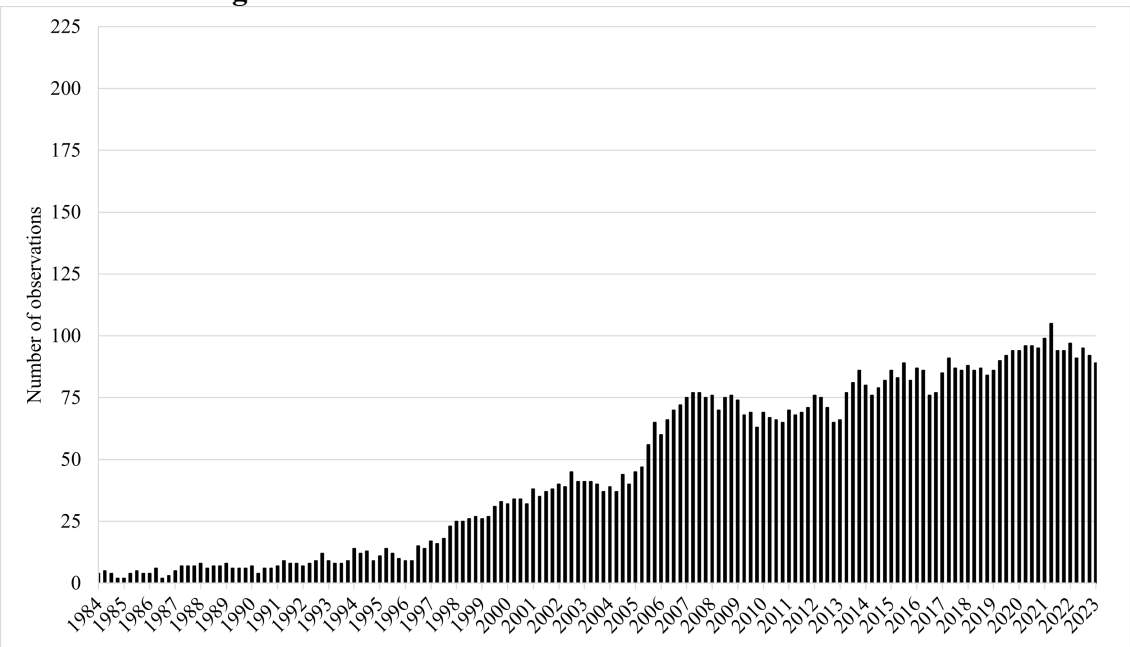
Description: This figure plots sample observations based on where reported retained earnings (RE^{REP}) and estimated income available for distribution (RE^{DIST}) fall within retained earnings range (RE^{RANGE}). The sample of 88,895 firm-quarter observations is divided into ten groups each representing the distance from minimum retained earnings (RE^{MIN}) as a percentage of retained earnings range. Observations are placed into group 1 if the applicable retained earnings value (RE^{REP} or RE^{DIST}) is less than 10% of RE^{RANGE} from RE^{MIN} and into group 10 if the applicable retained earnings value is greater than 90% of RE^{RANGE} from RE^{MIN}. The groups between 1 and 10 represent intervals of 10%; observations are placed into group 2 if RE^{REP} or RE^{DIST} is between 10% and 20% of RE^{RANGE} from RE^{MIN}, group 3 if RE^{REP} or RE^{DIST} is between 20% and 30% of RE^{RANGE} from RE^{MIN}, and so on.

Figure 3: Instances in which retained earnings range and retained earnings deviation include positive and negative balances from 1984-2023

Panel A: Maximum retained earnings is positive but minimum retained earnings is negative



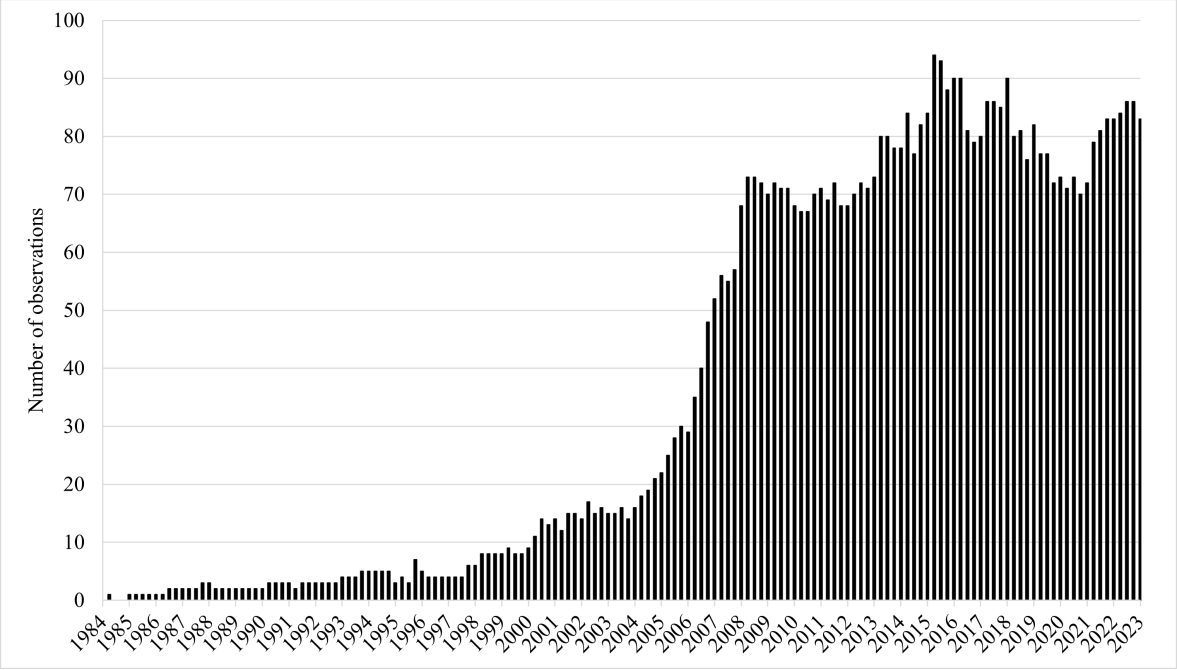
Panel B: Reported retained earnings is positive but estimated income available for distribution is negative



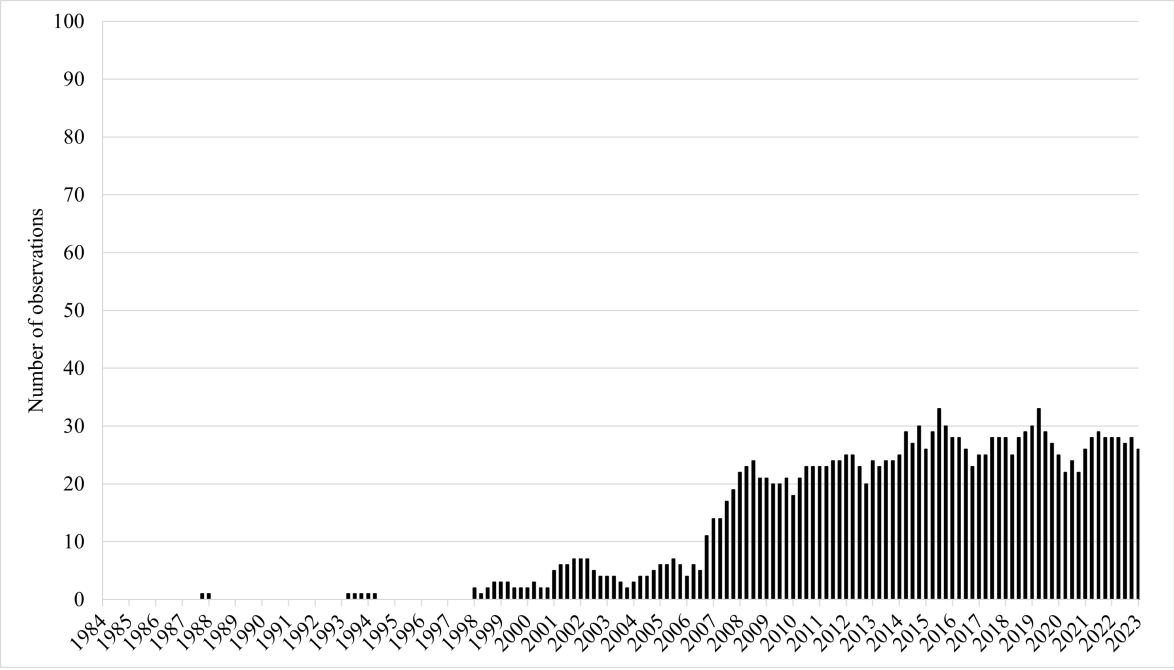
Description: This figure plots instances in which a firm's maximum retained earnings is positive (i.e., $RE^{MAX} > 0$) but its minimum retained earnings is negative (i.e., $RE^{MIN} < 0$) (Panel A) and instances in which a firm reports positive retained earnings (i.e., $RE^{REP} > 0$) but estimated income available for distribution is negative (i.e., $RE^{DIST} < 0$) (Panel B) over fiscal years 1984 to 2023.

Figure 4: Instances in which retained earnings range and retained earnings deviation exceed total assets from 1984-2023

Panel A: Retained earnings range exceeds total assets



Panel B: Retained earnings deviation exceeds total assets



Description: This figure plots instances in which a firm's retained earnings range exceeds its reported total assets (Panel A) and instances in which a firm's retained earnings deviation exceeds its reported total assets (Panel B) over fiscal years 1984 to 2023.