The Unluckiest Quality Individual Stock Investor versus Quality Index Investing

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This paper will compare the results of two individuals investing $125,000 each in the stock market over a 15-year period. One invests the entire $125,000 as an initial lump sum into a market basket of stocks. The other initially invests only a portion of the $125,000 into a collection of randomly selected quality dividend paying stocks while investing the remaining portion into the same stocks on a quarterly basis over 15 years. This second investor unluckily always invests at the high points of the market. Both investors reinvest the dividends. The comparison of the two investment strategies is astonishing.

INTRODUCTION

In many cases, that which was considered revolutionary a few years ago has become the pattern for today. Some of the reasons include:

(1) The presidential election of 2016 has divided the country like no other election in the recent history of the United States.
(2) The United States is now engaged in "traditional wars" and "non-traditional wars" of terrorism around the globe. Terrorist attacks are becoming so frequent that they are becoming the norm rather than the exception.
(3) The economy is beginning to recover from the deep recession of 2008 and 2009, but at a slow pace. Companies are beginning to hire again while at the same time continuing to downsize. Many are eliminating pension plans as well as other employee benefit plans. Numerous employees have become independent contractors without benefits.
(4) Members of the baby boom generation (those born between 1945 and 1964) are retiring in record numbers. Moreover, advanced medical procedures and new drugs produced by the biotechnology fields are enabling them to live much longer, some well past their 80's and 90's.
(5) College degrees are no longer guaranteeing jobs. Many new graduates are moving back to their parents' house to stay for many years (eliminating the empty nest syndrome).
(6) The energy situation (oil and natural gas) is in a constant state of fluctuation, dramatically affecting the economy and the investment markets.

What implications do the above have for investing and financial independence (the ability to control one's financial destiny)? Many of the factors listed above are beyond the control of an individual. However, there is one factor that is controllable, and that is the discipline associated with investing.

The purpose of this paper is to demonstrate that one can become financially independent and prepared for retirement by investing in quality dividend paying stocks over a long period. We will show that this is true even when the person invests at the high points of the market. We will incorporate the authors' current research with the research of previous papers (Spaht & Rubin, 2007; Rubin & Spaht, 2010; Rubin & Spaht, 2011; Spaht & Rubin, 2012; Rubin & Spaht, 2013; Spaht & Rubin, 2014; Rubin & Spaht, 2015; Rubin & Spaht, 2016).

Perspective

For most people, reaching the age of retirement is a certainty. Based on statistics from the Centers of Disease Control and Prevention, a male who turned 65 in 2014 can expect to live to age 83 while his female counterpart can anticipate aging to 85.5. In addition, according to the Society of Actuaries, there is a 25% chance that this 65 year old male will live ten years longer (to the age of 93) and that the 65 year old female will live to 96 (Powell, 2016).

As previously stated, there are many ways to accumulate wealth that lead to financial independence and a retirement free of financial concerns. However, for most people, the most realistic way is through building a quality stock portfolio. An ideal way to do this is by employing the strategy advocated by Warren Buffett who believes in long-term value investing in quality companies that have a proven record of dividend growth. Most of us are familiar with the observation made by Mr. Buffett in 2012 when he told the story of how, had one invested only $40.00 in Coca-Cola stock when it went public in 1919 and patiently reinvested the dividends, that stock would be worth more than 5 million dollars (Morris, 2014). Now, five years later, it would be worth even more – 11.5 million dollars!

Mr. Buffett also advocates not trying to time the market, and research backs up his statement. For example, the return of the S&P 500 since 1930 has been 10,055%. However, if one eliminates the 10 best days per decade, this return drops down to only 31% (Staying Invested Beats Marketing Timing, 2016). Thus, it is best to be a long-term investor and not a trader. The historical long-term trend for the stock market is up regardless of what happens in the short-term (WEIN, 2016).

Further describing the benefits of long-term investing, Mr. Buffett recently stated, "With a wonderful business, you can figure out what will happen; you can't figure out when it will happen. You don't want to focus on when, you want to focus on what. If you're right about what, you don't have to worry about when. If you're right about the business, you'll make a lot of money, so don't bother about attempting to buy stocks based on how their stock charts have looked over the past 200 days. Instead, always remember that it's far better to buy a wonderful company at a fair price" (Morris, 2014).

Considering that approximately half of the population does not have a source of retirement income from their employer (Kurt, 2016), and that the average person retires at age 66 and can expect to live well into his/her eighties, it is clear that focusing on the "what" is extremely critical.

The authors of this paper believe that, in building this kind of a portfolio, one should select quality stocks that not only have a long history of consistent dividend payments, but also have a history of increasing their dividend payments.

Analysis

In comparing the returns of the two investors, we assume that at the beginning of the first quarter of 1993, the index investor invested a lump sum of $125,000 into the S&P 500 Index. This investor decided to reinvest all of the dividends, but to invest no additional money into the index. The investor did not want the stress associated with making investment decisions and wanted to invest in a very passive investment climate.

On the other hand, during this same first quarter of 1993, the unlucky investor invested $50,000 in 10 randomly selected stocks contained in the *S&P 500 Dividend Aristocrats Index* by investing $5,000 at the high points of the market in each of 10 stocks. Then, on a quarterly basis over the 15-year period from

1993-2007, the investor reinvested the dividends while also investing an additional fixed amount of $125 (total of $500 per year or $7,500 for the 15-year period) in each of the stock's yearly high market price. (Note that each investor invested a total of $125,000.)

The unlucky investor's sample was limited to those stocks that had a strong buy or buy recommendation from the S&P equity analysts. Also, the sample only included stocks that had a record of consistently increasing dividends for at least the last 25 years. The 10 randomly selected stocks were Abbott Labs; AFLAC, Inc.; Becton, D'son; Coca-Cola; Exxon Mobile; Johnson & Johnson; McDonald's; Pepsi Co., Inc.; Proctor & Gamble; and Wal-Mart Stores.

The period 1993-2007 was selected because it contained almost equally good years and bad years in the stock market. The bursting of the Tech bubble at the end of 2000 and the stock market highs in 2007 are both represented.

What did the portfolios of the two investors look like at the end of the 15-year period? The value of the index investor's portfolio is easy to determine by utilizing the S&P 500 Dividend Reinvestment Historical Return Calculator. To determine the value of the unlucky investor's portfolio, we derive a formula referred to as the DCA-QDRIP (Dollar Cost Averaging Quarterly Dividend Reinvestment Plan) formula and use it to evaluate the returns for the various stocks along with their dividend income. Tables 2 and 3 contain the output from these computations.

DCA-QDRIP Formula

To derive the DCA-QDRIP (Dollar Cost Averaging Quarterly Dividend Reinvestment Plan) formula, the formula used to compute accumulations in stock value, consider an arbitrary stock and let:

P(n) = the price per share of stock during the n^{th} year,

D(n) = the declared dividend per share of the n^{th} year,

A(n) = the dollar amount invested to purchase additional shares of stock during the n^{th} year (this value is assumed to be $125 per quarter or $500 per year in this paper),

S = the number of shares initially purchased,

S_i = the number of shares owned at the end of the i^{th} quarter,

and S_{Pi} = the number of shares purchased during the i^{th} quarter.

Two assumptions are made in the derivation of the formula. First of all, since P(n) is the high price per share of stock during the entire n^{th} year, it will remain constant and not fluctuate throughout the year. Secondly, since the dividend is normally declared annually and distributed quarterly, it also will remain constant throughout the year and not change until the first quarter of the following year. Note that since S_i is the number of shares owned at the end of the i^{th} quarter, then S_{i-1} represents the number of shares owned at the beginning of the i^{th} quarter.

Under the above assumptions, the amount of dividend (DIV(i)) generated by one share of stock and used by the investor to purchase additional shares of stock during the i^{th} quarter is:

$$\text{DIV(i)} = .25\text{D}\left(\left[\frac{\text{i}-1}{4}\right]+1\right), \tag{1}$$

where [ ] denotes the greatest integer function. Also, the price (PRICE(i)) per share of stock over this same time period is:

$$\text{PRICE(i)} = \text{P}\left(\left[\frac{\text{i}-1}{4}\right]+1\right). \tag{2}$$

Thus the quotient,

$$\frac{\text{DIV(i)}}{\text{PRICE(i)}} = \frac{.25\text{D}\left(\left[\frac{\text{i}-1}{4}\right]+1\right)}{\text{P}\left(\left[\frac{\text{i}-1}{4}\right]+1\right)}, \tag{3}$$

represents the number of shares of stock purchased by the investor from the dividends of a single share of stock during the i^{th} quarter. This continuing process is illustrated in Table 1.

TABLE 1
SHARES PURCHASED FROM THE DIVIDENDS OF ONE SHARE OF STOCK

	Quarters			
Year	1	2	3	4
1	$\frac{.25\mathrm{D}\left(\left[\frac{1-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{1-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{2-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{2-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{3-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{3-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{4-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{4-1}{4}\right]+1\right)}$
2	$\frac{.25\mathrm{D}\left(\left[\frac{5-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{5-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{6-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{6-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{7-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{7-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{8-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{8-1}{4}\right]+1\right)}$
3	$\frac{.25\mathrm{D}\left(\left[\frac{9-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{9-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{10-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{10-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{11-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{11-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{12-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{12-1}{4}\right]+1\right)}$
4	$\frac{.25\mathrm{D}\left(\left[\frac{13-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{13-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{14-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{14-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{15-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{15-1}{4}\right]+1\right)}$	$\frac{.25\mathrm{D}\left(\left[\frac{16-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{16-1}{4}\right]+1\right)}$
5	… … … …	… … … …	… … … …	… … … …

Also note that the number of shares S_i owned at the end of the i^{th} quarter is given by:

$$S_i = S_{i-1} + S_{Pi}$$

$$= S_{i-1} + S_{i-1} \bullet \frac{\mathrm{DIV(i)}}{\mathrm{PRICE(i)}} + \frac{.25\mathrm{A}\left(\left[\frac{\mathrm{i}-1}{4}\right]+1\right)}{\mathrm{PRICE(i)}}$$

$$= S_{i-1} + S_{i-1} \bullet \frac{.25\mathrm{D}\left(\left[\frac{\mathrm{i}-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{\mathrm{i}-1}{4}\right]+1\right)} + \frac{.25\mathrm{A}\left(\left[\frac{\mathrm{i}-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{\mathrm{i}-1}{4}\right]+1\right)}. \quad (4)$$

For the purpose of this paper, since \$125 per quarter is used to purchase additional shares of stock, we have:

$$S_i = S_{i-1} + S_{i-1} \bullet \frac{.25\mathrm{D}\left(\left[\frac{\mathrm{i}-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{\mathrm{i}-1}{4}\right]+1\right)} + \frac{125}{\mathrm{P}\left(\left[\frac{\mathrm{i}-1}{4}\right]+1\right)}. \text{ (DCA-QDRIP Formula)} \quad (5)$$

Therefore, at the end of n years (or 4n quarters), the investor will have accumulated a value in stock of A dollars where:

$$A = \mathrm{P(n)} \bullet S_{4n}$$

$$= \mathrm{P(n)} \bullet \left[S_{4n-1} + S_{4n-1} \bullet \frac{.25\mathrm{D}\left(\left[\frac{4n-1}{4}\right]+1\right)}{\mathrm{P}\left(\left[\frac{4n-1}{4}\right]+1\right)} + \frac{125}{\mathrm{P}\left(\left[\frac{4n-1}{4}\right]+1\right)}\right]. \quad (6)$$

TABLE 2
STOCK VALUE GROWTH WITH DCA-QDRIP PLAN USING HIGH PRICES
1993-2007

Stocks Name	IIV	ICS	INS	FCS	FNS	FIV	% GAIN	ARR
Abbott Labs	5000	14.90	335.57	59.50	695.67	41,392.30	231.14	8.31
Aflac, Inc.	5000	5.20	961.54	63.90	1,613.43	103,098.00	724.78	15.10
Becton, D'son	5000	9.00	555.56	85.9	956.40	82,154.90	557.24	13.37
Coca-Cola	5000	22.30	224.22	64.30	456.45	29,349.50	134.80	5.86
Exxon Mobil	5000	17.30	289.02	95.30	682.54	65,045.60	420.37	11.62
Johnson & Johnson	5000	11.70	427.35	68.80	795.54	54,732.80	337.86	10.35
McDonald's Corp.	5000	14.50	344.83	63.70	690.91	44,011.10	252.09	8.75
PepsiCo, Inc.	5000	21.00	238.10	79.00	505.11	39,904.00	219.23	8.05
Procter & Gamble	5000	14.30	349.65	75.20	683.73	51,416.80	311.33	9.89
Wal-Mart Stores	5000	16.60	301.21	51.40	602.65	30,976.40	147.81	6.24
TOTAL	50,000					542,081.40	333.67	10.27

IIV = Initial investment value
ICS = Initial year's cost per share
INS = Initial number of shares purchased
FCS = Final year's cost per share
FNS = Final number of shares
FIV = Final investment value
% GAIN = Percentage total return (includes both reinvestment of dividends and investment of $125 per quarter per stock + initial $5,000 investment in each stock)
ARR = Annual rate of return in accumulations of stock value (includes both reinvestment of dividends and investment of $125 per quarter per stock + initial $5,000 investment in each stock)

TABLE 3
DIVIDEND GROWTH WITH DCA-QDRIP PLAN USING HIGH PRICES
1993-2007

Stocks Name	INS	IDS	IDI	FNS	FDS	FDI	% GAIN	ARI
Abbott Labs	335.57	0.34	122.90	695.67	1.30	904.37	635.85	15.32
Aflac, Inc.	961.54	0.06	61.73	1,613.43	0.80	1,290.74	1,991.09	24.25
Becton, D'son	555.56	0.17	101.50	956.40	0.98	937.27	823.47	17.21
Coca-Cola	224.22	0.34	81.75	456.45	1.36	620.77	659.39	15.58
Exxon Mobil	289.02	0.72	226.70	682.54	1.37	935.07	312.47	10.65
Johnson & Johnson	427.35	0.25	114.99	795.54	1.62	1,288.77	1,020.81	18.84
McDonald's Corp.	344.83	0.11	40.49	690.91	1.50	1,036.37	2,459.79	26.06
PepsiCo, Inc.	238.10	0.31	79.12	505.11	1.43	722.31	812.90	17.11
Procter & Gamble	349.65	0.28	105.26	683.73	1.28	875.18	731.48	16.33
Wal-Mart Stores	301.21	0.07	22.46	602.65	0.83	500.20	2,127.17	24.81
TOTAL			956.90			9,111.05	852.14	17.46

INS = Initial number of shares purchased
IDS = Initial declared dividend per share
IDI = Initial dividend income (beginning with end of first year)
FNS = Final number of shares
FDS = Final declared dividend per share
FDI = Final dividend income (last year)
% GAIN = Percentage return in dividend income growth (includes both reinvestment of dividends and investment of $125 per quarter per stock + initial $5,000 investment in each stock)
ARI = Annual rate of return in dividend income growth (includes both reinvestment of dividends and investment of $125 per quarter per stock + initial $5,000 investment in each stock)

Results of the Unlucky Investor

In referencing Table 2, had the unlucky investor invested an initial $5,000 in each of the 10 stocks and reinvested the dividends generated by the stocks while also investing an additional $125 in each stock quarterly (all investments made at the high points of stocks' prices), then, at the end of 15 years, that portfolio would have grown in value from $50,000 to $542,081. The resulting percentage increase is 333.67% in total return (10.27% annual rate).

In referencing Table 3, by using the above investment protocol, the dividend income would have increased from $976 to $9,111. This results in an increase of 852.14% return in dividend income growth (17.46% annual rate).

Thus, even if you happen to be an extremely unlucky investor in the market, always investing and reinvesting at the high points in the market, your portfolio growth as well as your dividend growth are impressive. Certainly, both growth rates far exceed the rate of inflation, thereby not only preserving the purchasing power of the portfolio, but also allowing the investor to prosper.

There are two stocks listed in the above tables that had substantial growth above that of the average stock and continue in this tradition today. AFLAC and Becton, D'son increased at a rapid rate over the 15-year period. This period included the terrifying market collapse of 2008 and 2009, the worst since 1974. AFLAC had over a 724% gain in stock value over the 15 years at an annual rate of growth of 15.10%. Becton, D'son had over a 557% gain in stock value over the 15 years at an annual rate of growth

of 13.37%. These representatives of the insurance and medical industries show broad diversification across industry sectors with the gains not being restricted to just one sector.

Potential value resulting from stock ownership also arises from the growth in dividends. The most important factor in investing in dividend paying stocks is not selecting the stock that has the highest current dividend yield, but rather selecting those stocks that over a period of time can consistently grow the dividend.

Referencing Table 3, even though all investments were made at the stock's high point, thereby lowering the initial dividend yield, the stocks' ability to grow dividends is electrifying. Over the 15-year period, AFLAC had more than a 1,991% dividend gain (24.25% annual rate), Johnson & Johnson had more than 1,020% (18.84% annual rate), McDonald's more than 2,459% (26.06% annual rate), and Wal-Mart had more than 2,127% (24.81% annual rate). Diversification across industry lines – insurance, drug, food, and retail – shows that impressive dividend growth is not restricted to one industry.

Results of the Index Investor

What would the results have been had our index investor only invested the lump sum of $125,000 in the S&P 500 Index at the beginning of the 1993-2007 period and reinvested the dividends, but not taken advantage of the Dollar Averaging Method of making the $125 additional investment each quarter? In this case, his S&P 500 Index portfolio would have grown in value to $403,246, resulting in a 222.597% increase that annualizes to a rate of 8.12% (S&P 500 Dividend Reinvestment Historical Return Calculator, 2016).

This passive investment strategy is the thesis of investing in the S&P 500 Index. The line of thought is that the rate of return will approximate the market rate of return thereby eliminating decision-making by the investor.

Comparison of the Two Investors

Even with the time value of money on the side of the lump sum index investor, his accumulation is less than that of the unlucky DCA-QDRIP Formula investor. The final portfolio value of the unlucky investor is $542,081 while the index investor's portfolio had a value of $403,246. The difference is $138,835 or 34.43%.

Thus, even though the unlucky investor always bought at the high points in the market, his portfolio value was greater than that of the index investor. This was due to the high quality stocks contained in the unlucky investor's portfolio. Investing for the long term in quality stocks is the critical factor in building a solid portfolio foundation.

Moreover, dividends are often the best indicator in finding these quality stocks (Principles of Individual Stock Investing, 2016). Furthermore, the most important factor in using dividends to select stocks is not to select those stocks with the highest current dividend yield, but to select the ones that over a period of time have consistently increased their dividends.

CONCLUSION

A question for most people is, "How can I make my savings last through retirement without outliving my income while still enjoying life before retirement?" The consensus of opinion is that one should not withdraw more than 4-5% of savings in the first year of retirement and then adjust the subsequent yearly withdrawals for inflation. It has also been shown that the strategy of withdrawing 4.2% per year over a 30-year retirement period works 90% of the time (portfolio assumption of 50% stocks, 40% bonds, and 10% cash) (How Can I Make My Savings Last?, 2016).

This paper demonstrates that even if one invests at the high points of the market, but invests in quality stocks while reinvesting the dividends and applying the dollar cost averaging strategy of investing equal sums of money at equal time periods, the annual return on the investment will far exceed the 4.2% required for a comfortable retirement. It also demonstrates that this strategy of investing is much better

than investing in an index fund. Finally, perhaps just as important, if not more so, it shows that this type of a quality investment portfolio will allow the person to enjoy life leading up to retirement.

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