

Counterpoint Global Insights

Stock-Based Compensation

Unpacking the Issues

CONSILIENT OBSERVER | April 18, 2023

Introduction

One way to think about a business is that it makes investments that allow it to offer a good or service to customers. It then seeks to sell its products for more than the cost to produce them. The firm creates value if its revenues exceed its expenses and costs, including the cost of capital.

Building a business requires dealing with multiple stakeholders. A stakeholder is a party with an interest in a company and includes suppliers, employees, governments, creditors, and shareholders. The stakeholders affect the business, and the business affects the stakeholders. Value generally accrues to shareholders only after all other stakeholders have been paid.

Cash is the primary way companies pay suppliers, governments, and bondholders. And the bulk of employee compensation is in cash. But public companies in the U.S. are increasingly paying employees with stock rather than cash. They are making their workers into shareholders.

Research suggests that nearly all the increase in stock-based compensation (SBC) has replaced cash wages.¹ SBC can be viewed as a way to finance growth for the firm, an incentive for employees to deliver results, a tool for retaining workers, and a means to foster an overall sense of ownership.

In the U.S., wealth and business ownership are closely linked. The top one percent of households have more than one-half of their total assets invested in stock, on average. About two-thirds of that ownership is in private companies and the rest is in public companies.² Families that are self-employed have a median net worth more than four times higher than those that are employed by companies.³

Equity ownership has always been common with startups. Founders of companies have long used equity ownership to induce employees to join the firm early on. Startups are endeavors with high risk and the potential for high reward. More than 60 percent of deals funded by venture capital firms have lost money.⁴ Overall, about two-thirds of businesses fail within 10 years.⁵

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But companies backed by venture capital make up about 40 percent of the capitalization of the U.S. stock market.⁶ Equity is an appropriate way to pay a small number of employees who are aligned with a corporate mission and are willing to trade the stability of working for a mature company for the potential of substantial upside or downside at a startup.

Historically, public companies paid their employees in cash. Through the 1940s, for instance, chief executive officers (CEOs) of public companies in the U.S. were paid essentially in all cash. As recently as the 1970s, about 85 percent of CEO pay was in cash.⁷

That started to change in the 1980s. There were two catalysts. First, an active market for corporate control meant that CEOs who wanted to avoid having their company get acquired had to focus on creating shareholder value.

This was important because the amount of skin in the game for CEOs had been trending lower for decades. For example, the median percentage direct ownership of stock by CEOs of the top 120 American public companies in the mid-1970s was one-sixth of what it was in the late 1930s.⁸ Boards recognized that equity compensation was a way to align pay with a mindset of ownership.⁹

Second was a growing awareness of the costs associated with the principal-agent problem. Executives are the agents who manage the firm on behalf of the shareholders, who are the principals. Costs arise when executives make decisions that benefit them at the expense of the shareholders. For example, executive pay is positively correlated with size, so CEOs may have an incentive to do deals that make the firm bigger even if they do not create value.

Corporate boards shifted the mix of pay for executives from cash to equity and then started to pay employees beyond the executive ranks with equity. Today, SBC is a large majority of executive pay, and almost 80 percent of SBC is paid to employees who are not high-ranking executives.¹⁰

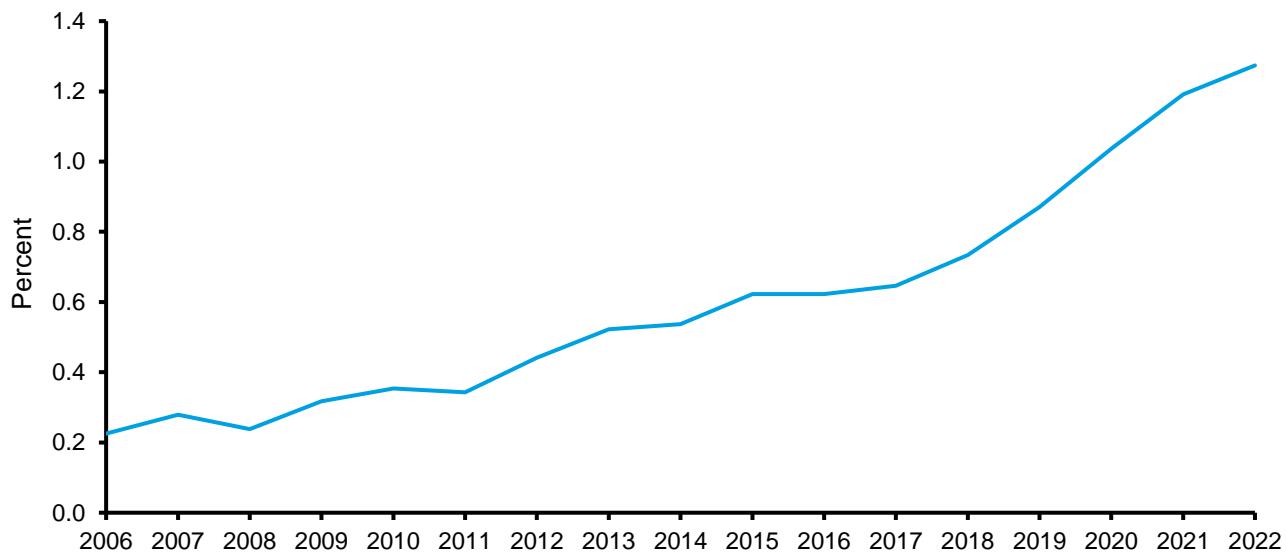
This report delves into SBC. We start by providing data that show overall trends and where SBC is prominent. We then turn to the accounting issues and how to see through the numbers to understand the economics. We wrap up the discussion by evaluating the strengths and weaknesses of SBC and whether this shift in pay is achieving its objectives.

Data on SBC

SBC became more important in the 1980s and 1990s but was not required to be recognized as an expense on the income statement under U.S. generally accepted accounting principles (GAAP) until 2006. Companies had to include the details about their SBC programs in the footnotes, but the expense was absent in the calculation of earnings. This is important because when surveyed, chief financial officers perceive that GAAP earnings are “in a class by themselves” as a focus of investors.¹¹ Companies, most prominently those in the technology industry, lobbied against treating SBC as an expense by claiming that the inclusion would lead to lower stock prices. Subsequent research showed that the concern was nonsense.¹²

In 2006, the year that companies had to reflect SBC as an expense on the income statement, total SBC expense for companies in the Russell 3000 was about \$25 billion.¹³ The Russell 3000 is an index that tracks the largest stocks by market capitalization in the United States. We estimate that SBC was about \$270 billion in 2022, or 6-8 percent of total compensation for public companies in the U.S.¹⁴ Sales over the same period went from \$11.5 to \$21.1 trillion. Exhibit 1 shows that SBC went from 0.2 percent to 1.3 percent of sales.

Exhibit 1: SBC as a Percent of Sales for the Russell 3000, 2006-2022



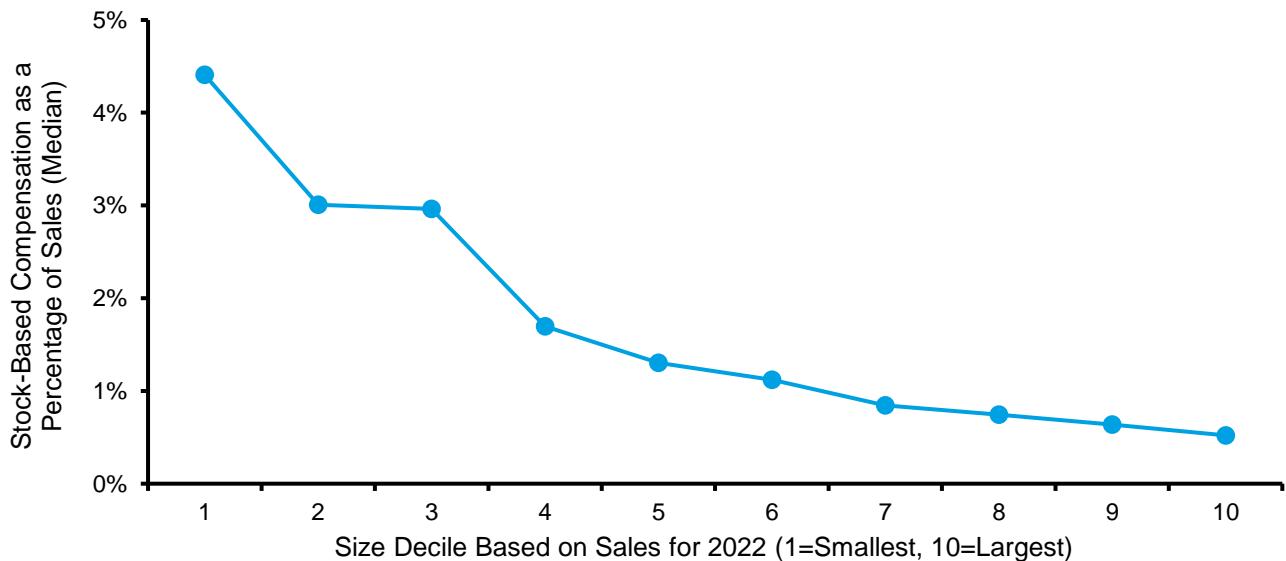
Source: FactSet and Counterpoint Global.

Note: Data for calendar years.

The corporate life cycle is useful to keep in mind when reviewing figures for SBC. In general, SBC as a percentage of sales is higher for younger companies than older companies. This in part reflects the fact that employees who join a company when it is young and relatively risky expect to receive equity, and in part because young companies often require capital to grow. SBC allows a company to replace cash compensation with equity and therefore reduces the need to raise capital externally.

Exhibit 2 shows the median SBC as a percentage of sales by decile for companies in the Russell 3000 in 2022. The deciles are based on sales, which we use as a proxy for age. We see that SBC is much higher for small companies and declines meaningfully as companies grow. Note there is a great deal of variance in each decile.

Exhibit 2: SBC as a Percentage of Sales by Decile for the Russell 3000, 2022



Source: FactSet and Counterpoint Global.

Note: Data for calendar year 2022; Minimum sales of \$100 million.

The use of SBC also varies a great deal by sector. Information technology, communication services, and financials rely most heavily on SBC based on total SBC divided by total sales (exhibit 3). Aggregate SBC is less than one-half of one percent of sales for the utilities and consumer staples sectors.

Exhibit 3: Stock-Based Compensation as a Percentage of Sales, Russell 3000 Sectors, 2022

Sector	Aggregate	Median
Information Technology	4.0%	6.4%
Communication Services	4.0%	3.2%
Financials	2.3%	1.4%
Real Estate	1.7%	1.7%
Consumer Discretionary	1.5%	0.8%
Health Care	0.9%	3.7%
Industrials	0.8%	0.7%
Materials	0.7%	0.5%
Energy	0.6%	0.8%
Utilities	0.4%	0.5%
Consumer Staples	0.4%	0.6%

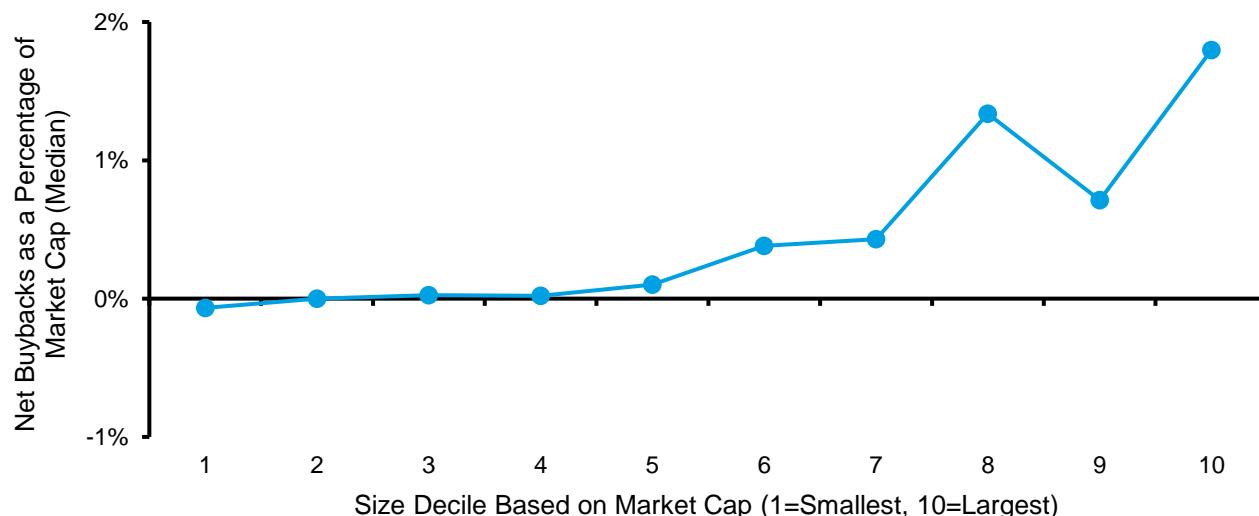
Source: FactSet and Counterpoint Global.

Note: Data for calendar year 2022; Minimum sales of \$100 million.

Life cycle analysis also shows that the penchant for returning capital to shareholders in the form of dividends and buybacks increases as companies age. This is because these older businesses are generally mature and profitable and hence generate excess capital. Further, companies today pay out a higher percentage of their free cash flow than did companies in past decades. The growth in share buybacks accounts for nearly all the increase in overall payout as a percentage of income in recent decades.¹⁵

Exhibit 4 shows the median net share buybacks as a percentage of market capitalization by decile for companies in the Russell 3000 in 2022. Net buybacks are the difference between gross buybacks and equity issuance, which includes the proceeds from the exercise of employee stock options. The general picture is that older companies buy back more stock than younger ones do. Here again, there is large variance in each decile. Note the top decile represents more than three-quarters of the total market capitalization of the Russell 3000 index.

Exhibit 4: Net Buybacks as a Percentage of Market Capitalization by Decile, Russell 3000, 2022



Source: FactSet and Counterpoint Global.

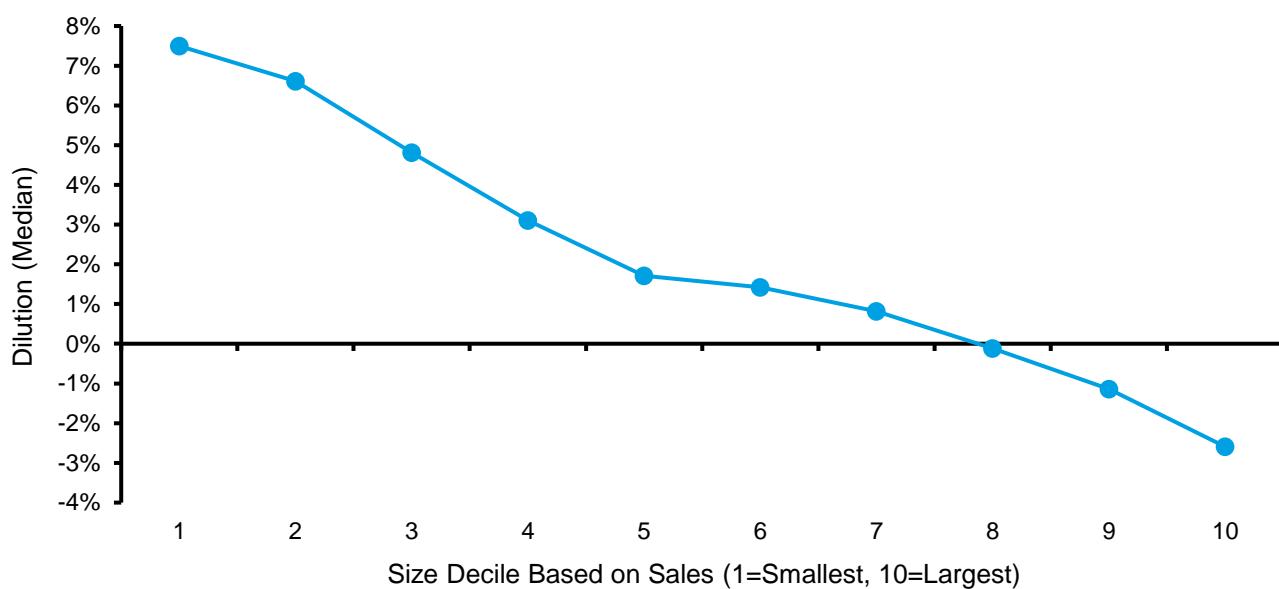
Note: Market cap as of 12/31/22 and net buybacks for calendar year 2022; Minimum market cap of \$100 million.

Young companies tend to rely more on SBC than old companies do, and old companies tend to buy back more stock than young ones do. As a result, you would expect that non-employee shareholders of young companies suffer more dilution than those of old companies.

Dilution occurs when a company issues new shares, lowering the percentage ownership of the existing shareholders. You calculate dilution as one minus the shares outstanding before issuance divided by the shares outstanding after issuance. For example, the owners of a company with 100 shares outstanding suffer about 4.8 percent dilution when the company issues 5 new shares, as they now own only 95.2 percent of the company ($0.048 = 1 - 0.952 = 1 - 100/105$).

Exhibit 5 shows the median dilution by sales decile for companies in the Russell 3000 over the past three years. Shareholders of the smallest three deciles realized dilution of around 6 percent, whereas shareholders of the largest three deciles saw their percentage ownership increase. This analysis assumes the initial investors did not purchase or sell any stock. (See Appendix A for details on exhibits 2, 4 and 5.)

Exhibit 5: Three-Year Dilution of Shareholders by Decile for the Russell 3000, 2020-22



Source: FactSet and Counterpoint Global.

Note: Data for calendar year 2022; Minimum sales of \$100 million.

Taken together, these data suggest that shareholders of young companies should be especially attuned to SBC because the impact from dilution is potentially meaningful. SBC is simply not that much of an issue for some sectors and most mature companies.

One of the most fundamental principles of capital allocation from the point of view of the ongoing shareholders is that it is good for companies to retire undervalued stock and issue overvalued stock, and bad to retire overvalued stock and issue undervalued stock.¹⁶ Buying or selling a stock at fair value is neutral before consideration of transaction costs.

We want to draw attention to those companies that issue equity in the form of SBC and buy back stock, often with the ostensible goal of reducing the impact of dilution. This population of companies raise two issues for analytical consideration.

The first is whether they are allocating capital intelligently. When surveyed in recent decades, 50-80 percent of financial executives say that the stock of their company is undervalued, 20-40 percent think it is correctly valued, and a de minimis number concede that their stock is overvalued.¹⁷ If a stock is not at fair value, either issuing or retiring it is suboptimal from the point of view of ongoing shareholders.

Take the case of issuing stock when it is perceived to be undervalued. Assume the stock trades at 80 percent of its fair value. The company is effectively “selling” stock for less than what it is worth and offering the proceeds as remuneration for employees. Further, non-executive employees may value the stock at an additional discount to reflect the loss of diversification and the fact that they cannot sell the stock immediately.¹⁸

The second problem is that issuing and retiring stock makes it more difficult to assess value. This is especially relevant for investors who rely on accounting metrics, such as multiples, that are meant to serve as a shorthand for value.

For instance, a common definition of levered free cash flow, the cash available for distribution to equity holders, is cash flow from operating activities minus capital expenditures.¹⁹ The components of this calculation appear on a firm’s statement of cash flows. Cash flow from operating activities does not reflect SBC as an expense. In fact, SBC is greater than cash flow from operating activities for some firms.

More than 95 percent of public companies now report non-GAAP results.²⁰ Adding back SBC expense is a common adjustment to earnings per share (EPS) and earnings before interest, taxes, depreciation, and amortization (EBITDA).²¹ Further, in recent years nearly one-fifth of companies have reported non-GAAP EPS with shares outstanding different from what GAAP designates.²²

Investors who measure free cash flow or non-GAAP earnings on a per share basis may fail to evaluate the relationship between dilution and buybacks. Issuing and retiring equity are economic decisions that companies and investors should scrutinize separately. Buybacks that offset dilution turn SBC, 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.

Stated differently, the pairing of SBC and buybacks can reduce and increase agency costs. They reduce agency costs if executives and other employees are aligned with shareholders and the company returns cash to shareholders rather than wasting it on investments that destroy value. They increase agency costs if they are an inefficient means to pay employees and the company buys back stock to manipulate accounting results with no regard for economic value.

A Framework for Thinking About SBC and the Accounting Implications

Financial statements are meant to help investors, creditors, and other interested parties understand a business. They are supposed to be relevant and have predictive value. But there is a tension between providing a literal representation of what happened and informing users. We believe that accounting for SBC may be faithful to standards but demands that users do additional analysis to understand value.²³

We describe two methods to incorporate SBC into valuation that are technically equivalent: treating SBC as an expense or as an employee claim on equity. Each method is based on free cash flow to equity (FCFE), a discounted cash flow model that values the equity by projecting and discounting cash flows attributable to equity holders. Investors who value businesses using multiples or yields should understand both methods to see the potential pitfalls in using shorthands.

Bear in mind that survey data reveal that investors use the free cash flow to the firm (FCFF) model nearly twice as often as the FCFE model.²⁴ FCFF values the firm and subtracts debt and other liabilities to arrive at equity value. Appendix B shows that equity value is the same using FCFF, FCFE with SBC as an expense, or FCFE with SBC as a claim.

Method 1: SBC as an Expense. The first method treats SBC as an expense. It requires recasting the statement of cash flows to accurately determine FCFE.

The statement of cash flows does a good job of matching the basic activities of a company. Cash flow from operating activities summarizes the cash flow that results from dealing with customers. Cash flow from investing activities tells what the company spent to maintain and grow the business. Cash flow from financing activities reveals whether the company raised or disbursed capital to reconcile its financial position from one period to the next.

The key is to recognize the entries on the statement of cash flows that have no net cash outlay but are in fact two transactions in one. SBC and leases are the most important of these.²⁵

The easiest way to understand this is by example. Stock compensation is an operating transaction, where the employee is paid for service, and a financing transaction, where the employee is a source of equity capital. A finance lease is an investing transaction, where a company buys a fixed asset, and a financing transaction, where the company raises debt.

Recognizing SBC and leases as four transactions allows the investor to calculate FCFE accurately by putting each in the right category:

- Treat SBC first as an expense, reducing cash flow from operating activities, and second as raising equity in cash flow from financing activities.
- Treat leases first as a capital expenditure, a use of cash that shows up in cash flow from investing activities, and second as raising debt in cash flow from financing activities.

This more accurate description of FCFE differs from the common definition of free cash flow in two meaningful ways. Cash flow from operations are lower, and capital expenditures are higher, following these adjustments. These differences underscore the limitation of the FCFE measure that is widely used.

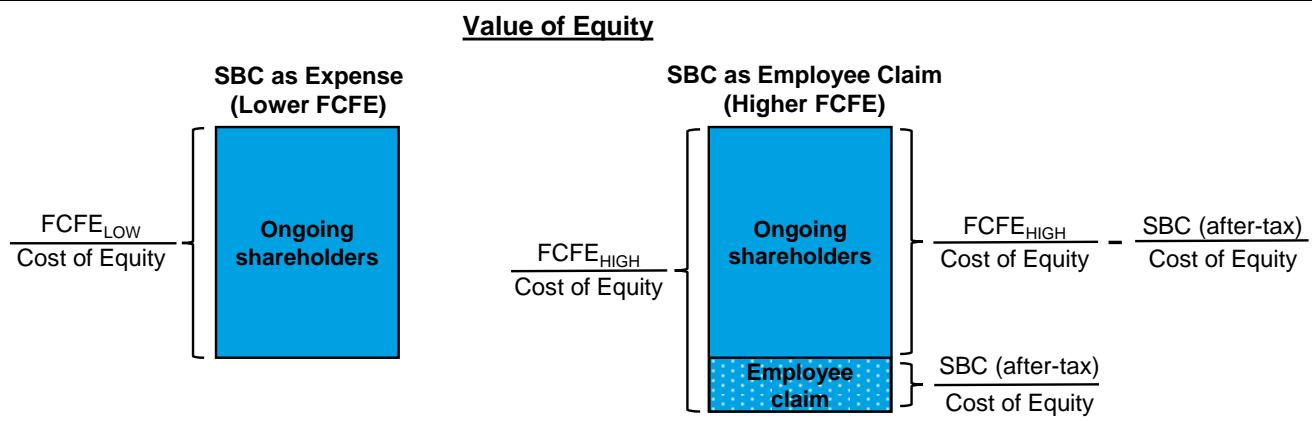
Applying this method is relatively straightforward. If you treat SBC as an expense in your projections and reckon fully for capital expenditures, you can project future FCFE, discount the sums by the cost of equity capital, and divide by fully diluted shares outstanding.

Companies that lose money are not required to report fully diluted shares outstanding. As a result, it is necessary to examine the notes associated with the financial statements to determine the amount of dilution.²⁶ But there is no need to model additional dilution or buybacks as those amounts are built into the cash flows.

Method 2: SBC as an Employee Claim on Equity. The second method does not recognize SBC as an expense, on the income statement or the statement of cash flows, but rather considers it as a claim on equity. Moving SBC from an expense to a claim on equity is what creates dilution.²⁷

Note that FCFE will be higher if no expense for SBC is recognized. But that benefit is offset by the employee claim. Exhibit 6 shows the two methods side by side. On the left, FCFE is lower but the claims on the cash flow come only from ongoing shareholders. On the right, the FCFE is higher but the claims on that cash include both ongoing shareholders and employees.

Exhibit 6: Two Methods to Reflect SBC in Equity Valuation



Source: Counterpoint Global.

A model based on this approach can use cash flow from operations as reported but requires two additional adjustments.

The first is adjusting future shares outstanding to reflect dilution. For profitable companies, start with fully diluted shares and increase the shares over time to capture anticipated SBC issuance. For unprofitable companies, add shares that have already been granted to reported shares, and then increase the shares for issuance. Exhibits 2, 3, and 5 provide base rate data that can help anticipate the amount of future dilution. Modeling dilution is tricky, but the goal is to reflect accurately the value of the employee claim on equity.²⁸

The second adjustment is to add leases to capital expenditures. Practically speaking, the companies that use a lot of SBC typically do not use a lot of leases, and companies that use a lot of leases do not use a lot of SBC. But this adjustment is meaningful for some companies.

Note that you should not give a company credit for share buybacks with either method of dealing with SBC. The reason is that buybacks are funded with excess cash, debt, or cash flow attributable to equity holders. Buybacks with excess cash reduce firm value and have no impact on value per share unless the shares are mispriced.²⁹

Assuming that a company funds buybacks with future cash flows is double counting. The cash flows are counted once as a source of value for shareholders in a discounted cash flow model and a second time as payment for buybacks.

No matter which method you use, remember that SBC is an estimate on the date of the grant. The returns of the stock price between the date it was granted and the date that it vests can affect value in at least a couple of ways.

One relates to taxes. If the stock goes up, the employee earns more than the amount implied by the SBC expense and the tax deduction from compensation increases. The greater the deduction the lower the tax bill. If the stock goes down, the employee earns less than the amount implied by the SBC expense and the tax deduction from compensation decreases. That increases the tax bill.

For example, Meta Platforms, Inc., a technology company, enjoyed a \$1.1 billion tax benefit in 2021. The stock had risen at a 37 percent compound annual rate in the prior three years. In 2022, the company's stock declined 64 percent and its provision for taxes increased \$471 million, bumping up the company's effective tax rate by two percentage points.³⁰

The other way that stock price returns can affect value is through future SBC grants. Employees will be happy if the stock goes up in line with, or more than, the market and peer companies. But employees may earn substantially less than they thought they would if the stock goes down. As a result, they may seek additional SBC to compensate them for the shortfall.

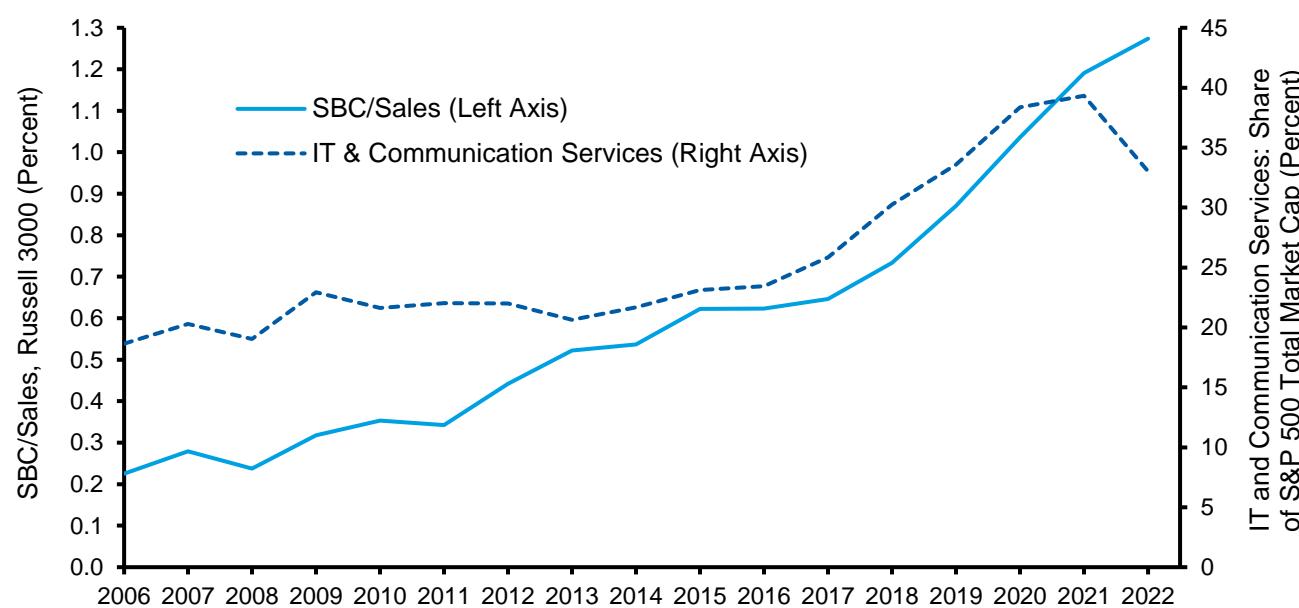
A company's relative stock price returns determine the weight of this effect. A particular company may find itself at no competitive disadvantage if the stocks of most companies, and especially its peers, decline in lockstep. But it is noteworthy that in 2022, overall SBC increased 19 percent while the Russell 3000 declined 19 percent. In this case, employees received more value in their compensation while shareholders realized less value. That is inconsistent with total alignment between employees and shareholders.

We now finish our discussion with a quick review of the strengths and weaknesses of SBC. SBC is like any other form of capital allocation where a company's goal should be committing resources intelligently and effectively to create long-term value per share.

Strengths and Weaknesses of SBC: Is SBC Achieving Its Goals?

There does not appear to be a single account for the rise in SBC over the last few decades, but several factors appear to be at play. One is the mix of public companies. The sectors with the highest aggregate SBC as a percent of sales, information technology and communication services, have gone from 19 to 33 percent of the market capitalization of the S&P 500 from 2006 to 2022 (see exhibit 7).

Exhibit 7: SBC to Sales Ratio and Information Technology (IT) and Communication Services as a Share of S&P 500 Market Capitalization, 2006-2022



Source: S&P Dow Jones Indices, FactSet, and Counterpoint Global.

Note: Data for calendar years.

Another factor is the “institutional imperative,” which in part says that companies will “mindlessly” imitate one another in areas such as compensation.³¹ We had a conversation with the former CEO of a public company and the topic of the widespread use of SBC came up. He said, “Here’s the truth, we did it because everyone else did it.”

Companies may feel the need to use SBC for competitive reasons because there is a market for labor.³² But that there is variance in the use of SBC indicates that it is one among several factors that current and prospective employees consider.

SBC is also a means to raise equity capital. Roughly one-third of companies in the Russell 3000 reported negative net income in 2022, and many companies use more cash than they generate from their operations. Issuing SBC compensates employees and finances the business, killing two birds with one stone.

Exhibit 8 shows SBC as a percent of cash flow from operating activities for constituents of the Russell 3000 in 2022. On an aggregate basis by sector, that figure is 18.8 percent for information technology, 18.4 percent for consumer discretionary (11.8 percent excluding Amazon, a company that is in e-commerce, cloud computing, and other technologies), and 17.2 percent for communication services.

Exhibit 8: SBC as a Percent of Cash Flow from Operating Activities, Russell 3000 Sectors, 2022

Sector	Aggregate	Median
Information Technology	18.8%	22.3%
Consumer Discretionary	18.4%	6.2%
Communication Services	17.2%	10.7%
Industrials	8.2%	6.1%
Health Care	8.2%	5.3%
Consumer Staples	5.9%	5.6%
Materials	5.0%	4.4%
Energy	2.3%	2.8%
Utilities	2.1%	2.1%

Source: FactSet and Counterpoint Global.

Note: Data for calendar year 2022; Minimum sales of \$100 million; Excludes financial and real estate sectors.

The compensation committees of boards of directors want to make sure they hire and retain top talent. As a result, they typically target pay for the CEO of their company at a level above the median of well-paid CEOs of peer companies.³³ This means that the targets for executive pay tend to ratchet up over time. Ironically, transparency in CEO pay contributes to this effect.³⁴ Higher pay for CEOs means more use of SBC because most executives are paid largely with equity.

Finally, companies use SBC to motivate employees and reduce agency costs. Overall, the research suggests that equity ownership by employees is good.³⁵ But the effect is not always strong and creating and implementing effective policies for SBC is not easy. We now examine the evidence on how effectively SBC influences the behavior of employees.

SBC and agency costs. SBC can reduce agency costs by creating proper incentives, encouraging the sorting of employees, providing a mechanism to retain talent, and creating an ownership mentality among employees. Academics have studied each of these areas.

An incentive is something that incites action. The premise of stock-based incentive compensation is that a financial stake in a company will motivate employees to work hard in order to contribute to the company's success. The word "incentive" comes from Latin and means "something that sets the tune." In concept, incentives encourage all employees to sing from the same hymn sheet.

The challenge is that the effort of an individual employee, especially one who is not an executive, is insufficiently linked to the performance of the stock. They are paid in a currency that they cannot control and that is subject to external forces such as interest rates, risk appetites, regulatory changes, and the results of the overall market. An incentive should ideally be tied to an outcome that an individual can control.

The research suggests that SBC overall, and stock options in particular, can provide an incentive for executives but the effect is much more muted for non-executives.³⁶ Only about 20 percent of total SBC goes to executives. But restricted stock units (RSUs) do a relatively poor job of incentivizing executives to make risky investments that create value.³⁷ Further, the impact of the incentives for executives varies based on CEO characteristics, including age and tenure.³⁸ Cash bonuses based on strategic goals can provide more of an incentive than SBC.³⁹

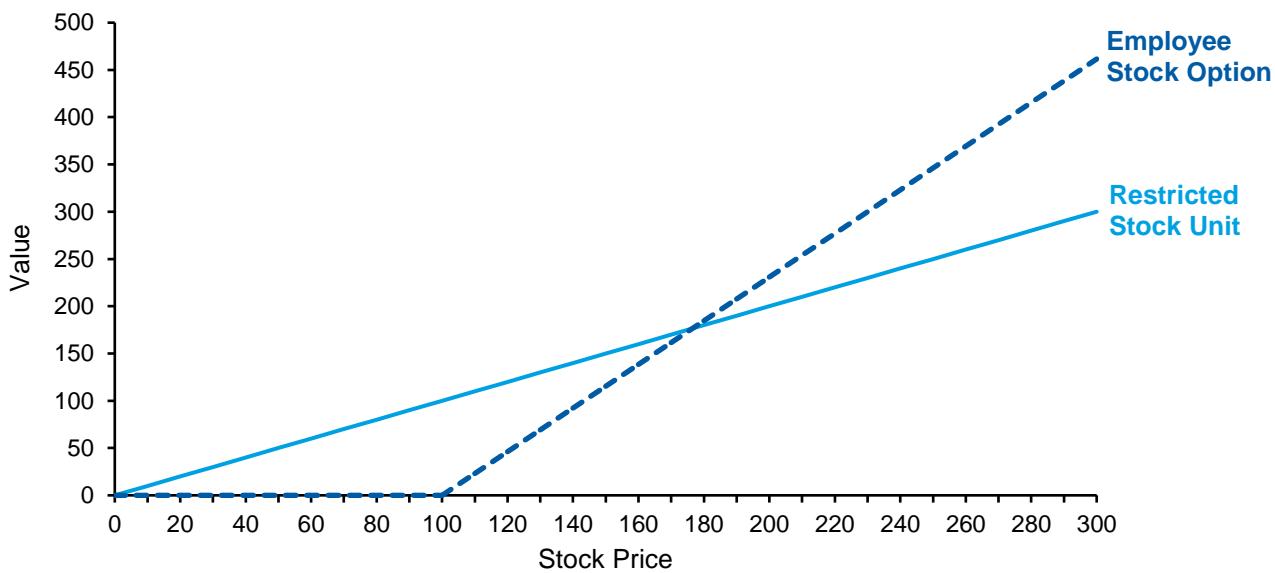
Sorting is one way to deal with the heterogeneity of the risk appetites among employees. The idea is that employees who are averse to risk will gravitate toward more stable companies, and those who seek risk and are

optimistic will work for younger, riskier companies with managers who are considered credible.⁴⁰ Whether an employee prefers compensation in the form of cash, stock units, or options will vary based on his or her risk profile.⁴¹

This is relevant because of the shift in the mix of pay. Cash compensation has been going down, especially for executives, for decades.⁴² But what is more relevant is the broad shift from employee stock options (ESOs), which were the dominant form of stock-based compensation in the 1990s, to stock units. Researchers examined a sample of 1,000 U.S. public companies and found that, scaled by shares outstanding, ESO grants dropped 80 percent and stock unit grants rose 7-fold from 2000 to 2012.⁴³

A comparison of payoffs shows why employees who seek risk and feel good about management and business prospects prefer ESOs to RSUs (see exhibit 9). We assume a \$100 strike price for the option and grant value for the RSU. Each RSU is typically worth 2-4 ESOs at grant date. We assume a ratio of 2.3. If the stock drops below \$100, the intrinsic value of the option is zero but the value of the RSU equals the stock price. If the stock price triples, the intrinsic value of the ESO is 1.5 times that of the RSU. ESOs have more downside and upside than RSUs do.

Exhibit 9: Payoffs from Employee Stock Options and Restricted Stock Units



Source: Counterpoint Global.

Note: Assumes the value of 1 RSU = 2.3 ESOs at grant date.

Note that before an initial public offering (IPO), companies tend to rely much more on ESOs than RSUs. But once public, they often shift the mix from options to stock units. Experiments suggest that ESOs and RSUs elicit similar levels of effort from the recipients.⁴⁴

One study asked survey participants who had received SBC to select their preference between ESOs and RSUs in various ratios. For example, they would offer 2,000 ESOs or 1,000 RSUs and see what percentage chose the ESOs. The researchers showed the participants ratios from 2-to-1 to 5-to-1.

Overall, the preference between ESOs and RSUs was split roughly evenly and was remarkably similar for all the ratios. This result indicates that the ratio of ESOs to RSUs does not influence the preference of employees, likely because they struggle to value the options properly.⁴⁵

Companies generally offer employees pay that is a combination of cash and SBC. Employees can negotiate but the company generally maintains boundaries for the amounts of each form of pay.

However, there are some companies that allow their employees to select their mix of compensation. Netflix, a subscription video service, is a good example. The company seeks to hire “high-performance employees,” those capable of completing the work of as many as two or three normal workers, and lets them choose how they would like to be paid.⁴⁶ When given the option, 59-75 percent of the eligible Netflix employees selected to receive all cash. Seven to eight percent of average pay was in options for those who chose to take some percentage in equity.

Shopify, an e-commerce company, adopted a similar program in late 2022 called Flex Comp. Employees can determine their mix of cash and SBC, and vesting for the equity begins immediately upon grant.⁴⁷ The company has yet to share results on the mix its employees chose.

Companies also use SBC to increase employee retention. The idea is that since SBC vests over time, typically three years, employees will stay with the company rather than leave early and forfeit part of their compensation. Further, if the overall market is doing well, suggesting that employees have rich opportunities to leave the firm, SBC can make it attractive to stay if the employer is participating in the upside.

Retaining employees may add value because the cost of hiring and training a new employee can be as much as 1.5 to 2.0 times the annual salary that is requisite for the position. Several factors drive retention, including the magnitude and form of compensation, recognition, growth opportunities, work-life balance, and work environment.⁴⁸ These are all elements of a company’s culture.

“Culture quant” work by the sustainability research team at Counterpoint Global showed that retention is positively correlated with total shareholder returns.⁴⁹ There is support for the proposition that a grant of SBC for a broad base of employees increases retention. However, the boost to retention appears to fade after the SBC vests.⁵⁰

Discerning the direction of causality makes it difficult to understand the relationship between retention and corporate performance. The issue is whether performance is good because employees stick around, or whether employees stick around because performance is good.

There is also a case that widespread use of SBC can reduce agency costs by creating an ownership mindset among a broad base of employees.⁵¹ This view is widely believed and shared but is hard to demonstrate empirically.

The first question is whether SBC is a pay delivery mechanism or a form of compensation that aligns employees and shareholders. One indicator that a company uses SBC in lieu of cash compensation is that it issues more SBC after its stock goes down. In other words, there is a compensation target. If the employee earns more than the target no adjustment is necessary, but if the employee makes less than the target there is an effort to close the gap by issuing additional equity or, in some cases, raising cash compensation.⁵²

Another clue about whether there is an ownership mindset is whether employees, and especially executives, hold or sell the stock after their SBC grants have vested. This is important because executives acquire roughly four times as much stock through vested restricted stock than they do through open purchases in the market.⁵³

Academics who studied more than 38,000 vesting events found that executives executed one or more open-market sales in only 43 percent of the cases in the 180 days following the date of vest.⁵⁴ This finding suggests that executives in fact do hold a sizeable amount of stock they are granted.

Yet there is also evidence that executives behave in a way that is not optimal. One way to test this is to look at when they exercise ESOs. For example, an executive who exercises an option with a 10-year life when it vests after 4 years gives up substantial value. The executive will earn the intrinsic value, the difference between the stock price and the strike price, but forgo the time value, which reflects the likelihood that the stock will go up further.⁵⁵

The two principal reasons that employees sell after the options vest is to diversify their assets and to have cash to consume. There is analysis that supports both motivations. But in either case, employees reduce their ownership in the company.

How employees value SBC. We have discussed the fact that if a company has a stock price that is different than fair value, it is hard to make the case that issuing equity in the form of SBC and buying back stock are both good moves. The counterargument is the case when the benefit of having motivated employees who drive terrific corporate performance is greater than the cost of issuing undervalued stock. This is a tough case to make.⁵⁶

One consideration is how employees value the SBC they receive. The immediate hurdle is that the shareholders, the principals, are likely to be risk neutral while employees, the agents, are generally risk averse.⁵⁷ That means that employees may place a lower value on that equity because it reduces their diversification, is not liquid, and is difficult to value in the case of options.

From the point of view of the company, the opportunity cost of issuing SBC is the value it would receive if it sold that equity to an investor.⁵⁸ A potential inefficiency exists if employees value SBC differently than would an outside investor.

The research generally concludes that employees are not great at valuing the equity in their compensation.⁵⁹ But consistent with sorting theory, how employees value stock options and restricted stock is a combination of behavioral, economic, and demographic factors.⁶⁰

Behavioral refers to the tendency to extrapolate recent results. Economic reflects issues such as diversification and liquidity. And demographic emphasizes that employees may have varied risk appetites based on their age and wealth. Training current and prospective employees how to value equity does appear to increase perceived value.⁶¹

How SBC levels are set. There is a market for labor that explains a lot about the amount of SBC that companies grant. Executive compensation is set by the board of directors, who often consider the input of compensation consultants. Firms that hire compensation consultants tend to pay their CEOs more than the companies that do not hire consultants.⁶²

SBC has risen because of the ratchet effect. The idea is that if all companies seek to target executive compensation above the median of the peer group, the median will ratchet up over time. This process is hard to reverse once it gets going. SBC has grown faster than total pay because of the shift in mix from salaries to equity compensation.

Researchers have identified another contributor to the growth in executive compensation that is hard to explain on the surface: boards tend to grant the same number of options in each year. So as market values drift up over time, the value of the options follow along.⁶³

As a side note, the amounts for base salaries and annual bonuses are very similar for CEOs in the Americas, Europe, and Australia. But overall CEO pay in the Americas is more than 2.5 times greater than that in Europe and Australia, with pay in the form of long-term incentives making up the difference. CEOs in Asia make a small fraction of the sum that their counterparts earn in the rest of the world.⁶⁴

Companies appear to have a target level of compensation for non-executives that is in large part dictated by a competitive labor market.⁶⁵ Target compensation is a combination of cash and stock, and the mix has shifted away from cash to stock in recent decades.

Shareholders and employees tend to be happy when stocks go up. Companies also benefit, especially if SBC works as a retention tool. But companies have more difficulty hiring and keeping employees when the higher asset prices benefit competitors as well.

One of the ostensible benefits of SBC is creating an ownership mindset. But the circumstances appear to be asymmetric. Employees can earn more than their target pay when the stock does well. Shareholders are unlikely to complain because they have also profited. But when the stock goes down, either because of issues unique to the company or overall market conditions, pay for employees falls short of the target.

The test of whether SBC is more about an ownership mentality or fulfilling expectations for target pay is how companies react to a lower stock price. Specifically, issuing additional equity to fill the gap between the target and actual compensation suggests that SBC is a method to deliver pay.⁶⁶ Increases in cash compensation also indicate that companies want to hit target levels.⁶⁷ Shareholders not only have to live with a lower share price but also deal with the prospects of additional dilution. Hence the asymmetry.

Employees are intrinsically motivated when their job is meaningful to them and extrinsically motivated when they work to earn rewards. There is a large body of research on intrinsic motivation that establishes some relevant points. First, the link between pay and job satisfaction is weak. Employees will be dissatisfied if they feel they are underpaid, but more pay does not translate into more satisfaction once remuneration is deemed to be fair. Second, intrinsic motivation better predicts performance on the job than extrinsic motivation does.⁶⁸ Intrinsic motivation is fostered through a sense of autonomy, mastery, and purpose.⁶⁹

Overall, it appears that companies set target levels of compensation and use SBC as a vehicle to deliver that pay. The board, often after conferring with a consultant, determines target levels of compensation for executives and the market for talent reveals targets for non-executives. Further, an employee's productivity and satisfaction appear to be more linked to a company's ability to foster intrinsic motivation than with compensation levels.

Buybacks and SBC. As we noted before, a core tenet of capital allocation is "buy low, sell high." Executives who choose to issue and retire equity simultaneously run the risk of violating that tenet if they consider the stock of their company to be mispriced.⁷⁰

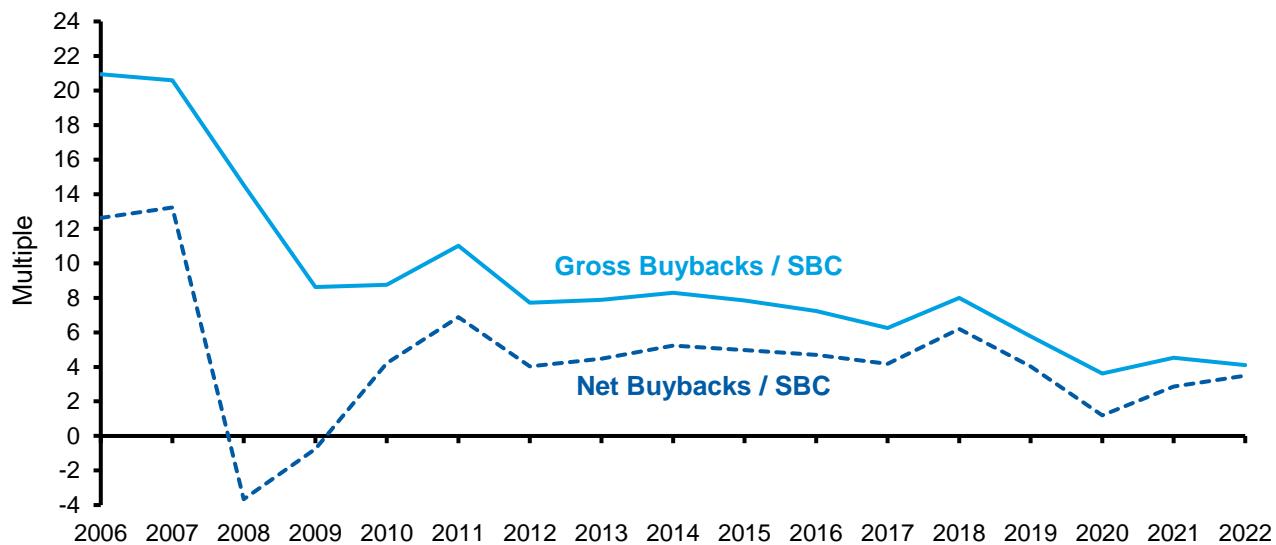
We believe that companies should consider the merits of issuing SBC and buying back stock separately. In practice, many companies appear to combine them. For example, a survey of financial executives found that 68 percent indicated that offsetting dilution from SBC was "important" or "very important" in their decision to buy

back stock.⁷¹ Analysis shows that companies buy back stock to manage their shares outstanding.⁷² SBC affects payout policy.

One academic study compared SBC (as a percent of sales) to buybacks (as percentage of cash flow from operations). They broke the sample of companies into quintiles based on SBC to sales and found that those companies with the lowest ratios allocated the lowest percentage to buybacks, and those with highest SBC ratios spent the most on buybacks.⁷³ In other words, buyback intensity rose consistently from the lowest to the highest quintile of SBC issuance. This is clear evidence that many companies consider SBC and buybacks together.

That point noted, buybacks are still a much larger sum than SBC. Exhibit 10 shows the ratio of buybacks to SBC for companies in the Russell 3000. We show gross buybacks, or total amount purchased, and net buybacks, which considers equity issuance, including the sale of stock, proceeds from the exercise of options, and the conversion of convertible debt securities. In 2022, gross buybacks were 4.1 times, and net buybacks 3.5 times, the amount of SBC.

Exhibit 10: Gross and Net Buybacks as a Multiple of Stock-Based Compensation, 2006-2022



Source: FactSet and Counterpoint Global.

Note: Data for calendar years.

As we saw earlier, the populations of companies that issue a meaningful amount of SBC and that buy back a lot of stock tend to be distinct. But there is also strong evidence that companies that grant a relatively large amount of SBC as a percent of sales use buybacks to manage the effect of dilution. This raises the analytical concern of whether those companies are allocating capital in a disciplined and intelligent fashion.

SBC, valuation, and total shareholder returns. At the end of the day, investors care about what the use of SBC means for valuation and total shareholder returns. The question is whether the use of SBC creates distortions that the market fails to fully recognize.

One study of research reports by sell-side analysts found that the majority add back SBC expense in their FCFE inputs for a discounted cash flow (DCF) model.⁷⁴ The researchers found that the analysts who excluded SBC in their DCF models had higher and more optimistic price targets and greater bias than the analysts who treated SBC as an expense.

This study also found that companies with the highest SBC intensity were accorded higher valuation multiples, including price-to-earnings (P/E) and price-to-sales (P/S), than those with low SBC intensity. This observation is not meaningful by itself because the companies with high SBC intensity also grow faster, on average, than the overall population of companies. However, the researchers found that companies that issue substantial SBC as a percent of sales have higher market valuations even after controlling for the differences in growth.

The question is whether the higher valuations are justified or if they represent overvaluation. The scholars tested this by examining the risk-adjusted total returns for the top issuers of SBC as compared to the bottom issuers. They found that the top issuers had lower returns than the bottom ones did. The top to bottom return differences are larger using portfolios with equal weights than value weights, indicating the effect is stronger among small companies than large ones.

To be clear, these aggregates provide limited insight into the circumstances and prospects for the stock of any individual company. But they do provide a signal of caution. The message is that it is important to understand the magnitude of SBC, how to treat it analytically, and how it shapes the capital allocation decisions of management.

Conclusion

A successful company generates revenue that is sufficient to cover expenses and costs and allows it to earn an attractive return on investment. Companies settle most of their expenses in cash. But public companies in the U.S. have increasingly switched from paying their employees in cash to paying them with stock. Stock-based compensation (SBC) in 2022 was nearly 5 times what it was in 2006, measured as a percentage of sales, although total SBC remains less than 10 percent of total employee pay.

There are sensible motivations for this shift. SBC helps finance the firm by substituting equity for cash, can provide an incentive for employees to deliver results, is a tool for retaining workers, and can be a means to foster an overall sense of ownership. Companies can use SBC appropriately or inappropriately, as is true of all capital allocation decisions.

SBC tends to be more significant for young companies than old ones. This makes sense because these companies commonly need financing and are risky. SBC provides employees upside potential and downside risk.

Companies can use share buybacks to offset the dilution from SBC. Buybacks are generally modest for small companies and more meaningful for large ones. This is because large companies are generally profitable and generate excess cash.

As a result of these patterns of equity issuance and retirement, ongoing shareholders realize more dilution with young companies than with old ones. Indeed, the median shares outstanding for companies in the top three deciles of size declined over the past three years.

There are two main ways to handle the shift from cash compensation to SBC in valuation. We consider both through a discounted cash flow (DCF) model, which projects and discounts free cash flow (FCF). FCF equals net operating profit after taxes minus investment in future growth. A DCF model should inform valuation approaches based on multiples.

The first method is to treat SBC as an expense like any other. Deriving the profit component of FCF from the income statement makes sense because SBC is already expensed there. Corporate value is then divided by fully diluted shares outstanding to derive shareholder value.

The second method treats SBC not as an expense but rather as dilution, or an added claim on equity through compensation. Corporate value is higher in the second method than the first because FCF is higher when SBC is not treated as an expense. That additional value is offset, however, by the claim on equity that employees get as part of their pay.

The appendix shows that these methods get to the same answer. We also provide base rate data that can offer guidelines on how to estimate dilution.

Modeling dilution can be tricky because some companies cover up the dilutive effects of SBC by buying back stock. We argue that the merits of issuing equity through SBC and retiring equity should be considered separately. The data show that companies often combine them, which indicates that SBC influences corporate payout policy.

The rise in SBC is likely the result of market conditions as well as a belief in the benefits. Compensation committees on corporate boards commonly benchmark executive pay based on corporate peers and almost always seek to pay above the median. SBC for non-executives is also heavily influenced by the market for labor. It is hard for one company to shun SBC if competitors are using it liberally. Still, there is wide dispersion in how much SBC companies use, even within the same industry.

The benefits of SBC are generally accepted but the academic research on their veracity is equivocal. Returns for stocks make assessing the effectiveness of SBC difficult. When stocks go up, employees and ongoing shareholders are happy. No one is pleased when stocks go down. The main issue is whether the company accelerates its SBC grants. That indicates that SBC is more a means to pay employees than to align them with shareholders.

Most sell-side research analysts add back SBC expense, leading to a higher absolute earnings figure. Further, companies with the highest ratios of SBC to sales tend to have higher valuation multiples than do the companies with the lowest ratios. The higher valuation is not meaningful in isolation because the SBC intensive companies also grow faster on average. But tests show that the heavy SBC users have lower total shareholder returns, on average, than the light SBC users. This result is heavily skewed by smaller companies and is less dramatic when the stocks in the constructed portfolios are weighted by market capitalization.

Please see Important Disclosures on pages 27-29

Appendix A: Details on Exhibits 2, 4, and 5

Exhibits 2, 4, and 5 present median results, which can hide a lot of variance and skew. The tables below provide more context for the figures, including means and outcomes for companies in the 25th and 75th percentiles.

Exhibit 11: Additional Detail for Exhibit 2, SBC as a Percentage of Sales by Decile for the Russell 3000, 2022

Decile	Mean	Median	25th Percentile	75th Percentile	Decile Sales Range (\$M)	
1	11.0%	4.4%	1.2%	15.8%	101	240
2	6.6%	3.0%	1.3%	7.9%	240	401
3	8.2%	3.0%	1.3%	8.0%	401	625
4	4.2%	1.7%	0.9%	4.3%	625	933
5	3.5%	1.3%	0.7%	2.8%	933	1,391
6	3.5%	1.1%	0.6%	2.7%	1,391	2,112
7	2.5%	0.8%	0.5%	1.5%	2,112	3,317
8	1.7%	0.7%	0.5%	1.5%	3,317	5,488
9	1.4%	0.6%	0.4%	1.3%	5,488	12,698
10	1.2%	0.5%	0.2%	1.1%	12,698	513,983

Source: FactSet and Counterpoint Global.

Note: Data for calendar year 2022; Minimum sales of \$100 million.

Exhibit 12: Additional Detail for Exhibit 4, Net Buybacks as a Percentage of Market Capitalization by Decile, Russell 3000, 2022

Decile	Mean	Median	25th Percentile	75th Percentile	Decile Market Cap Range (\$M)	
1	-5.9%	-0.1%	-1.6%	0.8%	101	345
2	-3.1%	0.0%	-0.7%	1.6%	345	565
3	-0.5%	0.0%	-0.4%	2.3%	565	897
4	0.2%	0.0%	-0.3%	3.0%	897	1,392
5	0.7%	0.1%	-0.2%	2.9%	1,392	2,175
6	1.5%	0.4%	-0.2%	4.1%	2,175	3,294
7	1.9%	0.4%	-0.1%	3.6%	3,294	5,264
8	3.1%	1.3%	0.0%	5.0%	5,264	10,024
9	2.1%	0.7%	-0.1%	3.4%	10,024	27,022
10	2.3%	1.8%	0.2%	3.4%	27,022	2,066,942

Source: FactSet and Counterpoint Global.

Note: Market cap as of 12/31/22 and net buybacks for calendar year 2022; Minimum market cap of \$100 million.

Exhibit 13: Additional Detail for Exhibit 5, Three-Year Dilution of Shareholders by Decile for the Russell 3000, 2020-22

Decile	25th Percentile				75th Percentile		Decile Sales Range (\$M)
	Mean	Median	Percentile	Percentile	Percentile	Percentile	
1	14.7%	7.5%	0.5%	26.8%	102	257	
2	12.3%	6.6%	0.1%	19.3%	257	439	
3	9.5%	4.8%	0.0%	16.0%	439	704	
4	8.3%	3.1%	-1.8%	16.5%	704	1,054	
5	5.8%	1.7%	-2.6%	14.3%	1,054	1,605	
6	0.8%	1.4%	-2.3%	11.5%	1,605	2,457	
7	1.1%	0.8%	-4.4%	7.8%	2,457	3,909	
8	4.1%	-0.1%	-4.8%	6.5%	3,909	7,102	
9	-0.5%	-1.1%	-8.1%	3.6%	7,102	16,198	
10	-1.0%	-2.6%	-8.7%	2.1%	16,198	607,563	

Source: FactSet and Counterpoint Global.

Note: Data for calendar year 2022; Minimum sales of \$100 million.

Appendix B: Calculating Equity Value Three (Equivalent) Ways

We show that the free cash flow to firm (FCFF) and free cash flow to equity (FCFE) models yield the same value of equity. We further demonstrate that the FCFE model produces the same equity value whether SBC is treated as an expense or as an employee claim on equity. We use a perpetuity approach for ease of exposition, but you can expand the logic to include multiple years.

Getting the three methods to match is more difficult than this basic example suggests. But it shows the math and reasoning of why these must sum to the same equity value. Some of this analysis follows the presentation on the topic by Aswath Damodaran, a professor of finance at New York University's Stern School of Business.⁷⁵

We start by assuming a firm has sales of \$450, an operating profit margin of 25 percent, and a tax rate of 20 percent. Its investment is \$20. The firm has \$750 in equity and \$250 in debt for a total value of \$1,000. The cost of equity is 8 percent, the pretax cost of debt is 5 percent, and the company has 25 shares outstanding before considering SBC.

The weighted average cost of capital (WACC) is 7 percent, determined as follows:⁷⁶

$$\text{WACC} = .08 \frac{750}{1,000} + .05(1 - .20) \frac{250}{1,000} = 7\%$$

We start by showing the equivalence of the FCFF and FCFE approaches. The FCFF approach uses the cash flow available to all the claimholders to value the whole company. That is net operating profit after taxes minus investment in future growth.⁷⁷

$$\text{Cash for claimholders} = \text{EBIT} (1 - \text{tax rate}) - \text{investment} = 112.5(0.80) - 20 = 70$$

We capitalize this sum by the weighted average cost of capital to calculate firm value:

$$\text{Value of the firm} = \frac{70}{.07} = \$1,000$$

The value of the equity is therefore \$750, or the value of the firm of \$1,000 minus debt of \$250 (\$750 = \$1000 - \$250). The value per share is \$30 (\$30 = \$750/25).

The FCFE uses the cash flows attributable to equity holders to go straight to the value of the equity. The main difference between FCFF and FCFE is interest expense, which is paid to creditors. We determine interest expense by multiplying the amount of debt by the pretax cost of debt. This comes to \$12.5 (\$12.5 = \$250 × .05).

$$\begin{aligned} \text{Cash for equity holders} &= (\text{EBIT} - \text{interest expense}) (1 - \text{tax rate}) - \text{investment} \\ &= (112.5 - 12.5)(0.80) - 20 \\ &= 80 - 20 = \$60 \end{aligned}$$

We capitalize the cash for equity holders by the cost of equity to determine equity value:

$$\text{Value of the equity} = \frac{60}{.08} = \$750, \text{ or } \$30 \text{ per share.}$$

This case assumes that SBC is an expense. But we can extend the analysis to show that equity value for ongoing holders is the same if we deal with it as a claim on equity. The latter is consistent with investors who seek to model the impact of SBC through dilution.

Because we no longer treat SBC as an expense, we know that this approach will increase cash flows as well as introduce a claim on equity. As a result, the value of the equity goes up overall, but the higher equity value is now split between ongoing shareholders and employees.

To continue with our example, we assume that SBC is two percent of sales. If we do not treat it as an expense, the operating profit margin goes from 25 to 27 percent. From there, the calculations are similar:

$$\begin{aligned}\text{Cash for equity holders} &= (\text{EBIT} - \text{interest expense}) (1 - \text{tax rate}) - \text{investment} \\ &= (121.5 - 12.5)(0.80) - 20 = \\ &= 87.2 - 20 = \$67.2\end{aligned}$$

This leads to a higher equity value before consideration of the employee claim:

$$\text{Value of the equity (shareholders + employees)} = \frac{67.2}{.08} = \$840$$

But that equity value is now shared. To determine the employee slice, we need to calculate the difference between the cash flow for equity holders with and without the expense.

$$\begin{aligned}\text{Increase in cash flow for equity} &= (\text{SBC expense}) (1 - \text{tax rate}) \\ &= (450 \times .02) (0.80) \\ &= \$7.2\end{aligned}$$

$$\text{That means the value of the claim that employees have on equity} = \frac{7.2}{.08} = \$90$$

Since the value of the equity for shareholders and employees combined is \$840, and the value of the claim for employees is \$90, we can see that the value for shareholders is \$750. We can also see that the company issued 3 shares, bringing the total shares outstanding to 28. This means ongoing shareholders realized dilution of 10.7 percent = $1 - (25/28)$. Value per share remains \$30 ($\$30 = \$840/28$).

This demonstration of equivalence has a couple practical implications. The first is that there is no free lunch. When calculated correctly, equity value is the same if cash flows and claims are considered properly. Second, recognize that when companies add back SBC in their non-GAAP results, including earnings, EBITDA, and free cash flow, there must be an explicit recognition of an employee claim on equity. Reflecting the dilution for ongoing shareholders is the main way to do this. Finally, investors should use multiples with care. This analysis shows that different approaches to treating SBC yield the same value, but they do produce different multiples.

The equivalence we showed makes some simple and unrealistic assumptions, such as an absence of nonoperating items and that interest expense being equal to the pretax cost of debt times debt outstanding. Yet it demonstrates that it is less about how you treat SBC and more about making sure that it is part of the calculation of value.

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