

Share repurchases and their impact on forecasting returns

Tim Appelt, August 2013

Rather than distributing earnings by paying dividends, companies sometimes use earnings to purchase and then retire a portion of existing shares. While repurchases or buybacks are a negligible component of corporate distributions in most markets,¹ they have become a significant factor in the United States. For example, over the 27 years spanning 1985 to 2011, average annual share repurchases averaged 1.61% of market capitalization in the US equity market.² If you add this to S&P500 dividend yield of 2.32% over the same period, this raises average total corporate payouts to 3.9%, much closer to the higher historical levels of dividend yields we have seen, and closer to the levels of dividend yields in other major equity markets. The magnitude of these buybacks raises the question: what impact do they have on investor returns, and in particular, how do they impact both our historical analysis of returns and our forecasts of future returns?

One very misleading approach is to calculate the percentage of capitalization spent on share repurchases, which is called the *buyback yield*, and add this to the dividend yield, to come up with a *total yield*. The suggestion is that investors are really receiving the total yield, not just the dividend yield, and that all is well — dividend yields in the US market aren't particularly low after all. If you believe this, then

1 DMS 2006, footnote 22, p. 24.

2 See Maubisson 2012, p 3. The average of 1.61% is calculated from the data as presented.

you will think that in our attribution and forecasting models, the total yield rather than the dividend yield should be used.

But think about it for a moment. If you are a buy-and-hold investor, how do you receive that buyback yield, and how does it impact your returns? The corporation used earnings to purchase other people's shares, and you did not receive your pro-rated portion as part of your dividend income. The total dividend yield idea doesn't explain how you benefit here.

A more subtle claim is that share buybacks are *equivalent* to dividend payouts, and I will show you that this can be true *under some specific circumstances*. Tackling the larger question of whether or not share buybacks are an effective way of returning cash to shareholders is a tricky discussion, especially in the abstract. I am not tackling this larger question here, but the discussion may give you some hints as to how you might think about it. My main purpose is to show you how share buybacks impact the investment returns of buy-and-hold investors, and how this fits within our analytical model. I will suggest that the effect is quite benign and does not need to be formally disentangled from other components of return. In other words, most investors can ignore this factor as a separate component. So this appendix is mostly of interest to those who might have doubts on this score.

The simplest approach is to give an example: Table 1 portrays Company A, which makes all of its earnings distributions in the form of dividends. The case is simple. At the end of year 0 the company has \$10,000 to distribute, over a share base of 10,000 shares, for a dividend of \$1.00 per share. At the end of year 1, the company has experienced business growth, and allocates an additional 4% to the pool of funds to be distributed, which rise to \$10,400. Shares outstanding remain constant at 10,000, which implies a dividend per share of \$1.04. This pattern continues for the following 10 years, at the end of which \$14,802 is available for distribution, and the dividend per share has risen to \$1.48. Not surprisingly, 4% growth of both funds available for distribution and dividends per share amounts to 4% annualized growth for 10 years. Column (1) to (4), which contain this

Table 1 Appendix to Chapter 16:
Company A: All Funds for Distribution are Paid as Dividends
And Shares Outstanding are Held Constant

End of Year	(1) Total Funds for Distribution (end of year)	(2) Growth of funds for Distribution	(3) Shares Outstanding (end of year)	(4) Dividend per Share	(5) Dividend Yield (Assumed for example)	(6) Growth of Dividends per Share	(7) Implied Share Price	(8) Market Capitalization
0	\$10,000		10,000	\$1.00	3.00%		\$33.33	\$333,333
1	\$10,400	4.00%	10,000	\$1.04	3.00%	4.00%	\$34.67	\$346,667
2	\$10,816	4.00%	10,000	\$1.08	3.00%	4.00%	\$36.05	\$360,533
3	\$11,249	4.00%	10,000	\$1.12	3.00%	4.00%	\$37.50	\$374,955
4	\$11,699	4.00%	10,000	\$1.17	3.00%	4.00%	\$39.00	\$389,953
5	\$12,167	4.00%	10,000	\$1.22	3.00%	4.00%	\$40.56	\$405,551
6	\$12,653	4.00%	10,000	\$1.27	3.00%	4.00%	\$42.18	\$421,773
7	\$13,159	4.00%	10,000	\$1.32	3.00%	4.00%	\$43.86	\$438,644
8	\$13,686	4.00%	10,000	\$1.37	3.00%	4.00%	\$45.62	\$456,190
9	\$14,233	4.00%	10,000	\$1.42	3.00%	4.00%	\$47.44	\$474,437
10	\$14,802	4.00%	10,000	\$1.48	3.00%	4.00%	\$49.34	\$493,415
10-year annualized growth				4.00%			4.00%	4.00%

information, are highlighted in blue, and all the information here is directly under the control of the corporation.

The market enters the picture when I assume that the dividends per share are valued to yield 3% in column (5). The yield of 3% is simply an arbitrary number I have chosen, and the yield could have been any other number. To keep the example simpler, I assume that the market continues to price the company with a 3% dividend yield. Columns (7) and (8) show the consequences of this yield: at the end of year 0 the share price is \$33.33 ($\$1.00/3\%$), and the total market capitalization of the company is \$333,333. Column (6) calculates the annual growth of dividends per share, which at 4% mirrors the annual growth of the funds for distribution since the number of shares have remained constant. Given all these assumptions, our equity attribution model tells us that the 3% yield plus 4%

dividend growth generates approximately a 7% return, or precisely $(1.03) \cdot (1.04) - 1 = 0.0712$ or 7.12%.³

Now I will compare Company A to Company B, a business that generates exactly the same funds for distribution and has the same steady 4% annual growth. They are essentially the same company except for one small detail: Company B decides to allocate one-third of its funds for distribution to share buybacks, and so dividend payouts are made with the remaining two-thirds of those funds. The left-hand side of Table 2, again highlighted in blue, contains this information. Columns (1) and (2) are identical to those in Table 1, and columns (3) and (4) show the two-thirds /one-third split of distributions between dividends and money allocated to share buybacks. All four columns are under the control of Company B.

In order to show you that these two differing distribution policies may (but need not) generate virtually identical returns to buy-and-hold investors, Table 2 makes the assumption that at the end of year 0, the market understands that A and B are essentially identical companies at that point, and so values the shares at the same price, \$33.33. Remember that this is just an example, and I am not saying that the market *must* value the shares at the same price, although it is plausible that it should do so at this point. But making this assumption means that the dividend yield of B is 2% ($\$0.67/\33.33), and 1% of the company's capitalization, \$3,333 is allocated to purchase shares. In other words just as for company A, at the end of year 0, 3% of market capitalization is distributed to shareholders. In addition, at this share price at the end of year 0, 100 shares can be purchased and cancelled, with the consequence that in year 1 the company has a reduced share base of 9,900 shares, columns (9) and (10).

Now as we move from year to year, the situation is just a little more complicated for B than for A. Since Company A kept the number of its shares fixed, its allocation of funds to dividends immediately translates into a per share value, and the growth in dividends per

3 Of course you can calculate returns to each period in the usual way, in terms of ending value plus dividend versus starting value, and then cumulate the results. That will also show returns of 7.12% per year and 7.12% annualized.

Table 2 Appendix to Chapter 16:
Company B: The Same Funds are Available for Distribution, which is Split between Dividend Payouts and Share Buybacks

End of Year	(1) Total Funds for Distribution (end of year)	(2) Growth of funds for Distribution	(3) Funds Allocated for Dividends (2/3)	(4) Funds Allocated for Buybacks (1/3)	(5) Dividend Yield (Assumed for Example)	(6) Buyback Yield (Assumed for Example)
0	10,000		6,667	3,333	2.00%	1.00%
1	\$10,400	4.00%	6,933	3,467	2.00%	1.00%
2	\$10,816	4.00%	7,211	3,605	2.00%	1.00%
3	\$11,249	4.00%	7,499	3,750	2.00%	1.00%
4	\$11,699	4.00%	7,799	3,900	2.00%	1.00%
5	\$12,167	4.00%	8,111	4,056	2.00%	1.00%
6	\$12,653	4.00%	8,435	4,218	2.00%	1.00%
7	\$13,159	4.00%	8,773	4,386	2.00%	1.00%
8	\$13,686	4.00%	9,124	4,562	2.00%	1.00%
9	\$14,233	4.00%	9,489	4,744	2.00%	1.00%
10	\$14,802	4.00%	9,868	4,934	2.00%	1.00%

End of Year	(7) Dividend per Share	(8) Implied Share Price	(9) Shares Bought Back (end of period)	(10) Shares Outstanding (End of Year)	(11) Market Capitalization	(12) Growth of Dividends per Share
0	\$0.67	\$33.33	100.0	10,000	\$333,333	
1	\$0.70	\$35.02	99.0	9,900	\$346,667	5.05%
2	\$0.74	\$36.79	98.0	9,801	\$360,533	5.05%
3	\$0.77	\$38.64	97.0	9,703	\$374,955	5.05%
4	\$0.81	\$40.59	96.1	9,606	\$389,953	5.05%
5	\$0.85	\$42.65	95.1	9,510	\$405,551	5.05%
6	\$0.90	\$44.80	94.1	9,415	\$421,773	5.05%
7	\$0.94	\$47.06	93.2	9,321	\$438,644	5.05%
8	\$0.99	\$49.44	92.3	9,227	\$456,190	5.05%
9	\$1.04	\$51.94	91.4	9,135	\$474,437	5.05%
10	\$1.09	\$54.56		9,044	\$493,415	5.05%
10-year annualized growth						
	5.05%	5.05%			4.00%	

share is identical to the growth of its funds allocated for distribution to shareholders at 4%. But the per share dividend of Company B depends on how many shares were purchased and retired at the end of the previous year. In this example the assumption of a continuing 2% yield determines a share price, which in turn determines the

number of shares purchased and retired. With these assumptions the dividends per share grow at the higher rate of 5.05% (Column 12) due to the declining share base from year to year.

The consequence is that while the assets allocated for distribution are the same each year for both A and B, and grow at 4% per year, investors in Company B receive a lower dividend yield but a higher dividend growth rate. Once again, our equity attribution model tells us that the return to an investment in B will be approximately 7%: a 2% dividend yield plus 5.05% dividend growth. The precise calculation is $(1.02) \times (1.0505) - 1 = 7.15\%$, just .03% higher than for Company A. You should also note that while the share price of Company B rises faster than that of Company A, the total market capitalization of the two companies remains identical, since the reduction in the number of shares outstanding for Company B compensates for its higher dividend per share growth.

Obviously these examples are highly engineered, with appropriate dividend yields that never change. What they illustrate is the general principle that share buybacks increase the dividend per share growth rate relative to a firm without share buybacks, if all else is held constant. But you can also see that whether or not investments in the two companies remain essentially the same, will be determined by how the respective yields and prices move, and additionally for Company B, how this affects the share buyback program. If shares are bought back at higher prices (lower dividend yields) the growth effect will be diluted which lowers returns to existing shareholders, and conversely if shares are bought back at relatively cheaper prices (higher dividend yields), more shares will be purchased and retired, which will increase the growth rate for existing shareholders.

There are several lessons from this analysis with respect to our equity attribution and forecasting models. First, with respect to our historical attribution model, since share buybacks impact dividend growth, adding a buyback yield to actual dividend yield would double the impact of buybacks, and so is clearly wrong. The impact of buybacks is embedded in the historical dividend growth that has occurred, and so no further analysis is required.

Second, the situation with respect to our forecasting model is analogous. Since the historical impact of buybacks on dividend growth is in our historical data, then to the extent that we related future dividend growth to historical dividend growth, perhaps along with GDPPC and possibly some other factors, we do not need to explicitly model the impact on dividend growth due to buybacks. At least this is the case as long as we think buybacks will continue to occur more or less as they have in the past. To put it another way, were you to add a buyback yield to dividend yields in your forecasts, you would have to explicitly remove the effect of buybacks on your forecast of dividend growth.

This analysis also leads to an interesting observation about US equities. Since the US market has been subject to significant share buybacks over the past 25 years, it looks and behaves more like company B than company A. Given that share buybacks have averaged 1.6% of capitalization since 1985, this suggests that real dividend growth has been roughly 1.6% higher than it would otherwise have been over this period, assuming no buybacks. But given that real dividend growth in the US market has been in the range of 1.0% over longer periods, this implies that real dividend growth might not have been positive over this period without share buybacks.

