

Sometimes Doing Nothing Really Is Better

A Closer Look at Stock Options, Share Repurchases, and Earnings per Share

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Stock option grants continue to be an important aspect of compensation for U.S. public companies. Out of the approximately 8,500 large public companies in Standard & Poor's Compustat Database, slightly more than 54% granted new stock options in 2013. From 2004 to 2013, companies received cash proceeds from exercised stock options that averaged nearly \$32 million per year, and 18 received cash proceeds in excess of \$1 billion in 2013. These cash proceeds averaged more than 40% of company cash balances over the past decade. Given the significant magnitude of the dollar amounts and the large number that continue to grant new stock options, companies face an important decision—how to best use cash proceeds from exercised stock options now and in the future.

Conventional wisdom says that companies should use share repurchases to offset the dilutive effects of exercised stock options on earnings per share (EPS). In public announcements of share repurchase programs, managers often cite concerns with EPS dilution as the reason

they're executing share repurchases. But share repurchases may not have their intended EPS effects in certain situations. Companies may actually report lower EPS when they expend resources to repurchase shares (see "Detrimental to EPS" on p. 45).

Instead, companies may actually report *higher* EPS if they reinvest cash proceeds from exercised stock options into internal investment opportunities. In other words, they may realize higher EPS if they do nothing other than what they're already doing—focusing on their operating and investing activities. Companies in these situations satisfy both short-term investors through higher EPS and long-term investors through capital spending.

To help management accountants in public companies determine the option that would be more beneficial to their company, we propose a practical way to compare EPS effects between expending stock-option-related proceeds for share repurchases or reinvestment. Figure 1 illustrates the choice.

Preventing EPS Dilution Through Share Repurchases

The common approach to reducing EPS dilution from exercised stock options is to repurchase shares. To avoid dipping into its existing cash, a company will often use the proceeds from exercised stock options to repurchase shares. But a company's ability to at least partially stave off the dilutive effects of the new issuance depends on the number of options exercised and the spread between the strike price and market price at the time the company issued the shares. Let's consider a simplified example for a fictional company using the data in Table 1.

Example 1 Calculations

The example company has an EPS equal to \$1 (\$10,000/10,000 shares). When employees exercise stock options, the company receives cash proceeds of \$15,000 and issues 1,000 additional shares. At this point, the company's EPS is \$0.91 (\$10,000/11,000 shares).

The company then uses the cash proceeds from the exercised stock options to repurchase shares at the market price. The company repurchases 750 shares (\$15,000 cash proceeds/\$20 market price), so the company's EPS is now \$0.98 (\$10,000/10,250 shares).

Figure 1: Choice Between Expending Stock-option-related Proceeds for Share Repurchases or for Reinvestment

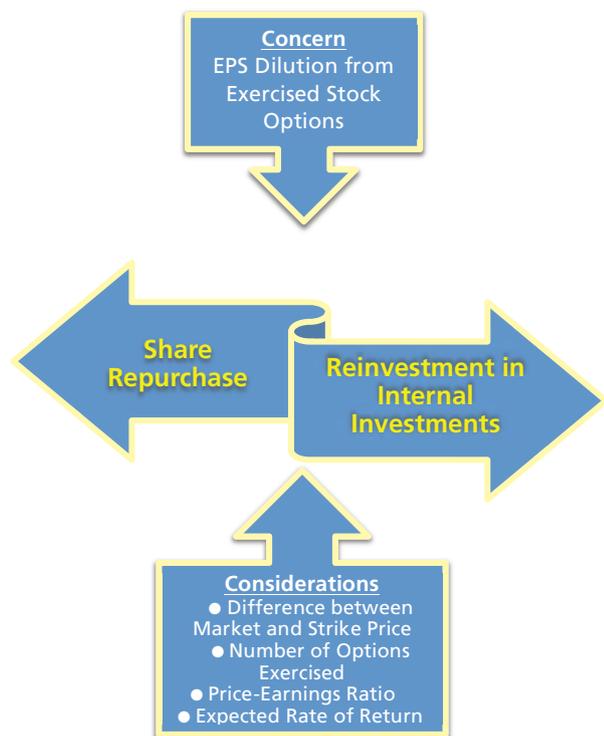


Table 1: Example Company Facts

Net Income	\$10,000
Common Shares Outstanding	10,000
Number of Options	1,000
Market Price	\$20
Option Strike Price	\$15
Expected Rate of Return on Cash	6%

Example 1 Implications

The share repurchase doesn't completely offset the EPS dilution from the exercised stock options. But it does reduce the dilutive effects by 78% (decrease in EPS of \$0.02 rather than \$0.09). In total, EPS decreases 2% (an EPS of \$0.98 vs. \$1) when the company repurchases shares to offset dilutive effects from exercised stock options.

The equation in Figure 2 illustrates how repurchasing shares using cash proceeds from exercised stock options affects EPS. You can see that exercised stock options decrease EPS as the number of exercised stock options increases or the difference between the option strike price and the market price increases.

Preventing EPS Dilution Through Proceed Reinvestment

No pun intended, but there's another option. Rather than using the proceeds from the exercised stock options to repurchase shares, companies could reinvest the proceeds into internal investments. At first glance, companies might conclude that they will then feel the full effect of the EPS dilution. This isn't the case. There's an opportunity cost in the numerator of the EPS equation. If a company reinvests the proceeds from the exercised stock options, it will increase net income because the reinvested proceeds earn a rate of return. While proceed reinvestment doesn't affect the denominator, a company will enjoy a numerator effect that offsets EPS dilution. Using the same example company, let's see how that could work.

Example 2 Calculations

As in the first example, the company's EPS is equal to \$1 (\$10,000/10,000 shares) prior to the stock options being exercised. When the employees exercise the stock options, the company receives cash proceeds of \$15,000 and issues 1,000 additional shares. At this point, the company's EPS is equal to \$0.91 per share (\$10,000/11,000 shares).

This time, however, the company uses cash proceeds of

Figure 2: Example 1 Equation

$$EPS_{Repurchase} = \frac{NI}{CSHO + \#Options \times (1 - \frac{SP}{MP})}$$

$EPS_{Repurchase}$ =EPS using the cash proceeds from exercised stock options to repurchase shares at their market price;
 NI =net income; $CSHO$ =common shares outstanding; $\#Options$ =number of stock options exercised;
 SP =option strike price; MP =market price.

Figure 3: Example 2 Equation

$$EPS_{Reinvest} = \frac{NI + \#Options \times SP \times E(R)}{CSHO + \#Options}$$

$EPS_{Reinvest}$ =EPS after reinvestment of cash proceeds from exercised stock options to repurchase shares at their market price; NI =net income; $CSHO$ =common shares outstanding; $\#Options$ =number of stock options exercised;
 SP =option strike price; $E(R)$ =expected rate of return after taxes.

\$15,000 from the exercised stock options to reinvest in its operations. The company earns a 6% rate of return on these proceeds, which results in \$900 of additional net income. At this point, the company's EPS is equal to \$0.99 (\$10,900/11,000 shares).

Example 2 Implications

The reinvestment of cash proceeds doesn't completely offset the EPS dilution from the exercised stock options. But it reduces the dilutive effects by 89% (decrease in EPS of \$0.01 rather than \$0.09). In total, EPS decreases 1% (\$0.99 vs. \$1) when the company reinvests proceeds to offset dilutive effects from exercised stock options.

The equation in Figure 3 illustrates how reinvestment of cash proceeds from exercised stock options affects EPS. You can see that EPS dilution isn't as obvious when the firm reinvests the cash proceeds from exercised stock options. It depends on the number of exercised options, the option strike price, and the expected return on cash. The ratio of these factors, a company's net income, and common shares outstanding prior to exercised options will determine how much exercised options will dilute EPS—or at all.

Choosing Between Two Alternatives

How does a company decide whether to use the cash pro-

ceeds from exercised share options for share repurchases or for reinvestment? With an understanding that a company must consider other factors if preventing EPS dilution is a major objective, then a company should reinvest proceeds whenever EPS through reinvestment is greater than the EPS through repurchases. To clarify this trade-off, let's return to the example company.

Example 3 Calculations

As you recall from examples 1 and 2, this company's EPS is equal to \$1 (\$10,000/10,000 shares) prior to the stock options being exercised. In addition, the company's price-earnings ratio is equal to 20 (\$20 market price/\$1 EPS), and its market capitalization is \$200,000 (10,000 common shares outstanding \times \$20 market price).

The key comparison is between the company's earnings-price (E/P) ratio (the inverse of the price-earnings ratio) and its expected internal rate of return on cash. The E/P ratio is a company's "earnings yield" and captures the market's pricing of the company's earnings. The expected rate of return on cash is the company's beliefs about its internal prospects. Both measures are forward looking—one based on market expectations and one on company expectations.

In our example, if the company uses the cash proceeds to repurchase shares at their market price, it has 250 net

Table 2: The Effect of Expectations on EPS

	MARKET PRICE					
	\$16.00	\$17.00	\$18.00	\$19.00	\$20.00	\$21.00
EPS (Repurchase)	0.994	0.988	0.984	0.979	0.976	0.972
EPS (Reinvest)	0.991	0.991	0.991	0.991	0.991	0.991

	EXPECTED RATE OF RETURN ON CASH					
	3.5%	4.0%	4.5%	5.0%	5.5%	6.0%
EPS (Repurchase)	0.976	0.976	0.976	0.976	0.976	0.976
EPS (Reinvest)	0.957	0.964	0.971	0.977	0.984	0.991

Figure 4: Example 3 Equation

$$EPS_{Reinvest} > EPS_{Repurchase}$$

$$\frac{NI + \#Options \times SP \times E(R)}{CSHO + \#Options} > \frac{NI}{CSHO + \#Options \times (1 - \frac{SP}{MP})}$$

$$E(R) > \frac{NI}{MP \times CSHO + \#Options \times (MP - SP)}$$

E(R)=expected rate of return after taxes are considered; *NI*=net income; *CSHO*=common shares outstanding; *#Options*=number of stock options exercised; *SP*=option strike price.

shares issued (1,000 shares issued – 750 shares repurchased). These 250 additional shares issued would increase market capitalization by \$5,000 (250 shares × \$20 market price) for a new market capitalization of \$205,000. The earnings-price ratio after the share repurchase is equal to 0.049 (\$10,000 net income/\$205,000 market capitalization), which equates to 4.9%. This could be considered the market's expected rate of return on the company's stock.

Thus the company's final EPS benefits more from reinvestment (\$0.99 per share) than a repurchase (\$0.98 per share) because the company's expected internal rate of return on cash (6%) was more than its E/P ratio (4.9%).

Example 3 Implications

While it may not be apparent, market expectations (as shown in share price) and company internal expectations (expected rate of return on cash) can dramatically affect the final EPS and whether a firm should repurchase

shares or reinvest proceeds from exercised stock options to maximize EPS.

Table 2 shows how final EPS varies with both. The EPS from reinvesting doesn't vary as the company's market price changes. Assuming the expected rate of return on cash is constant, we see that if the company's market price falls, share repurchases become more beneficial to EPS than reinvestment when the share price is between \$16 and \$17 (\$16.52 per share to be exact).

The second part of Table 2 shows that EPS from repurchasing doesn't vary with the company's expected rate of return on cash. Assuming the share price is constant, if the company's expected rate of return on internal investments is less than 4.9%, then the company should repurchase shares because EPS is always higher in comparison to reinvesting. Alternatively, if the company's expected rate of return on internal investments is greater than 4.9%, then the company should reinvest because EPS is always higher in comparison to repurchasing shares.

Table 3: Example of Excel Matrix

		ESTIMATED MARKET PRICE								
		\$15.00	\$16.00	\$17.00	\$18.00	\$19.00	\$20.00	\$21.00	\$22.00	
EXPECTED RATE OF RETURN ON CASH	4.0%	EPS (Repurchase)	\$1.000	\$0.994	\$0.988	\$0.984	\$0.979	\$0.976	\$0.972	\$0.969
		EPS (Reinvest)	\$0.964	\$0.964	\$0.964	\$0.964	\$0.964	\$0.964	\$0.964	\$0.964
	4.5%	EPS (Repurchase)	\$1.000	\$0.994	\$0.988	\$0.984	\$0.979	\$0.976	\$0.972	\$0.969
		EPS (Reinvest)	\$0.970	\$0.970	\$0.970	\$0.970	\$0.970	\$0.970	\$0.970	\$0.970
	5.0%	EPS (Repurchase)	\$1.000	\$0.994	\$0.988	\$0.984	\$0.979	\$0.976	\$0.972	\$0.969
		EPS (Reinvest)	\$0.977	\$0.977	\$0.977	\$0.977	\$0.977	\$0.977	\$0.977	\$0.977
	5.5%	EPS (Repurchase)	\$1.000	\$0.994	\$0.988	\$0.984	\$0.979	\$0.976	\$0.972	\$0.969
		EPS (Reinvest)	\$0.984	\$0.984	\$0.984	\$0.984	\$0.984	\$0.984	\$0.984	\$0.984
	6.0%	EPS (Repurchase)	\$1.000	\$0.994	\$0.988	\$0.984	\$0.979	\$0.976	\$0.972	\$0.969
		EPS (Reinvest)	\$0.991	\$0.991	\$0.991	\$0.991	\$0.991	\$0.991	\$0.991	\$0.991
	6.5%	EPS (Repurchase)	\$1.000	\$0.994	\$0.988	\$0.984	\$0.979	\$0.976	\$0.972	\$0.969
		EPS (Reinvest)	\$0.998	\$0.998	\$0.998	\$0.998	\$0.998	\$0.998	\$0.998	\$0.998
	7.0%	EPS (Repurchase)	\$1.000	\$0.994	\$0.988	\$0.984	\$0.979	\$0.976	\$0.972	\$0.969
		EPS (Reinvest)	\$1.005	\$1.005	\$1.005	\$1.005	\$1.005	\$1.005	\$1.005	\$1.005

- Combination where share repurchases produce the highest EPS
- Combination where reinvestment produces the highest EPS
- Combination where share repurchases and reinvestment produce the same EPS

Since our example company’s market price is \$20, and the expected rate of return is 6%, the company should reinvest the option proceeds to offset the dilutive effects of exercised stock options.

With some algebra, we have created an equation that solves for the trade-off between expending stock-option-related proceeds for either share repurchases or for reinvestment (see Figure 4). This equation provides management accountants with a tool to directly compare whether a company should reinvest or repurchase with option proceeds. The equation, which can be embedded within an Excel spreadsheet, runs different scenarios to determine the various antidilutive effects of share repurchases or reinvestment under different considerations.

Detrimental to EPS

In fiscal year 2012, approximately 2,000 executives at public companies exercised stock options. Of these, we identified 784 companies that used proceeds from exercised stock options to repurchase shares of stock. Out of that group, 354 did so to the detriment of EPS. In many instances, even a modest return on cash (1% or 2%) would increase EPS relative to share repurchases. While other motivations, such as mergers and acquisitions activity, dividend policy, or beliefs that shares are significantly underpriced, may explain some of these seemingly misguided repurchases, they’re unlikely to explain all of them.

Table 3 presents an Excel spreadsheet based on our example. The spreadsheet allows management accountants and others to readily identify the EPS implications of either a repurchase or reinvestment decision, but, most importantly, it’s easily adaptable to different audiences and company-specific circumstances.

As you can see in the table, every combination of market price and expected rate of return on cash has an EPS breakeven point. For the example company, one such combination is at a market price of \$18 per share and a 5.5% expected rate of return on cash. The equation and Excel spreadsheet also demonstrate that, as the spread between the market price and strike price increases, companies should more often choose to reinvest proceeds. This is because the denominator effect associated with the options becomes larger, resulting in a lower required rate of return. Similarly, companies that experience large amounts of exercised stock options should also choose to reinvest because the denominator effect results in a lower required rate of return.

Additionally, if we look at the equation for Example 3 (Figure 4) and ignore the options, the right side of the equation is net income divided by market capitalization (market price × common shares outstanding). This is equal to the E/P ratio and is the inverse of the price-earnings ratio. As the E/P ratio gets smaller—or, more notably, as the price-earnings ratio gets larger—the required return on cash gets smaller and smaller, which makes it more preferable to reinvest funds into internal

Figure 5: Earnings per Share Before and After Options Are Exercised



investments rather than repurchasing shares.

Finally, inasmuch that growth companies have higher price-earnings ratios, their ultimate choice for how to expend cash from exercised stock options becomes easier because their earnings-price ratio—and, therefore, the calculated expected return—is lower relative to non-growth companies. This corresponds with conventional wisdom that a growth company is most likely to best use its cash toward internal investments regardless of whether it can expend cash toward cash dividends, repurchases, or, in this case, to offset the dilutive effects of exercised stock options.

Reinvestment Can Increase Pre-option Exercise EPS

As a company's expected rate of return increases, its return on internal investments also increases. These returns impact the numerator of EPS accordingly and, at some point, result in higher EPS (see Figure 5) than what *was reported* prior to when options were exercised. In other words, proceed reinvestment increases EPS when expected rates of return are high.

Using the facts from our continuing example, Figure 5 shows how exercising options impacts EPS. The example company's expected rate of return has no effect on EPS before it exercises options or under the repurchase choice. When the company's expected rate of return exceeds 6.7%, however, EPS under the reinvestment choice actually increases relative to EPS before options are exercised. Perhaps surprisingly, this shows that when the expected return on cash from exercised stock options

is high enough, a company can actually *increase* its EPS relative to the EPS reported prior to when the options were exercised. Stated simply, companies that *carte blanche* use share repurchases without considering the impact of their expected rate of return on internal investments are potentially missing the boat concerning the best way to address the dilutive effects of exercised stock options.

Turning Conventional Wisdom on Its Head

Conventional wisdom says that companies should use share repurchases to offset the dilutive effects of exercised stock options on EPS. We show, however, that there are certain situations where companies are better off reinvesting the cash proceeds from exercised stock options on internal investments. The equation we've provided, which can be embedded in an Excel spreadsheet, can be used by management accountants to better understand their choices about how to best use resources to offset the dilutive effects of exercised stock options. **SF**

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