



*Monte Carlo Analysis of a Portfolio
Of High Dividend Stocks*

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The Draw of High Dividends

There has been a great deal of attention lately given to ETF's and other funds that focus on generating a high dividend yield (see FDL, DVY, PEY, SDY). People tend to emphasize the 'income' portion of their portfolios as they approach retirement, but interest in these funds goes beyond retirees. The basic argument in favor of high-dividend investment strategies is that stocks with high dividends will sustain you when the market is in decline or simply moving sideways and not doing much in terms of price appreciation (which means that Beta for total returns of high dividend yielding stocks tends to be fairly low). Further, the ratio of dividend to price (dividend yield) is often treated as a measure of when a stock is expensive or cheap. When dividend yield is high, the stock is considered cheap, and vice versa. This measure of relative value of a stock has recently been made for the market as a whole in the *Business Week* bestseller by Ben Stein and Phil DeMuth, *Yes, You Can Time the Market*. At the intuitive level, this argument makes sense. Taking high dividend yield as a 'buy signal' is advocated by many market experts and is cited, for example, in *A Random Walk Down Wall Street* (by Burton Malkiel) as one of the very few fundamental measures of value that has proven out. Malkiel shows that the historical 10-year rate of return when stocks are purchased at high dividend yields have been markedly higher than the 10-year rate of return when stocks are purchased at low dividend yields. Similarly, Stein and DeMuth show an analysis of market history over the last hundred years in which entering the market at high dividend yields delivers vastly superior results over a twenty-year investing horizon than when you enter at low dividend yields. Can it really be this simple? A recent paper by Ang and Beekaert (both from Columbia University and the National Bureau of Economic Research), *Stock Return Predictability: Is It There?*, casts additional insight on this issue. They find that the observed apparent advantage in investing at low dividend yields is indeed present in the *historical* data but that the observed effects are not likely to persist. They are not saying that the results shown by Malkiel and Stein and DeMuth are incorrect regarding the historical data, but rather that we should not count on seeing these effects continue in the future.

Many investors are currently focusing on achieving high dividend yields, largely because many sectors with high dividend yields have performed very well over the past several years. This recent experience tends to make people believe the theory that high dividends are a good measure of value. There are, of course, other reasons why people are “income” investors. As Phil DeMuth (www.phildemuth.com) has pointed out to me, many people have trusts in which they are entitled to the "income" (i.e. dividends) but cannot touch the "principal." This situation leads some investors to appropriately treat dividends as a preferred source of returns.

Total Returns vs. Income

I think about investing in terms of total returns (dividends plus price appreciation), but many investors want portfolios with a certain level of dividend yield and perhaps even to maximize dividend yield.

If you consider that earnings can either be reinvested (providing growth capital) or simply distributed to shareholders, is there any reason to think that disbursement is inherently better for shareholders than reinvesting in the business? Further, since both capital appreciation and dividends are simply components of total return, can the market really be so inefficient that one ‘type’ of earnings is treated as inherently ‘better’ than another? In the long-term, it simply does not make sense that dividends are somehow a privileged source of returns.

Another interesting issue with regard to choosing investments based on dividends is that some companies pay dividends that exceed their earnings per share—they are taking more money out of the firm to give to shareholders than they are really earning. This situation is referred to as the stock being ‘leveraged,’ because the dividends are being paid out by essentially borrowing against future earnings. This situation is easily identified if you examine dividends vs. earnings per share. A stock that is leveraged must be inherently more risky than a similar business that is not leveraged and if the market is at all rational, this should be manifested in higher volatility relative to return. If you see

a high dividend stock that also shows high levels of volatility, this is consistent with leverage and may not be an ideal choice for a conservative ‘income focused’ investor. The risk being that the dividends are potentially unsustainable.

How large a dividend relative to earnings is sustainable over the long-haul? The iShares high-dividend ETF (DVY) tracks the Dow Jones Select Dividend Index. That index specifically excludes any stocks for which the five-year average ratio of dividends to earnings per share exceeds 60% because Dow Jones Indexes’ internal research has suggested that this ratio is the upper end of sustainable dividends relative to earnings in the United States. At the time of this writing DVY has a dividend yield of 2.92%.

Examining a High Dividend Portfolio

Ben Stein recently wrote an article in the *New York Times* (March 12, 2006) in which he mentioned a series of candidates for a portfolio of stocks with a current dividend yield of 7%, as selected by himself and Phil DeMuth (see table below). Stein notes in this article that it would be quite simple to construct a portfolio with dividend yield greater than 7% per year. Phil DeMuth has also pointed out that many of these stocks are leveraged—meaning that their payout via dividends is more than their earnings. Stein specifically notes that he is not asserting the suitability or attractiveness of any of these firms in particular, but I was intrigued enough to take a closer look. A portfolio with a 7% dividend yield has some real intuitive appeal, right?

Sector	Ticker	Name
REITS	LXP	Lexington Corporate Properties Trust
	HR	Healthcare Realty Trust
MLP's	TPP	Teppco Partners
	MWE	MarkWest Energy Partners
Utilities	PGL	Peoples Energy
	EN	Enel of Italy
	UIL	UIL Holdings
	NZT	New Zealand Telecom
Royalty Trusts	UU	United Utilities of Britain
	GNI	Great Northern Iron Ore Properties
	PBT	Permian Basin
Other	UST	UST Inc.
	CAG	ConAgra Foods
	DLX	The Deluxe Corporation
	ALD	Allied Capital

Candidates for a 7% Solution by Stein and Demuth

There are different ways to calculate the annual dividend yield, particularly if you happen to be looking forward. This can be particularly challenging if you are looking at a company that does not pay dividends quarterly (the case for many foreign firms) or that pays special dividends or simply has dividend yields that vary a lot. We have written the new income calculation of Quantext Portfolio Planner (QPP) to use the same historical period as it uses to calculate other historical statistics. When we run QPP for the three year period to the end of January of 2006, we get the following:

Ticker	Historical Annual Dividend Yield (3YR QPP)	Yahoo! Finance
LXP	6.77%	6.70%
HR	7.18%	6.80%
TPP	6.81%	7.30%
MWE	7.04%	7.30%
PGL	5.12%	5.80%
EN	7.42%	7.80%
UIL	6.49%	5.90%
NZT	6.75%	7.10%
UU	9.49%	6.50%
GNI	8.38%	8.70%
PBT	9.45%	9.20%
UST	5.43%	5.60%
CAG	4.29%	3.70%
DLX	3.84%	6.70%
ALD	8.56%	8.00%

Calculated Trailing Dividend Yield from QPP and listed on Yahoo! Finance

The annual dividend values cited above from *Yahoo! Finance* are taken as of the time of this writing. Interestingly, the values calculated using QPP match those from *Yahoo! Finance* quite closely, except in the case of DLX and UU. In the cases of both of these firms, recent large price changes have altered the dividend yield substantially. This is one of the best reasons to look at longer-term data for dividend yield. The high yield that Yahoo! reports for DLX is due to the fact that DLX has dropped in price by about 40% over the last twelve months, thereby raising yield.

When we run Quantext Portfolio Planner for this period and examine the historical performance of a portfolio that is equally weighted between all of these stocks, we find the following:

Historical Data	
Start: 2/1/2003	End: 1/31/2006
Average Annual Return	Standard Deviation (Annual)
19.65%	10.61%
Historical Beta: 70.53% Historical Yield: 6.87%	
Performance of S&P500 over historical period	
Average Annual Return on S&P500 14.86%	
Annual Standard Deviation on S&P500 8.85%	

Portfolio equally allocated to each high-dividend stock

This portfolio has had an average dividend yield of 6.87% over the past three years (see above)—which would certainly have been nice. The average annual return (dividend + appreciation) was 19.65% per year. So far, this sounds great. The average annual return for the S&P500 over the same period has been 14.86%, to put this in context. These

gains in return do not come without a cost. The volatility of this portfolio has been substantially higher than that for the S&P500 over the same period (10.6% per year for this portfolio vs. 8.85% for the S&P500). Now for the really critical question: what is the projected future performance from the Monte Carlo model?

Portfolio Stats	
Average Annual Return	Standard Deviation (Annual)
17.57%	17.89%

Projected future performance of equally-allocated portfolio

The projected future average annual return for this portfolio is 17.57% per year, with a standard deviation of 17.89% per year (having assumed that the S&P500 will return 8.3% per year, with a standard deviation of 15.07% per year). This is a high risk / high return portfolio. It is important to bear in mind, of course, that these projections have many uncertainties regarding the future actual expected risk and return but the basic outcome that this portfolio has a projected risk that is markedly higher than that for the S&P500 is important to note. Further, it is hard to argue with the historical data on volatility:

Ticker	Standard Deviation In Annual Return
LXP	13.89%
HR	23.18%
TPP	16.14%
MWE	18.01%
PGL	15.37%
EN	18.67%
UIL	22.02%
NZT	18.73%
UU	14.99%
GNI	26.26%
PBT	29.23%
UST	20.04%
CAG	21.97%
DLX	17.57%
ALD	22.46%
IVV	9.04%
IWN	14.65%

Trailing 3-Year Standard Deviation in Annual Return

The table above shows the actual historical standard deviation in annual return for these stocks and we have added the same measures for an S&P500 ETF (IVV) and a small value stock ETF (IWN). These high-dividend stocks show volatility that is markedly higher than that for the S&P500 and, in most cases, higher than the *small value* index, too. These are fairly high volatility stocks.

Now, let's imagine that we wished to build a stock portfolio that has total volatility that is very close to that for the S&P500 as a whole (i.e. standard deviation of about 15.1% per year). We have found that a portfolio with 40% in the S&P500 (in this case IVV) and 4% each in these high-yielding stocks gives about this level of total volatility:

Portfolio Stats	
Average Annual Return	Standard Deviation (Annual)
13.91%	15.24%
Historical Data	
Start: 2/1/2003	End: 1/31/2006
Average Annual Return	Standard Deviation (Annual)
18.34%	9.05%
Historical Beta: 82.99%	
Historical Yield: 4.88%	

40% IVV / 4% each in high-yield stocks

This portfolio looks pretty good for an aggressive investor. We still have Beta well below 100%, but the total portfolio risk is a bit more than that for the S&P500. The projected average annual return is 13.9% per year, far above our projected value for the S&P500 index (8.3% per year). The high returns relative to the S&P500 for essentially the same level of risk are due to diversification effects.

What does it all mean?

So what do we learn from running these portfolios through our Monte Carlo tool? First, the tool immediately shows that a portfolio of these stocks has a high volatility. A portfolio built out of these stocks will be high risk. If these stocks were to make up a meaningful fraction of a portfolio, the holder of the portfolio should be aware of the high volatility that he or she will experience. The total dividend yield of these stocks is high, but that yield is being extracted against future earnings, which poses considerable risk—and these risks show up in the fairly high volatility associated with these stocks and with the portfolio as a whole.

Historically, high dividend yields demonstrated that companies were generating a high level of earnings relative to their share price. For this reason, many people take high dividend yields to suggest that the price of a stock is fairly low compared to expected earnings. Further, a company with stable earnings might rationally return earnings to shareholders rather than retaining those earnings as protection in a down business cycle. The problem, of course, is that many companies are currently paying large dividends to attract investors but they are paying these dividends by borrowing against future earnings—so these high dividends are not necessarily a good “value signal” for the stock. Further, because many companies with high dividend yields have generated substantial capital appreciation over the last several years (see energy utilities for example), many investors are choosing stocks that emphasize high dividends in the hope that these firms will continue to outperform. Sadly, sector momentum strategies tend not to work out well for investors in the long-term. Ultimately, it is critical to look at any investment from a range of perspectives and not put too much weight on dividend levels alone.

The Monte Carlo model suggests that there is no free lunch to be had simply by buying stocks based on high dividend yields. This should not be too surprising. An interesting feature of human behavior is that people will often focus on simple decision rules (heuristics) in making decisions rather than analyzing all facets. If people assume that high dividend yields are a measure of the desirability of an investment, companies will

ramp up their dividend yields. Ultimately, it does not make sense for dividends to be a preferred form of return—as opposed to price gains in the underlying stock. There will be people who have a real preference for dividends vs. capital appreciation because of the structure of trusts or tax reasons, but even these investors must be careful to account for the fact that many companies that are currently paying high dividends (that exceed earnings per share) have a high level of risk / volatility.

As we have emphasized in our other papers, a practical portfolio planning process will consider fundamentals and quantitative aspects of individual investment choices and of the portfolio as a whole. High dividend yields can be driven by a variety of factors, some of which may signal a well-priced stock and some of which may simply reflect the company's response to their assumptions of shareholder preferences. When dividends exceed earnings, an investment is likely to act like any other leveraged investment. Potential returns increase, but so do risks.

QPP looks at total return vs. volatility in a portfolio. The underlying assumptions in a Monte Carlo model reflect broad assumptions about the balance between risk and return. As such, QPP will tend to discount the ability of individual assets to outperform long-term market relationships between risk and return. Further, the recent academic research calls the value of high dividend yields in predicting future out-performance into question (Ang and Bekaert paper cited earlier). That said, it still makes sense to attempt to take advantage of asset allocation effects that many high-yield stocks provide. Overall, a portfolio with 40% in the S&P500 and 60% allocated equally between these same high-yield stocks looks quite attractive. Even if the dividends are cut and the future total returns decrease by a few percent, this portfolio seems to provide reasonable outcomes. This portfolio—or one like it—is reasonable even if the dividends do turn out to be unsustainable.

In summary, simply choosing a portfolio to maximize dividends can lead to a portfolio that may be too risky because many firms are achieving high dividends with leverage. There is nothing wrong with this strategy, but investors must be diligent in accounting for

the total volatility associated with the business models that these firms are pursuing. Ultimately, the market is pretty smart and a leveraged business model is likely to correspond to higher risk and this is signaled by high volatility / increased risk.

More information on Quantext Monte Carlo planning tools, as well as a free trial, is available at: <http://www.quantext.com/gpage3.html>