

Disbursing Cash to Shareholders

Frequently Asked Questions about Buybacks and Dividends

May 6, 2014

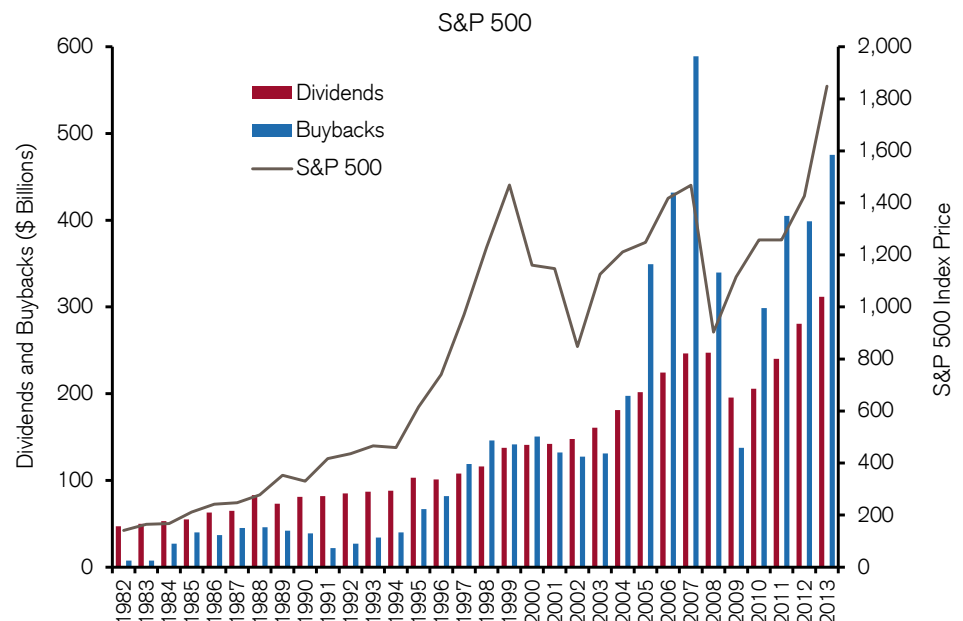
Authors

Michael J. Mauboussin

michael.mauboussin@credit-suisse.com

Dan Callahan, CFA

daniel.callahan@credit-suisse.com



Source: S&P Dow Jones Indices, Liang and Sharpe, Credit Suisse estimates.

- Corporate cash balances are building because Corporate America's return on investment is high and its reinvestment rate is modest. The issue of disbursing cash to shareholders is a crucial and timely issue in determining shareholder value.
- Share buybacks and dividends are two methods to return cash to shareholders. Executives view the two very differently and are often unsure of the best way to proceed. Superficial media coverage and wide-ranging input from investors contributes to this confusion.
- This report answers frequently asked questions. This format allows us to cover the pertinent issues as well as address a number of canards that persist with regard to these topics.
- A company should retain its earnings if it can earn a rate of return that is above the cost of capital. But if shareholders can earn a higher rate of return on capital than the company can, the company should disburse the cash.

Introduction

The value of a stock equals the present value of future cash flows. Sooner or later, an investor in a stock must be able to put cash into his or her pocket for a stock to be of value. Ultimately, a company's value boils down to the cash it can disburse during its life.

There are three ways a company can transfer cash to its shareholders.¹ First, the company can sell itself for cash. In a cash sale, the acquirer has to worry about generating sufficient cash flows to justify the price, but outgoing shareholders can take the money to the bank. Second, a company can pay a dividend. A dividend is a distribution to shareholders that generally comes from profits. Finally, a company can buy back its shares. Similar to dividends, buybacks distribute cash to shareholders. But unlike dividends, only shareholders who sell can cash in.

The topic of how best to return cash to shareholders, especially through dividends and buybacks, is always relevant but is especially so in today's environment. To see why, consider this simple but foundational equation:

Earnings Growth = Return on Equity * (1 – Payout Ratio)

This says, in plain words, that a company's growth rate is a function of how much it makes on its investments (which the return on equity, or ROE, determines) and how much it invests (which the payout ratio dictates, with a low payout ratio meaning high reinvestment).² Companies with higher ROEs can grow faster than companies with lower ROEs given the same payout ratio. Likewise, companies with lower payout ratios can grow faster than companies with higher payout ratios given the same ROE.

Let's put some numbers to work to make the point. Assume a company has an ROE of 20 percent (\$200 of earnings divided by \$1,000 of equity), pays out 50 percent of its earnings (\$100), and retains 50 percent of its earnings (\$100). The company should be able to grow earnings in the next year at the rate of 10 percent, or from \$200 to \$220 (a 20 percent return on \$1,100 of equity). This is consistent with the equation ($10\% = 20\% * [1 - .50]$).

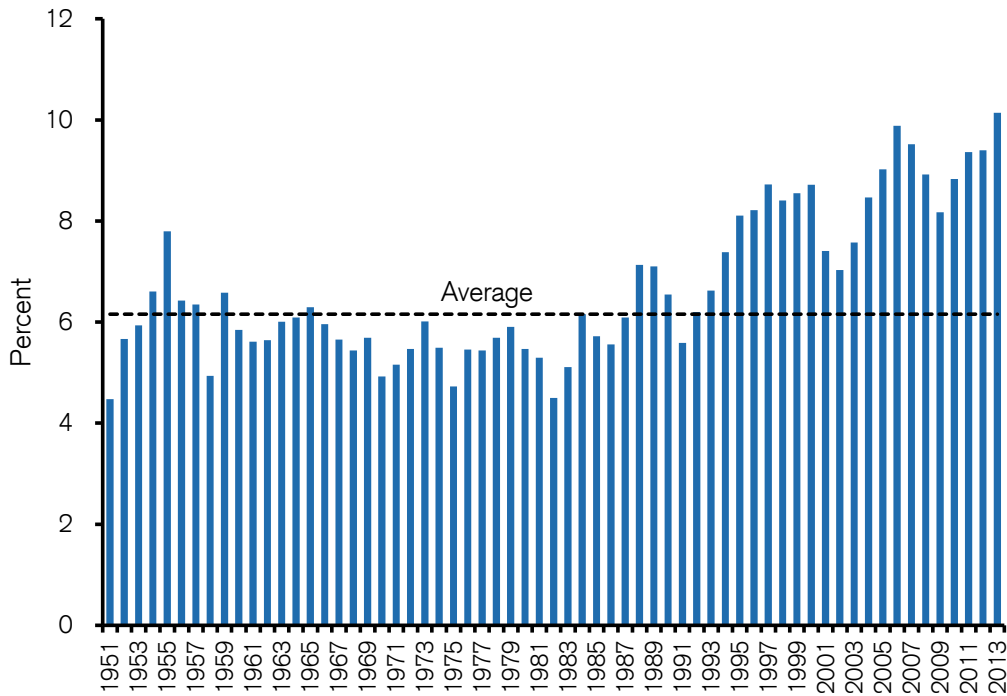
More accurately, the earnings growth in the equation is the maximum growth rate the company can achieve excluding external financing. If the growth in earnings is less than what the product of the ROE and payout ratio suggests, the company will generate excess cash. Say earnings growth is five percent. This means the company could have paid out 75 percent of its earnings, or \$150. But since it only paid out \$100, the company generated \$50 in excess cash.

This formulation is the key to understanding today's situation. In a nutshell, return on capital is high, payout ratios are average, and growth is low. As a result, companies are generating prodigious excess cash.

Here is a look at the components. Exhibit 1 shows that asset-weighted cash flow return on investment (CFROI[®]) for corporate America, currently above 10 percent, is at an all-time high.³ CFROI is a measure of the cash return on the investments a company makes. As the figure is adjusted for inflation, it is comparable through time.

* CFROI[®] is a registered trademark in the United States and other countries (excluding the United Kingdom) of Credit Suisse Group AG or its affiliates.

Exhibit 1: Asset-Weighted Cash Flow Return on Investment at All-Time High (1951-2013)

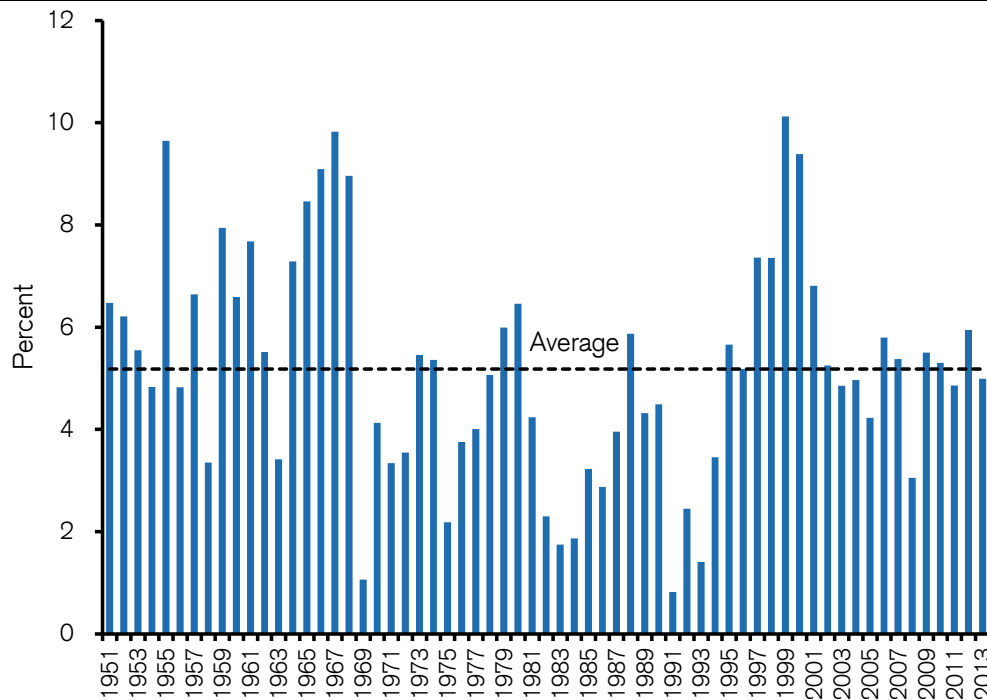


Source: Credit Suisse HOLT®.

Payout ratio is trickier to measure and depends on what definition you adopt. What is clear is the percentage of public companies that pay a dividend has decreased from the mid-80s in the 1980s to the mid-50s today. The probability of paying a dividend is much higher for older and more established companies. For instance, 83 percent of the companies in the S&P 500 paid a dividend in 2013. Further, the payout ratio, which is the dividend payment divided by earnings, has declined for those companies that do pay a dividend.⁴

That said, in the last 30 years or so, companies have shifted their payouts from mostly dividends to a combination of dividends and buybacks. Indeed, the propensity to distribute cash to shareholders has held remarkably stable when researchers account for firm characteristics such as size, age, and profitability.⁵

While returns on investment are at highs, growth has been below the long-term trend. Exhibit 2 shows that asset growth, adjusted for inflation, remains slightly below its average of approximately 5 percent over the past 60 years. This has been true for most years following the popping of the dot-com bubble. A good deal of earnings per share growth for individual companies in recent years has been the consequence of lower depreciation expense, reduced financing costs, and ample share buybacks.

Exhibit 2: Real Asset Growth Slightly Below Historical Average (1951-2013)

Source: Credit Suisse HOLT.

The combination of high return on investment and modest reinvestment has led to a strong generation of excess cash. Companies in the S&P 500, excluding those in the financial services sector, held almost \$1.7 trillion in cash and marketable securities at the end of 2013, up 12 percent from the prior year and close to double the amount held at year-end 2008. Cash and marketable securities represent about eleven percent of the market capitalization of the S&P 500, excluding companies in the financial services sector. Cash is the foundation of value for equity investors, and companies have a lot of it.

Merton Miller and Franco Modigliani, economists who won the Nobel Prize, sought to understand the link between dividend policy and value in the stock market in a seminal paper on valuation published in 1961.⁶ For example, the professors asked whether a company is better off paying a higher dividend today at the risk of limited future earnings growth or paying a lower dividend and achieving higher earnings growth in the future.

Their answer was a surprise. It doesn't matter. They assumed that a company that paid out "too much" could access the capital markets to raise the capital necessary to satisfy its investment needs. So whether a company grows by retaining earnings or tapping external funding doesn't matter. Naturally, this argument assumes a rational and perfect environment, that the earnings power of the firm's assets is stable, and that the firm's investment policy doesn't change. None of these assumptions hold outside of theory.

But the paper makes clear a point that is essential for the rest of our discussion: A company should retain its earnings, or otherwise access capital, if it can invest at a rate of return that is higher than the cost of capital. Indeed, there are powerful and valuable compounding effects if a company can do so over time.

On the other hand, if you can earn a higher rate of return on capital than the company can, even if by investing in the market itself, the company should give you your money. With \$1.7 trillion at stake, this is one of the most crucial issues facing companies and investors today.

Returning cash to shareholders is not free of friction. The most pronounced cost is taxes. A substantial portion of the cash companies hold sits overseas, which means that a company that wants to repatriate the money has to pay additional taxes.⁷ Further, individuals who own stocks in taxable accounts incur a liability when companies pay a dividend or realize a capital gain when they sell shares back to the company.

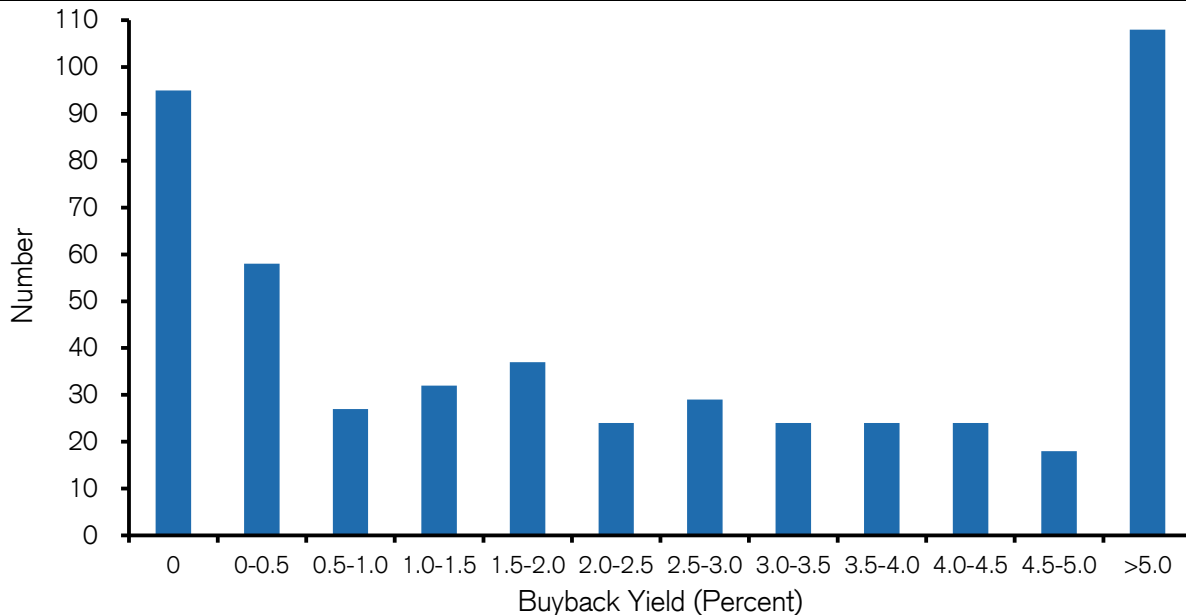
If, why, and how companies choose to distribute cash to shareholders is a crucial and timely issue in determining shareholder value. Still, poor thinking about the topic continues to pervade the minds of executives and investors alike. We can pin part of the confusion on the media, which frequently provides superficial and unsophisticated reporting. But many executives and board members also come across as rudderless even though they have a great deal to gain by getting it right.

Finally, investors are all over the map. Some swear by dividends, and others want buybacks only. Few have carefully and rigorously thought through their positions. Executives are buffeted by the strong views of investors, leaving them in doubt of the best course.

This report is in the form of frequently asked questions. By using this format, we hope to cover the pertinent issues as well as address a number of canards that continue with regard to these topics.

To set the scene, here are some numbers. In 2013, 405 companies in the S&P 500 bought back \$476 billion of stock (the number drops to \$363 billion net of issuance). The top 10 buyers repurchased \$126.2 billion, or 26 percent of the total for the S&P 500. Exhibit 3 provides details of the buyback yield, defined as gross share buyback divided by average market capitalization, for companies in the S&P 500 in 2013.

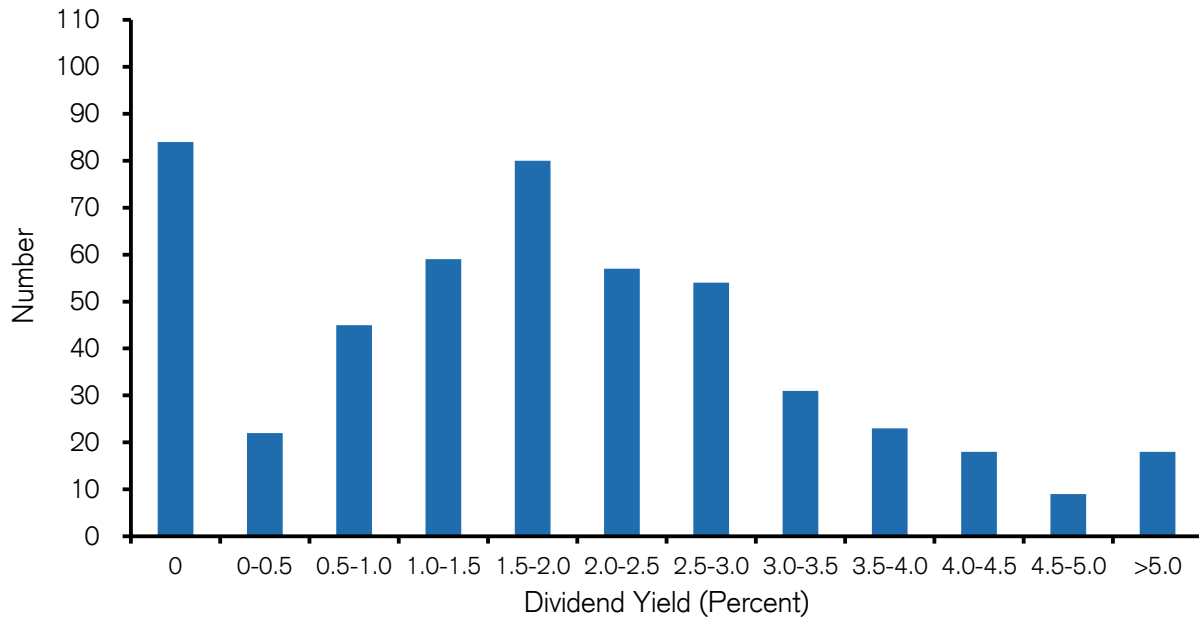
Exhibit 3: Breakdown of Buyback Yield for S&P 500 (2013)



Source: FactSet, Credit Suisse.

In 2013, 416 companies in the S&P 500 paid dividends totaling \$312 billion. The top 10 dividend payers distributed \$80.3 billion, or one-quarter of the total for companies in the S&P 500. Six companies were in the top 10 for both buybacks and dividends. The market capitalization of the S&P 500 was \$16.5 trillion at the end of 2013.⁸ Exhibit 4 provides a breakdown of dividend yields for companies in the S&P 500 in 2013.

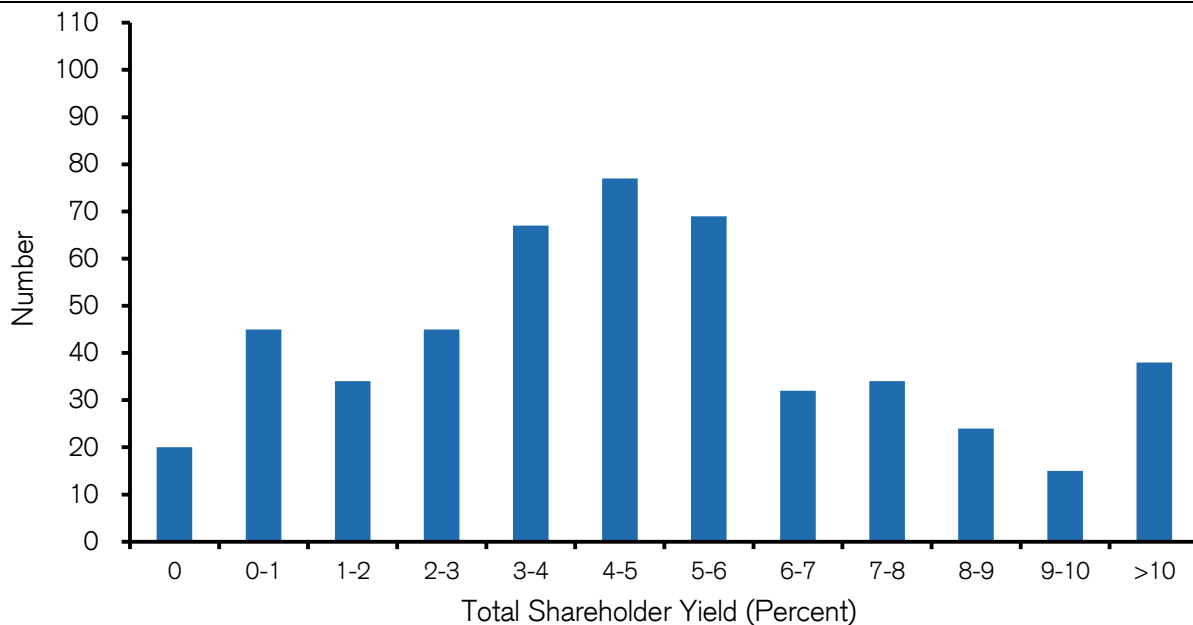
Exhibit 4: Breakdown of Dividend Yield for S&P 500 (2013)



Source: FactSet, Credit Suisse.

We combine the data from exhibits 3 and 4 to create exhibit 5, which shows the total shareholder yield for all of the companies in the S&P 500. We calculate this yield as gross buybacks plus dividends divided by average market capitalization. Only 20 companies have no yield at all, and the modal yield is in the range of 4-5 percent. Finally, nearly 40 companies in the S&P 500 delivered a total shareholder yield in excess of 10 percent.

Exhibit 5: Breakdown of Total Shareholder Yield for S&P 500 (2013)



Source: FactSet, Credit Suisse.

Q: How are share buybacks and dividends the same?

A: Buybacks and dividends are similar in that they both distribute cash to shareholders. More formally, **buybacks and dividends are identical under certain assumptions**, which include:⁹

- No taxes or the timing and magnitude of taxation is identical;
- No or identical transaction costs;
- Shareholders reinvest proceeds at the same rate;
- Identical timing of the distributions; and
- The stock is at its fair price.

If these assumptions were to hold, the total shareholder return (TSR) would be the same whether a company bought back shares or paid a dividend. As a practical matter, none of these assumptions hold.

Even though the U.S. government has taxed dividends at a higher rate than capital gains for most of the last 50 years, the tax rate on long-term capital gains and qualified dividends, at a maximum of 20 percent, is currently the same.¹⁰

But from the point of view of the shareholder, **buybacks offer more flexibility than dividends because they allow the shareholder to control the timing of taxes**. A shareholder can choose to hold on to her shares instead of selling them back to the company, hence deferring a tax consequence. The same shareholder who receives a dividend in a taxable account must pay taxes at that time.

Q: How are share buybacks and dividends different?

A: **The most fundamental difference between buybacks and dividends may be the attitude of executives**. Executives believe that maintaining the dividend is on par with investment decisions such as capital spending, whereas they view buybacks as something to do with residual cash flow after the company has made all investments that are appropriate.¹¹

There are a couple consequences of this difference in attitude. The first is that dividend payments are inherently less volatile than buybacks. Exhibit 6 shows the annual amount of buybacks and dividends by companies in the S&P 500 as well as the price level and market value of the index from 1982 through 2013. The average arithmetic growth rate of dividends from 1982 to 2013 was 6.7 percent with a standard deviation of 9 percent. The average arithmetic growth rate of buybacks was 23.7 percent with a standard deviation of 56 percent. The average growth rate of dividends and buybacks combined was 10.9 percent with a standard deviation of 20 percent.

Dividends are remarkably resilient compared to buybacks. This was in full evidence through the recent financial crisis, as dividends declined only 20 percent from 2007 to 2009. Buybacks tend to follow the level of the S&P 500 more closely, which is consistent with the view that residual cash flows should fund them.¹² Buybacks dropped more than 75 percent from 2007 to 2009. Companies tend to buy back stock when the market is up and refrain when the market is down.

Exhibit 6: Share Buybacks and Dividend Payments for the S&P 500 (1982-2013)

	S&P 500		Dividends +		S&P 500	S&P 500	Dividend	Buyback	Total
	Price	Dividends	Buybacks	Buybacks	Market Value	Average Market Value	Yield	Yield	Shareholder Yield
1981					863				
1982	141	47	8	55	1,015	939	5.0%	0.8%	5.8%
1983	165	50	8	58	1,220	1,118	4.5%	0.7%	5.1%
1984	167	53	27	80	1,217	1,219	4.3%	2.2%	6.6%
1985	211	55	40	95	1,500	1,359	4.0%	2.9%	7.0%
1986	242	63	37	100	1,710	1,605	3.9%	2.3%	6.2%
1987	247	65	45	110	1,736	1,723	3.8%	2.6%	6.4%
1988	278	83	46	129	1,897	1,816	4.6%	2.5%	7.1%
1989	353	73	42	115	2,367	2,132	3.4%	2.0%	5.4%
1990	330	81	39	120	2,195	2,281	3.6%	1.7%	5.3%
1991	417	82	22	104	2,824	2,509	3.3%	0.9%	4.1%
1992	436	85	27	112	3,015	2,919	2.9%	0.9%	3.8%
1993	466	87	34	121	3,306	3,160	2.8%	1.1%	3.8%
1994	459	88	40	128	3,346	3,326	2.6%	1.2%	3.8%
1995	616	103	67	170	4,588	3,967	2.6%	1.7%	4.3%
1996	741	101	82	183	5,626	5,107	2.0%	1.6%	3.6%
1997	970	108	119	227	7,555	6,590	1.6%	1.8%	3.4%
1998	1,229	116	146	262	9,942	8,749	1.3%	1.7%	3.0%
1999	1,469	138	141	279	12,315	11,129	1.2%	1.3%	2.5%
2000	1,160	141	151	292	11,715	12,015	1.2%	1.3%	2.4%
2001	1,147	142	132	274	10,463	11,089	1.3%	1.2%	2.5%
2002	848	148	127	275	8,107	9,285	1.6%	1.4%	3.0%
2003	1,126	161	131	292	10,286	9,197	1.7%	1.4%	3.2%
2004	1,212	181	197	378	11,289	10,788	1.7%	1.8%	3.5%
2005	1,248	202	349	551	11,255	11,272	1.8%	3.1%	4.9%
2006	1,418	224	432	656	12,729	11,992	1.9%	3.6%	5.5%
2007	1,468	246	589	836	12,868	12,799	1.9%	4.6%	6.5%
2008	903	247	340	587	7,852	10,360	2.4%	3.3%	5.7%
2009	1,115	196	138	333	9,928	8,890	2.2%	1.5%	3.7%
2010	1,258	206	299	505	11,430	10,679	1.9%	2.8%	4.7%
2011	1,258	240	405	645	11,385	11,408	2.1%	3.6%	5.7%
2012	1,426	281	399	680	12,742	12,064	2.3%	3.3%	5.6%
2013	1,848	312	476	787	16,495	14,619	2.1%	3.3%	5.4%
						Average	2.6%	2.1%	4.7%

Source: S&P Dow Jones Indices, Thomson Reuters Datastream, Liang and Sharpe, Credit Suisse estimates.

Note: All dollar amounts in billions.

Consistent with this attitude, **dividends provide a strong signal about management's commitment to distribute cash to shareholders and its confidence in the future earnings of the business.** For this reason, companies are very deliberate about the decision to initiate a dividend.¹³

Executives perceive buybacks as being more flexible than dividends and as a lever that can increase earnings per share under the right conditions. Since the financial crisis, return on investment for companies has risen and investment growth has been moderate, leaving substantial sums for buybacks. While not at the peak of 2007, buybacks have roared back from the levels at the depth of the financial crisis.

Another core difference between buybacks and dividends is the treatment of shareholders. Dividends treat all shareholders the same. Buybacks benefit ongoing shareholders when management buys stock that is undervalued and benefit outgoing shareholders when the stock is overvalued.

Q: What are the philosophies that motivate share buybacks?**A: We like to distinguish three schools: fair value, intrinsic value, and accounting-motivated.**

The fair value school takes a steady and consistent approach to buybacks. Management recognizes that over the long haul it will buy back shares sometimes when they are overvalued, other times when they are undervalued, and for the most part when they are priced about fairly. This approach offers shareholders substantial flexibility as it allows them to hold shares and defer tax liabilities or to create homemade dividends by selling a pro-rated number of shares.

The fair value school is consistent with the free cash flow hypothesis, which says that managers who have excess cash will invest it in negative net present value projects. By disbursing cash, companies buying back their shares reduce the risk of doing something foolish with the funds.¹⁴

This school relies on process and believes that in the long haul the average price a company pays will reflect value. Research suggests that most companies would have been better off buying back stock consistently versus their actual behavior of buying heavily in some periods and lightly, or not at all, in others.¹⁵

The intrinsic value school believes a company should only buy back shares when it deems them to be undervalued. A company must have asymmetric information or beliefs, as well as analytical prowess, to profitably pursue this approach. Asymmetric information means that company management has information that the stock price fails to reflect. Differing beliefs occur when management has the same information as the market but comes to different conclusions about what that information means.

Analytical prowess means that the executives at the company know how to translate their differential view into an estimate of the relationship between the stock price and intrinsic value. Investors should not assume that management has this ability. Indeed, surveys consistently show that executives believe their stock to be cheap. For example, in a survey from mid-2013, 60 percent of chief financial officers (CFOs) thought that U.S. equities were overvalued, but only 11 percent thought their own stock was overvalued.¹⁶

Management can act on its conviction by being bold with its buyback program, buying back a substantial percentage of the shares or even buying them at a premium to the prevailing price through a tender offer.¹⁷

This school fits the signaling hypothesis, which suggests that companies buy back shares when they deem them to trade below intrinsic value. Further, it is important to focus on actual share buybacks versus buyback announcements. The evidence supporting the signaling hypothesis is mixed, but 85 percent of CFOs believe that their buyback decision conveys information.¹⁸

Boosting short-term accounting results, especially earnings per share (EPS), is what motivates the final school. When surveyed, three-fourths of CFOs cite increasing EPS as an important or very important factor in the decision to buy back shares. Two-thirds of CFOs say that offsetting the dilution from option or other stock-based programs is important.

The problem with the accounting-motivated school is that its actions are not necessarily aligned with the principle of value creation.¹⁹ For example, there may be a case where buying back overvalued stock boosts EPS and helps management reach a financial objective that prompts a bonus. In this case the motivation is impure because management's proper goal is to allocate capital in an economically sound fashion for shareholders.

Investors assessing companies buying back stock should make an effort to determine which school the management is in. It can be the case that management buys back stock for the right reason and realizes accounting benefits as a result. That's fine. But investors should be on the lookout for companies that make decisions based on the accounting results without sufficient regard for the economic merits.

Q: Share buybacks add to earnings per share, isn't that good?

A: First, it's important to note that share buybacks do not necessarily increase EPS.²⁰ That buybacks inevitably lead to higher EPS is a canard that the business press repeats often. The common approach is to point out that since EPS is earnings divided by shares outstanding, buybacks boost EPS by reducing the number of shares outstanding. **The problem with this simple argument is that the company has to pay for the buyback, which means that earnings are lower with a buyback program than they would be without it.**

A company can fund a buyback one of two ways. Either it can use excess cash, or it can borrow money. **Whether a buyback is accretive or dilutive to EPS is a function of the relationship between the after-tax interest rate (either foregone from cash or incurred from debt) and the inverse of the price/earnings (P/E) multiple.** Since the appropriate P/E multiple for a stock reflects factors other than the discount rate, including growth prospects and incremental return on invested capital, the accretion or dilution says little about the virtue of the program.²¹

Here's a simple example to make the case more concrete. Say a company has excess cash that is earning 3 percent and has a tax rate of 33 percent. You can calculate the "EPS breakeven P/E" with the following equation:

$$EPS \text{ Breakeven } \frac{P}{E} = \frac{1}{\text{Interest rate} \times (1 - \text{tax rate})}$$

So in this case the EPS breakeven P/E multiple is 50 (1/[.03 * .66]). This means that any buyback below a 50 P/E will add to EPS, and any buyback above 50 will subtract from EPS.

Say the same company decides to fund the buyback with debt that has a pretax cost of six percent. The EPS breakeven P/E multiple is 25 (1/[.06 * .66]). To state the obvious, with prevailing interest rates as low as they are and with P/E multiples on forward earnings near historic averages, buybacks are currently a bonanza for EPS accretion. **Since accretion says nothing about the economic merit of a buyback, you can't say whether it is good or bad.**

Exhibit 7 is work by our HOLT® team that shows the non-financial companies in the Russell 1000 that enjoyed the largest positive EPS gains as the result of buybacks over the past one and five years. The magnitude of the impact is overstated because the calculation does not consider the after-tax interest rate on cash or debt used to fund the program. Still, you can see some companies enjoyed large boosts to EPS through their buyback programs.

Exhibit 7: Estimated Impact of Share Buyback on EPS

Last Year				Last Five Years			
Company	EPS Assuming No Buyback	EPS As Reported	Estimated Impact on EPS	Company	EPS Assuming No Buyback	EPS As Reported	Estimated Impact on EPS
Albermarle Corporation	\$4.53	\$4.94	9.1%	Safeway, Inc.	\$0.49	\$0.95	93.9%
DIRECTV	\$4.76	\$5.19	9.0%	DIRECTV	\$2.78	\$5.19	86.7%
NVR, Inc.	\$51.35	\$55.77	8.6%	Wellpoint, Inc.	\$5.07	\$8.65	70.6%
Halliburton Company	\$2.19	\$2.37	8.2%	Gap, Inc.	\$1.78	\$2.80	57.3%
Activision Blizzard, Inc.	\$0.88	\$0.95	8.0%	Bally Technologies, Inc.	\$2.22	\$3.39	52.7%
CF Industries Holdings, Inc.	\$22.82	\$24.63	7.9%	AutoNation, Inc.	\$2.04	\$3.05	49.5%
Rovi Corporation	\$0.19	\$0.20	5.3%	Northrup Grumman Corporation	\$5.62	\$8.34	48.4%
Quest Diagnostics, Inc.	\$4.96	\$5.34	7.7%	L-3 Communications Holdings, Inc.	\$5.79	\$8.54	47.5%
Carter's, Inc.	\$2.59	\$2.77	6.9%	Big Lots, Inc.	\$1.93	\$2.84	47.2%
Rockwood Holdings, Inc.	\$0.67	\$0.72	7.5%	Apollo Education Group, Inc.	\$1.29	\$1.89	46.5%
Fossil Group, Inc.	\$6.23	\$6.62	6.3%	Weight Watchers International, Inc.	\$2.49	\$3.63	45.8%
Marathon Petroleum Corporation	\$6.22	\$6.61	6.3%	Charles River Laboratories International	\$1.48	\$2.15	45.3%
Armstrong World Industries	\$1.60	\$1.70	6.2%	Amgen, Inc.	\$4.68	\$6.65	42.1%
Harris Corporation	\$4.00	\$4.22	5.5%	GameStop Corporation	\$2.32	\$3.28	41.4%
Laboratory Corp. of America Holdings	\$5.93	\$6.24	5.2%	Kohl's Corporation	\$2.96	\$4.17	40.9%
AECOM Technology Corporation	\$2.45	\$2.58	5.3%	Lowe's Companies, Inc.	\$1.51	\$2.10	39.1%
Pfizer, Inc.	\$1.57	\$1.65	5.1%	Yahoo! Inc.	\$0.91	\$1.26	38.5%
Lowe's Companies, Inc.	\$2.00	\$2.10	5.0%	AmerisourceBergen Corporation	\$1.15	\$1.57	36.5%
TW Telecom, Inc.	\$0.23	\$0.24	4.3%	C.R. Bard, Inc.	\$6.23	\$8.48	36.1%
C.H. Robinson Worldwide, Inc.	\$2.54	\$2.65	4.3%	Health Net, Inc.	\$1.58	\$2.12	34.2%

Source: HOLT Lens™, FactSet. Universe: Russell 1000 (ex-financials). Impact of share repurchase on EPS is a HOLT calculation that shows the percentage increase in EPS due to cumulative net shares bought over the trailing 12 and 60 months. HOLT estimates the number of shares repurchased by taking the total dollar amount of buybacks divided by the average price for each period. We show the top 20 companies. Data as of April 23, 2014.

Q: How should you assess the merit of a buyback program?

A: The golden rule of share buybacks is as follows:²²

A company should repurchase its shares only when its stock is trading below its expected value and when no better investment opportunities are available.

The golden rule addresses both absolute and relative value. Companies should only invest where they anticipate a net present value positive payoff. This is a fancy way of saying “you will get more than what you pay for.” This absolute benchmark applies to all of a company’s capital allocation decisions, including capital expenditures, research and development, and mergers and acquisitions.

The rule also addresses relative value when it emphasizes that **companies should prioritize higher return internal investment opportunities over buybacks**. Ideally, executives should rank their investment opportunities by expected return and fund them from highest to lowest. A company should expect that all of the investments it funds will earn above the cost of capital. While access to capital can be a constraint, most companies generate sufficient cash flow to fund their internal investments.

The shareholder rate of return on a buyback is the cost of equity divided by the ratio of stock price to intrinsic value. For instance, if the cost of equity is 8 percent and the stock is trading at two-thirds of its intrinsic value, the shareholder rate of return is 12 percent (.08/.66). Managers can compare this rate of return to alternative investment opportunities.

Executives generally think of buybacks as a means to distribute cash that’s left over after the company has made all the operating investments it deems worthy. But in cases where a company has no excess cash or

borrowing capacity, **there may be instances where buying back stock is more attractive than investing in the business.** Managers should base their capital allocation decisions on expected reward and risk. When buybacks are more attractive than investing in the business, they should take priority.

Q: Aren't companies that overpay for their stock harming their shareholders?

A: Only if a stock trades exactly at intrinsic value do buybacks and dividends treat all shareholders the same. If a stock is over- or undervalued, the effect of a buyback is different for selling shareholders than it is for those who continue to hold.

It's important to emphasize that **from the company's point of view, there's a value conservation principle at work:** Whether the company buys under- or overvalued stock or pays a dividend doesn't make a difference in terms of the value of the disbursement or the subsequent value of the firm. What differs is who wins and who loses as the result of buying stock below or above intrinsic value. **Since management should focus on building value per share for continuing shareholders, it should always try to buy back shares that are undervalued.**

Exhibit 8 shows the simple idea. Say we have a company with a value of \$10,000 and 1,000 shares outstanding that decides to return \$2,000 to its shareholders.

Exhibit 8: The Value Conservation Principle

Assumptions	Scenario A			Scenario B		Scenario C	
	Base	Assume buyback @ \$20	Assume buyback @ \$5	Assumptions	Assume dividend of \$2		
Buyback amount		\$2,000	\$2,000	Dividend amount	\$2,000		
Firm Value	\$10,000	\$8,000	\$8,000	Firm Value	\$8,000		
Shares outstanding	1000	1000	1000	Shares outstanding	1000		
Current price	\$10	\$20	\$5	Current price	\$10		
Shares post buyback		900	600				
Value/share	\$10	\$8.89	\$13.33	Value/share	\$8.00		
				Dividend/share	\$2.00		
Selling shareholders		100	400				
		\$20	\$5				
Value to sellers		\$2,000	\$2,000				
Ongoing shareholders		900	600	Ongoing shareholders	\$8,000		
		\$8.89	\$13.33	Dividends	\$2,000		
		\$8,000	\$8,000				
Total value		\$10,000	\$10,000	Total value	\$10,000		
Per share +/- sellers		\$10.00	(\$5.00)				
Per share +/- holders		(\$1.11)	\$3.33				

Source: Credit Suisse.

In Scenario A, we assume the stock price is \$20, double the fair value of \$10 (\$10,000/1,000). The company can buy 100 shares, leaving \$8,000 of value and 900 shares outstanding. In this case, the selling shareholders have gained \$10 per share (\$20 proceeds - \$10 value = \$10) and the continuing shareholders have lost \$1.11 per share (\$8.89 continuing value - \$10 initial value = -\$1.11). Buying back overvalued stock benefited sellers at the expense of buyers.

In Scenario B, we assume the stock trades at one-half of fair value, or \$5 per share. The company can buy 400 shares, with \$8,000 of remaining value and 600 shares outstanding. Now we see that the selling shareholders lose \$5 per share ($\$5 \text{ proceeds} - \$10 \text{ value} = -\5) and continuing shareholders gain \$3.33 per share ($\$13.33 \text{ continuing value} - \$10 \text{ initial value} = \3.33).

In Scenario C, the company pays a \$2 dividend to all shareholders. Just as in the prior scenarios, the firm value drops to \$8,000, but each shareholder receives identical treatment, leaving aside tax considerations.

Here are three final thoughts on this question. First, **you can't conclude that buying back stock was a bad idea just because the stock goes down subsequently.** Executives, similar to investors, operate with imperfect and incomplete information. Provided they approach the buyback with a sound process that has analytical integrity and honestly, they have done their job properly. Unfortunately, few companies demonstrate sufficient rigor in their analysis of buybacks.

Second, **if you are the shareholder of a company that is buying back stock, doing nothing is doing something.** By choosing to hold the shares instead of selling a pro-rated amount, you are effectively increasing your percentage stake in the company. One alternative is to sell shares in proportion to your stake, creating a homemade dividend and maintaining a consistent percentage ownership in the business.

Finally, **it is logical that you would prefer that the companies you hold in your portfolio buy back stock rather than pay a dividend.** It should be reasonable to presume that you own shares of companies that you think are undervalued. If that is the case, buybacks will by definition increase value per share. The only instance where this may not be true is if you believe that a dividend would provide a more powerful signal to the market, hence creating more value than a buyback.

Q: Does it ever make sense to repatriate cash, pay taxes, and then buy back shares?

A: Of the \$1.7 trillion in cash and marketable securities that companies in the S&P 500 hold, roughly \$1 trillion is outside the United States. Since the U.S. taxes foreign income, multinationals have to pay taxes if they choose to repatriate cash from international profits. The tax the company owes equals the difference between the U.S. tax rate and the tax rate the company paid in the domicile of the profits. Alternatively, companies can defer the payment of U.S. taxes and let the cash sit offshore.

Academic research shows that this tax on repatriation keeps cash abroad, which is why \$1 trillion in liquid assets sit on the balance sheets of multinationals.²³ Further, some companies have made acquisitions overseas as a means to deploy that capital.

One can make a case for repatriating cash, paying U.S. taxes, and buying back shares if the shares are sufficiently cheap. **Repatriating cash makes sense if the stock price's discount to intrinsic value exceeds the incremental tax rate of the repatriated funds.** Exhibit 9 provides a matrix to guide the analysis. The rows are various tax rate assumptions. (Note that these rates are the difference between U.S. tax rates and the tax rates the company paid in the jurisdiction.) The columns are various ratios of price to intrinsic value. The body of the table shows the rate of return on the buyback assuming a cost of equity of 8 percent. Transactions that fall into the shaded area are value neutral or value creating.

Exhibit 9: Rate of Return on Buying Back Stock Given Intrinsic Value and Tax Rates

		Price to Intrinsic Value Ratio					
		0.5	0.6	0.7	0.8	0.9	1.0
Incremental Tax Rate	0%	16.0%	13.3%	11.4%	10.0%	8.9%	8.0%
	5%	15.2%	12.7%	10.9%	9.5%	8.4%	7.6%
	10%	14.4%	12.0%	10.3%	9.0%	8.0%	7.2%
	15%	13.6%	11.3%	9.7%	8.5%	7.6%	6.8%
	20%	12.8%	10.7%	9.1%	8.0%	7.1%	6.4%
	25%	12.0%	10.0%	8.6%	7.5%	6.7%	6.0%
	30%	11.2%	9.3%	8.0%	7.0%	6.2%	5.6%

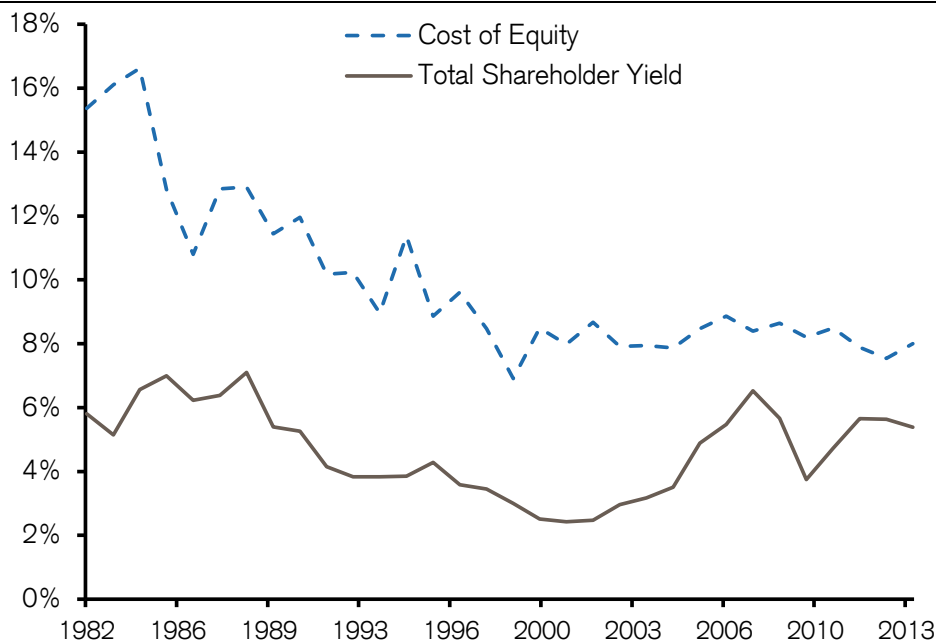
Source: Credit Suisse.
Assumes an 8 percent cost of equity.

Let's consider a simple example. Say the incremental tax rate is 10 percent and the company trades at 60 percent of intrinsic value. Assuming no taxes, the pretax rate of return on the buyback is 13.3 percent (cost of equity divided by the ratio of price to intrinsic value = $.08/.60 = .133$). But since the cash to fund the buyback is taxed at 10 percent, the rate of return falls to 12.0 percent (we need to adjust the price to intrinsic value ratio by multiplying it by $1/[1-\text{tax rate}]$, which changes the denominator to .66, so $.08/.66 = .12$).

Q: What has happened to payout ratios if you consider buybacks and dividends together?

A: As noted earlier, the propensity of companies to distribute cash to shareholders has not changed substantially over time when we consider factors such as the age of the company and the industry in which it competes. Exhibit 10 compares an estimate of the cost of equity capital to the payout yield, which we define as gross buybacks plus dividends divided by market capitalization, from 1982 through 2013.

Exhibit 10: Total Shareholder Yield for the S&P 500 versus the Cost of Equity (1982-2013)



Source: Aswath Damodaran; S&P Dow Jones Indices, Liang and Sharpe, Credit Suisse estimates.

For 2013, the total payout yield for the S&P 500 was approximately 5.4 percent (\$787 billion total payout divided by an average market capitalization of \$14.6 trillion). This compares to a 10-year Treasury note yield that was in the range of roughly 1.5 to 3.0 percent and a cost of equity of around 8 percent.

Q: Why are comparisons to historical dividend payouts and yields flawed?

A: Despite the rise in share buybacks in the past 30 years or so, many market analysts continue to use dividend yield as a measure of policy and a means to anticipate future market returns.²⁴ In fact, **you should be very cautious in comparing data before and after 1982**. Here's the reason: buybacks were very scarce prior to that date because the Securities and Exchange Act of 1934 prohibited the manipulation of securities prices. Since the rules weren't clear about what constituted manipulation, most companies avoided buybacks altogether.²⁵

In 1982, Congress enacted Rule 10b-18, which grants companies a safe harbor provided they follow certain rules. Those rules form a legal shield from the threat of being sued by specifying how a company can execute a buyback in terms of manner, timing, price, and volume.²⁶ The Securities and Exchange Commission has subsequently updated the rules to reflect current market conditions.

Given that the propensity to pay out cash to shareholders has been stable but that the mix has shifted from dividends to buybacks, comparisons must take into consideration share buybacks. The year 1982 really did mark a new regime in how companies could return cash to shareholders.

Critics of buybacks have noted that many companies both buy back shares and issue shares simultaneously. For instance, Cisco Systems bought back \$3.1 billion of stock in fiscal 2013, but issued \$3.3 billion. So it is valid to consider total net payout to shareholders, which is net share repurchase plus dividends. Appendix A discusses this issue in more detail.

Q: Isn't it true that the majority of total shareholder returns are the result of dividends?

A: This is one of the great misconceptions in the investing industry. Let's assume that an investor's goal is to accumulate capital over time. This makes sense because saving is the act of foregoing current consumption to be able to consume more in the future. Here's the point: **Price appreciation is the only source of investment return that increases accumulated capital over time.**²⁷

The key to understanding this comment is to distinguish between the equity rate of return and the capital accumulation rate. The equity rate of return is a one-period measure that simply adds price appreciation to dividend yield. To illustrate, the S&P 500 had an equity rate of return of 32.4 percent in 2013, with 29.6 percent price appreciation and a 2.8 percent dividend yield.

The capital accumulation rate, often measured as total shareholder return (TSR), is a multi-period measure that assumes all dividends are reinvested in the stock. Knowing price appreciation (g) and dividend yield (d), you calculate TSR as follows:

$$\text{Total shareholder return (TSR)} = g + (1 + g) * d$$

The value of the compounding reinvested dividends means that the TSR, or capital accumulation rate, is always higher than the equity rate of return as long as g is positive.

Here is an illustration to solidify the distinction. Assume price appreciation of 8 percent and a dividend yield of 3 percent. The equity rate of return is 11 percent ($.08 + .03$) while the TSR is 11.24 percent ($.08 + [(1 + .08) * .03]$).

You hear from time to time that dividends have provided the lion's share of returns in the stock market over history. This is wrong if you accept that capital accumulation is a reasonable way to assess returns over the long haul. Indeed, capital accumulation depends solely on price appreciation.

Here's the way to think about it: Say you own a stock that trades at \$100 and pays a \$3 dividend. After the dividend payment, you will have a \$97 stock and a \$3 dividend.²⁸ You will only earn the full TSR if you reinvest your dividend, effectively giving you \$100 worth of stock again. From there, it should be clear that price appreciation only determines the capital accumulation rate.

Now here's the problem: Almost no one earns the full TSR. First, most individuals do not reinvest the dividends they receive from the stocks they hold directly. While no definitive public statistics exist, **individual investors appear to reinvest just 10 percent of the dividends they collect.**²⁹ Of course, if investors aren't reinvesting their dividends they are free to use the proceeds to consume, which has utility. But it prevents them from earning the full TSR.

Second, unless investors own individual, dividend-paying stocks in a tax-free account, they have to pay taxes on their dividends. This means that they can only reinvest a fraction of the dividends they receive, which prevents them from earning the TSR. To calculate the TSR a taxpaying shareholder earns, we need to add a term to our equation that reflects the reinvestment rate, (r):

$$\text{Total shareholder return (TSR)} = g + (1 + g) * (d) * (r)$$

Let's say the tax rate on dividends is 20 percent, which means that our shareholder can reinvest only 80 percent of the dividend that she receives. The TSR drops to 10.6 percent ($.08 + ([1.08] * .03 * .80)$). If you compound over time the difference between 11.2 percent for the full TSR and 10.6 percent for the tax-adjusted TSR, the difference can be meaningful.

The issue of taxes is also very relevant for comparing past results. In the latest edition of his best-selling book, *Stocks for the Long Run*, Jeremy Siegel, a professor at the Wharton School at the University of Pennsylvania, compares the results of IBM and Standard Oil of NJ (now ExxonMobil) from 1950-2012.

Siegel shows that IBM had better growth in revenue, dividends, and earnings per share over the period. He also shows that the price appreciation of IBM's stock exceeded that of Standard Oil of NJ. Then he introduces the punch line. Because Standard Oil of NJ had a higher dividend yield, its TSR exceeded that of IBM.³⁰

But not so fast. If you assume that shareholders had to pay taxes on those dividends—and the tax rate on dividends averaged close to 50 percent during that period—the results are reversed. Price appreciation becomes more important because shareholders were simply unable to reinvest the full amount of their dividends.

The only place where an investor can earn the full TSR in equities is in a tax-free or tax-deferred account that owns index funds with automatic reinvestment of dividends. Such an investor would of course have no opportunity to do better than the market, but the data show that the majority of funds fail to match their benchmarks in an average year.

Conclusion

Management's primary job is the judicious allocation of capital. Today we are in a situation where companies are generating more cash than they deem they can reinvest in the business. As a result, cash balances are building.

Share buybacks and dividends are two methods to return cash to shareholders. But executives view them very differently. Most view dividends as a quasi-contract, a commitment on par with capital spending, and view buybacks as a means to disburse residual cash. Dividends treat all shareholders uniformly, while buybacks treat ongoing and selling shareholders differently based on the relationship between stock price and value. Buybacks only benefit continuing shareholders when management executes them when the stock is undervalued.

Endnotes:

¹ Naturally, one of the vital functions of the capital markets is to turn claims on future cash into cash (selling a stock) and turning cash into claims on future cash (buying a stock). But participants in capital markets must assess the prospects of future cash flows in order to properly value the shares of a company.

² This equation assumes no change in capital structure. For a more formal way to calculate maximum payout ratio, see Alfred Rappaport, "The Affordable Dividend Approach to Equity Valuation," *Financial Analysts Journal*, Vol. 42, No. 4, July-August 1986, 52-58.

³ Thanks to Bryant Matthews of the HOLT Model Development group at Credit Suisse for these data.

⁴ Ali Fatemi and Recep Bildik, "Yes, Dividends are Disappearing: Worldwide Evidence," *Journal of Banking & Finance*, Vol. 36, No. 3, March 2012, 662-677.

⁵ For the mix shift, see Douglas J. Skinner, "The Evolving Relation Between Earnings, Dividends, and Stock Repurchases," *Journal of Financial Economics*, Vol. 87, No. 3, March 2008, 582-609. Also, Gustavo Grullon, Bradley Paye, Shane Underwood, and James P. Weston, "Has the Propensity to Pay Out Declined?" *Journal of Financial and Quantitative Analysis*, Vol. 46, No. 1, February 2011, 1-24. Also, Jacob Boudoukh, Roni Michaely, Matthew Richardson, and Michael R. Roberts, "On the Importance of Measuring Payout Yield: Implications for Empirical Asset Pricing," *Journal of Finance*, Vol. 63, No. 2, April 2007, 877-915.

⁶ Merton H. Miller and Franco Modigliani, "Dividend Policy, Growth, and the Valuation of Shares," *Journal of Business*, Vol. 34, No. 4, October 1961, 411-433.

⁷ The tax rate is the difference between the U.S. rate and the rate the company paid in the jurisdiction where the company earned the profit. For example, the corporate tax rate is 35 percent in the United States and 30 percent in Australia. So a U.S.-based company would have to pay an additional 5 percentage points in tax on cash that it repatriated from Australia. This is barring any tax holiday that the U.S. government may implement.

⁸ S&P Dow Jones Indices, FactSet, Credit Suisse.

⁹ For a mathematical demonstration, see Michael J. Mauboussin and Kristen Bartholdson, "The Demise of Dividends: And the Rise of Share Buybacks," *Credit Suisse First Boston Equity Research*, April 15, 2002.

¹⁰ This applies to qualified dividends only, which represent most of the dividends paid. Unqualified dividends are those paid by entities including real estate investment trusts, master limited partnerships, dividends accrued on employee stock option programs, dividends from tax exempt companies, and dividends from savings or money market accounts. High income earners in the U.S. must pay a 3.8 percent surtax, meant to help pay for health care.

¹¹ Alon Brav, John R. Graham, Campbell R. Harvey, and Roni Michaely, "Payout Policy in the 21st Century," *Journal of Financial Economics*, Vol. 77, No. 3, September 2005, 483-527.

¹² Eric Floyd, Nan Li, and Douglas J. Skinner, "Payout Policy through the Financial Crisis: The Growth of Repurchases and the Resilience of Dividends," *Chicago Booth Working Paper*, No. 12-01, March 2013.

¹³ Jayant R. Kale, Omesh Kini, and Janet D. Payne, "The Dividend Initiation Decisions of Newly Public Firms: Some Evidence on Signaling with Dividends," *Journal of Financial and Quantitative Analysis*, Vol. 47, No. 2, April 2012, 365-396. Also, Doron Nissim and Amir Ziv, "Dividend Changes and Future Profitability," *Journal of Finance*, Vol. 56, No. 6, December 2001, 2111-2133.

¹⁴ Michael C. Jensen, "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers," *American Economic Review*, Vol. 76, No. 2, May 1986, 323-329. For evidence that companies with modest asset growth fare better than those that grow rapidly, see Michael J. Cooper, Huseyin Gulen, and Michael J. Schill, "Asset Growth and the Cross-Section of Stock Returns," *Journal of Finance*, Vol. 63, No. 4, August 2008, 1609-1651.

¹⁵ Chao Zhuang, "Share Repurchases: How Important Is Market Timing?" *Working Paper presented at USC FBE Finance Seminar*, September 30, 2013. Also, Alice A. Bonaimé, Kristine W. Hankins, and Bradford D. Jordan, "Wiser to Wait: Do Firms Optimally Execute Share Repurchases?" *SSRN Working Paper*, March 6, 2014.

¹⁶ “CFO Signals™: What North America’s Top Finance Executives Are Thinking—and Doing,” *Deloitte Research*, Second Quarter 2013.

¹⁷ Jin Wang and Lewis D. Johnson, “Information Asymmetry, Signaling, and Share Repurchase,” *Working Paper*, February 2008.

¹⁸ Gustavo Grullon and David L. Ikenberry, “What Do We Know about Share Repurchases?” *Journal of Applied Corporate Finance*, Vol. 13, No. 1, Spring 2000, 31-51. For the survey result, see Brav, Graham, Harvey, and Michaely (2005).

¹⁹ Konan Chan, David L. Ikenberry, Inmoo Lee, and Yanzhi Wang, “Share Repurchase as a Potential Tool to Misdlead Investors,” *Journal of Corporate Finance*, Vol. 16, No. 2, April 2010, 137-158.

²⁰ While buybacks do boost the EPS of individual companies, they have a negligible impact on the S&P 500 index. Howard Silverblatt, a senior index analyst at S&P, writes, “The S&P index weighting methodology adjusts for shares, so buybacks are reflected in the calculations. Specifically, the index reweights for major share changes on an event-driven basis, and each quarter, regardless of the change amount, it reweights the entire index membership. The actual index EPS calculation determines the index earnings for each issue in USD, based on the specific issues’ index shares, index float, and EPS. The calculation negates most of the share count change, and reduces the impact on EPS.” See Howard Silverblatt, “Buybacks and the S&P 500® EPS,” *Indexology Blog*, March 7, 2014.

²¹ Michael J. Mauboussin and Dan Callahan, “What Does a Price-Earnings Multiple Mean? An Analytical Bridge between P/Es and Solid Economics,” *Credit Suisse Global Financial Strategies*, January 29, 2014.

²² Alfred Rappaport and Michael J. Mauboussin, *Expectations Investing: Reading Stock Prices for Better Returns* (Boston, MA: Harvard Business School Press, 2001), 174.

²³ C. Fritz Foley, Jay C. Hartzell, Sheridan Titman, and Garry Twite, “Why Do Firms Hold So Much Cash? A Tax-Based Explanation,” *Journal of Financial Economics*, Vol. 86, No. 3, December 2007, 579-607.

²⁴ Robert D. Arnott and Clifford S. Asness, “Surprise! Higher Dividends = Higher Earnings Growth,” *Financial Analysts Journal*, Vol. 59, No. 1, January/February 2003, 70-87.

²⁵ Jordan Voss, “Why do Firms Repurchase Stock?” *Major Themes in Economics*, Spring 2012.

²⁵ See www.sec.gov/divisions/marketreg/r10b18faq0504.htm.

²⁷ Alfred Rappaport, “Dividend Reinvestment, Price Appreciation and Capital Accumulation,” *Journal of Portfolio Management*, Vol. 32, No. 3, Spring 2006, 119-123.

²⁸ As an empirical matter, the stock price doesn’t go down by the exact amount of the dividend because of the impact of taxes. The basic equation to determine how much a stock will drop when it goes ex-dividend is as follows:

$$\frac{P_b - P_a}{D} = \frac{(1-t_d)}{(1-t_{cg})}$$

Where P_b is the stock price before the ex-dividend date, P_a is the price after the ex-dividend date, t_d is the tax rate on dividend income and t_{cg} is the tax rate on capital gains. So if the tax rates on dividends and capital gains are the same (as they are today), then the decline in the stock price is roughly equivalent to the dividend. If the tax rate on dividends is higher than that on capital gains, which has been true for most of the last half century, then the decline in stock price will be less than the dividend. See Aswath Damodaran, “Returning Cash to the Owners: Dividend Policy,” available at <http://pages.stern.nyu.edu/~adamodar/pdfiles/ovhds/ch10.pdf>.

²⁹ Rappaport, 120.

³⁰ Jeremy J. Siegel, *Stocks for the Long Run: The Definitive Guide to Financial Market Returns and Long-Term Investment Strategies, Fifth Edition* (Hoboken, NJ: John Wiley & Sons, 2014), 173-174.

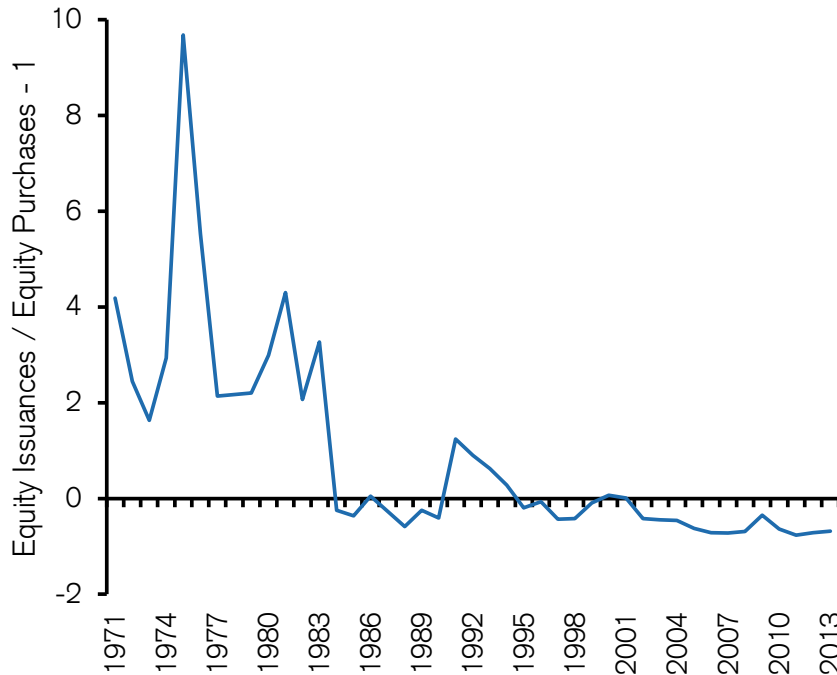
Reference for cover and exhibits 6 and 10: J. Nellie Liang and Steven A. Sharpe, “Share Repurchases and Employee Stock Options and their Implications for S&P 500 Share Retirements and Expected Returns,” *Board of Governors of the Federal Reserve System Finance and Economics Working Paper No. 99-59*, November 1999.

Appendix A

One legitimate criticism of buybacks is that companies use them to offset equity issuance. So, for example, the company issues stock via employee stock options or restricted stock units and then buys back an equivalent number of shares, leaving the shares outstanding relatively flat.

Exhibit 11 shows the last 40 years of net equity issuance for the largest 1,500 non-financial companies in the United States (the sample is in fact somewhat smaller in the early years but in no case dips below 1,000). Calculated by our HOLT team, the exhibit shows the ratio of equity issuances, including preferred stock, divided by equity purchases, minus one (issuances/purchases – 1). When the line is above zero, companies are issuing more equity than they are buying, and when it is below zero they are buying more than they are issuing.

Exhibit 11: Net Equity Issuance for the Largest U.S. Companies (1971-2013)



Source: Credit Suisse HOLT.

The exhibit shows that net issuance was relatively high in the 1970s but that the ratio has been near or below zero for most of the past 30 years. Note, again, that buybacks were not common until 1982.

Our view is that you should analyze equity issuance and purchases independently. Companies should issue equity, be it in the form of compensation for employees or for an acquisition, only when it makes economic sense. Likewise, a company should buy back shares when it makes economic sense. Each decision must stand on its own merit, and executives should avoid conflating the two.

Shareholders have been appropriately skeptical about companies that have linked their buyback programs to their issuance of equity. For instance, many companies vow to buy back shares in order to offset dilution from compensation using stock.

General disclaimer / Important information

This document was produced by and the opinions expressed are those of Credit Suisse as of the date of writing and are subject to change. It has been prepared solely for information purposes and for the use of the recipient. It does not constitute an offer or an invitation by or on behalf of Credit Suisse to any person to buy or sell any security. Nothing in this material constitutes investment, legal, accounting or tax advice, or a representation that any investment or strategy is suitable or appropriate to your individual circumstances, or otherwise constitutes a personal recommendation to you. The price and value of investments mentioned and any income that might accrue may fluctuate and may fall or rise. Any reference to past performance is not a guide to the future.

The information and analysis contained in this publication have been compiled or arrived at from sources believed to be reliable but Credit Suisse does not make any representation as to their accuracy or completeness and does not accept liability for any loss arising from the use hereof. A Credit Suisse Group company may have acted upon the information and analysis contained in this publication before being made available to clients of Credit Suisse. Investments in emerging markets are speculative and considerably more volatile than investments in established markets. Some of the main risks are political risks, economic risks, credit risks, currency risks and market risks. Investments in foreign currencies are subject to exchange rate fluctuations. Before entering into any transaction, you should consider the suitability of the transaction to your particular circumstances and independently review (with your professional advisers as necessary) the specific financial risks as well as legal, regulatory, credit, tax and accounting consequences. This document is issued and distributed in the United States by Credit Suisse Securities (USA) LLC, a U.S. registered broker-dealer; in Canada by Credit Suisse Securities (Canada), Inc.; and in Brazil by Banco de Investimentos Credit Suisse (Brasil) S.A.

This document is distributed in Switzerland by Credit Suisse AG, a Swiss bank. Credit Suisse is authorized and regulated by the Swiss Financial Market Supervisory Authority (FINMA). This document is issued and distributed in Europe (except Switzerland) by Credit Suisse (UK) Limited and Credit Suisse Securities (Europe) Limited, London. Credit Suisse Securities (Europe) Limited, London and Credit Suisse (UK) Limited, authorised by the Prudential Regulation Authority (PRA) and regulated by the Financial Conduct Authority (FCA) and PRA, are associated but independent legal and regulated entities within Credit Suisse. The protections made available by the UK's Financial Services Authority for private customers do not apply to investments or services provided by a person outside the UK, nor will the Financial Services Compensation Scheme be available if the issuer of the investment fails to meet its obligations. This document is distributed in Guernsey by Credit Suisse (Guernsey) Limited, an independent legal entity registered in Guernsey under 15197, with its registered address at Helvetia Court, Les Echelons, South Esplanade, St Peter Port, Guernsey. Credit Suisse (Guernsey) Limited is wholly owned by Credit Suisse and is regulated by the Guernsey Financial Services Commission. Copies of the latest audited accounts are available on request. This document is distributed in Jersey by Credit Suisse (Guernsey) Limited, Jersey Branch, which is regulated by the Jersey Financial Services Commission. The business address of Credit Suisse (Guernsey) Limited, Jersey Branch, in Jersey is: TradeWind House, 22 Esplanade, St Helier, Jersey JE2 3QA. This document has been issued in Asia-Pacific by whichever of the following is the appropriately authorised entity of the relevant jurisdiction: in Hong Kong by Credit Suisse (Hong Kong) Limited, a corporation licensed with the Hong Kong Securities and Futures Commission or Credit Suisse Hong Kong branch, an Authorized Institution regulated by the Hong Kong Monetary Authority and a Registered Institution regulated by the Securities and Futures Ordinance (Chapter 571 of the Laws of Hong Kong); in Japan by Credit Suisse Securities (Japan) Limited; elsewhere in Asia/Pacific by whichever of the following is the appropriately authorized entity in the relevant jurisdiction: Credit Suisse Equities (Australia) Limited, Credit Suisse Securities (Thailand) Limited, Credit Suisse Securities (Malaysia) Sdn Bhd, Credit Suisse AG, Singapore Branch, and elsewhere in the world by the relevant authorized affiliate of the above.

With respect to the analysis in this report based on the Credit Suisse HOLT methodology, Credit Suisse certifies that (1) the views expressed in this report accurately reflect the Credit Suisse HOLT methodology and (2) no part of the Firm's compensation was, is, or will be directly related to the specific views disclosed in this report.

The Credit Suisse HOLT methodology does not assign recommendations to a security. It is an analytical tool that involves use of a set of proprietary quantitative algorithms and warranted value calculations, collectively called the Credit Suisse HOLT valuation model, that are consistently applied to all the companies included in its database. Third-party data (including consensus earnings estimates) are systematically translated into a number of default variables and incorporated into the algorithms available in the Credit Suisse HOLT valuation model. The source financial statement, pricing, and earnings data provided by outside data vendors are subject to quality control and may also be adjusted to more closely measure the underlying economics of firm performance. These adjustments provide consistency when analyzing a single company across time, or analyzing multiple companies across industries or national borders. The default scenario that is produced by the Credit Suisse HOLT valuation model establishes the baseline valuation for a security, and a user then may adjust the default variables to produce alternative scenarios, any of which could occur. Additional information about the Credit Suisse HOLT methodology is available on request.

The Credit Suisse HOLT methodology does not assign a price target to a security. The default scenario that is produced by the Credit Suisse HOLT valuation model establishes a warranted price for a security, and as the third-party data are updated, the warranted price may also change. The default variables may also be adjusted to produce alternative warranted prices, any of which could occur. Additional information about the Credit Suisse HOLT methodology is available on request.

This document may not be reproduced either in whole, or in part, without the written permission of the authors and CREDIT SUISSE.

© 2014 CREDIT SUISSE GROUP AG and/or its affiliates. All rights reserved