

# **Quality Individual Stock Investing Versus Index Investing**

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*Much discussion exists concerning how best to accumulate wealth resulting in financial independence. These methods include investing in properties or collectibles, but such are not realistic for the average person due to substantial costs and a lack of liquidity. The most practical way for the general public to accumulate wealth is equity stock investing. However, the correct investing strategy must be utilized. This paper develops such a strategy and then compares its results to the results of investing in a market basket of stocks through a quality index and determines which strategy works best long-term.*

## **INTRODUCTION**

Members of the baby boom generation (those born between 1945 and 1964) are retiring in record numbers. Initially, these individuals had access to numerous employee benefit plans, most notably various retirement plans. Their retirement plans guaranteed financial security in the years to come, or so they thought. Because of this, they felt free to spend the net income received in each paycheck. They reasoned that there was no need to invest a portion of their paychecks since they believed that their jobs were secure and that their retirement years were free of any financial concern.

Something happened along the way in the years between graduation and retirement. A warning sign of what would come occurred with the recession (some say depression) of 1974 and 1975 that struck the pre-baby boom generation. For the first time, there was high unemployment among the professional classes, and college degrees no longer guaranteed job security. Many employees were terminated without having vested in the organization's pension plan; and for those that had vested, retirement benefits were based on low earnings. Moreover, pension plans were terminated, and many future employees became independent contractors without benefits. This scenario was repeated in the deep recession of 2007 and 2008.

State and municipal pension plans should provide a solid financial foundation for retirement, but often fail to do so. Several of these plans are seriously underfunded. For example, Connecticut, the state with the highest per capita income in the United States, has an unfunded pension obligation of 48.1%. Similarly, Detroit filed for bankruptcy protection in 2013, primarily because of pension obligations that were inadequately funded (Kuriloft & Martin, 2015).

Private industry has the same funding issues as state and municipal plans. Many companies are terminating retirement plans and changing employment relationships by forcing employees to become independent contractors.

Because of the above concerns, employees should begin investment programs that accumulate wealth and generate dependable income streams. There are many investible financial assets, but most are not realistic for the ordinary person. Collectables such as paintings, antiques, sculptures, and precious metals and stones are extremely difficult to evaluate and market. In addition, they do not generate an income stream. Moreover, personal assets such as automobiles, clothes, and home furnishings deteriorate in value and cost money to maintain while simultaneously failing to generate an income stream.

## **PERSPECTIVE**

For most people, investing in common stocks is the investable asset that has the potential for capital appreciation and a continuous, increasing income stream. However, investing in stocks should meet the Cardinal Rules of all successful investment strategies. These include Safety of Principal, Liquidity, Diversification, Tax Advantaged, and Quality of Management. The authors of this paper note that stocks in the S&P 500 Dividend Aristocrats Index meet these criteria. Stocks in this index have a record of consistency in increasing the dividends for at least the last 25 years and some for the last 50 years.

Although investing in stocks in the S&P 500 Dividend Aristocrats Index may be considered by some to be rather boring, the stocks' companies market products that are consumer staples such as soap, drink, and food. In addition, these stocks have been the best performing stocks in the entire United States equity sector from 1963 to 2014. Moreover, they have generated more dividends than most other stocks, and, for the most part, their investors are long term investors who are less likely to "buy high" and "sell low" which results in less frequent trading costs. "Controlling risk through investment in high-quality companies is key to the Value Line portfolio strategy" (Appel, 2013).

Long term investing in quality stocks seems to be the key factor for success in the stock market regardless of a perceived impending bear market. According to Terrance Odeon, chairman of the Finance Group at Berkley's HAAS, "People buy and sell stocks at the wrong time. They sell stocks that are poised to rise and buy stocks that do worse than those they sold. They do worse than if they had been throwing darts" (Browning, 2015).

In reality, a bell does not ring at the top of the market or at the bottom of the market. Most investors simply operate in unlimited uncertainty in the short run. They panic as the market goes into a deep decline and sell at a price when they should be buying. Then after selling near the bottom of the market, they stay out of the market until it rebounds and buy again at the high end, resulting in a continuous cycle of buying high and selling low. "The key is to create portfolios that can withstand bull or bear market alike and then stop trading" (MacBride, 2015).

Market timing assumes that an investor is able to return to the market just in time to catch it on its rebound. The probability of doing this is quite small. In fact, the annualized total return of the S&P 500 for the years 1970 to 2015 shows the following: if fully invested, a return of 9.2%; out of the market for the 15 best days, a return of 5.3%; out of the market for the 30 best days, a return of 2.7%; out of the market for the best 45 days, a return of 0.4%; out of the market for the best 60 days, a return of -1.6%; out of the market for the best 75 days, a return of -3.4%; and out of the market for the best 90 days, a return of -5.1% (Wilson, 2015).

Warren Buffett stated, "The ability of people to dance in and out of markets is quite limited, and in my case, it is zero. But stocks are going to be higher, and perhaps a lot higher, 10 years from now, 20 years from now. My game is to own decent businesses and own them at decent prices. If you do that, you are going to make a lot of money over time" (Smith, 2015). If Warren Buffett cannot time the market, how can the less experienced, average investor dream of doing so?

Jack Bogle, the Founder of Vanguard, has long been the proponent of index fund investing. His thesis is to invest in stocks in proportion to their market capitalization for the long term and not to speculate. Warren Buffett goes further, adding, "Holding the index fund for the long term means forever" (Morrison, 2015).

Jason Zweig, writer of "The Intelligent Investor" column in the Wall Street Journal, believes that the book Super Forecasting! The Art and Science of Prediction is the most important recent book on decision-

making. In this book, the author argues that, under the right circumstances, ordinary investors have the ability to improve their investing skills enough to beat professional investors (Zweig, Sept., 2015). Also, in his column, Zweig points out that both John Bogle, founder and retired CEO of The Vanguard Group, and James Grant, editor of the respected publication “Grant’s Interest Rate Observer,” assert that “individual investors who pick their own stocks may stand at least as good a chance of outperforming the market as many professionals do” (Zweig, April, 2015).

Can investors perform better by selecting their own stocks rather than by investing in an index of stocks? In an effort to answer this question, the authors will incorporate 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).

## ANALYSIS

In order to answer the preceding question, this paper will compare the results of investing in individual stocks to the results of investing in an index of stocks. Investments in individual stocks will utilize a sample of stocks from the S&P 500 Dividend Aristocrats Index. These investments will be further limited to those stocks that have a record of consistently increasing their dividends for at least the last 25 years. The index of stocks to be used for the investment comparison will be the S&P 500 Index.

The S&P 500 Index is probably second in overall popularity to the Dow Jones Index and is most popular with institutional investors. It contains 500 companies from 88 industrial groups and includes public utilities, transportation companies, and financial companies that are listed on the NASDAQ as well. This sample is weighted by value (share price times number of shares outstanding). Thus, the stocks with the highest prices and the highest number of shares are more influential in the index. It expresses changes in the level of current prices as a percentage change from base year prices.

This paper assumes that the investor invests in a sample of 17 randomly selected stocks, subject to the restrictions discussed above, that are contained in the S&P 500 Dividend Aristocrats Index. An initial one-time only investment of \$85,000 is made at the beginning of 1998 by investing \$5,000 in each of the 17 stocks. The dividends in each of the stocks will be reinvested for the 10-year period from 1998 through 2007. Finally, a comparison will be made of the ending value of this portfolio to what would have been its ending value had the dividends not been reinvested. This paper also compares these two ending values to what would have been the ending values had the same amounts been invested over the same time period in the S&P 500 Index. (The time period of 1998-2007 was selected because it contains almost equally good years and bad years in the stock market. The bursting of the Tech bubble at the end of 2000 as well as the stock market highs in 2007 are both represented.)

The first step is to derive the formula referred to as the Q-DRIP (Quarterly Dividend Reinvestment Plan) formula which is used to determine the returns for the various stocks purchased over the 10-year period.

## Q-DRIP FORMULA

To derive the Q-DRIP (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  $n^{\text{th}}$  year (P(n) is computed by finding the average of the high and low prices per share during the  $n^{\text{th}}$  year),
- D(n) = the declared dividend per share of the  $n^{\text{th}}$  year,
- S = the number of shares initially purchased,
- $S_B$  = the number of shares owned at the beginning of the  $i^{\text{th}}$  quarter,
- $S_E$  = the number of shares owned at the end of the  $i^{\text{th}}$  quarter, and
- $S_P$  = the number of shares purchased during the  $i^{\text{th}}$  quarter.

Two assumptions are made in the derivation of the formula. First of all, since  $P(n)$  is the average price per share of stock during the entire  $n^{\text{th}}$  year, it will remain constant and not fluctuate throughout the year. Secondly, since the dividend is normally declared annually and distributed quarterly, it too will remain constant throughout the year and not change until the first quarter of the following year.

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

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

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

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

Thus the quotient

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

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

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

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

Also note that:

$$\begin{aligned}
 S_E &= S_B + S_P \\
 &= S_B + S_B \cdot \frac{\text{DIV}(i)}{\text{PRICE}(i)} \\
 &= S_B + S_B \cdot \frac{.25D\left(\left[\frac{i-1}{4}\right]+1\right)}{P\left(\left[\frac{i-1}{4}\right]+1\right)} \\
 &= S_B \left[ 1 + \frac{.25D\left(\left[\frac{i-1}{4}\right]+1\right)}{P\left(\left[\frac{i-1}{4}\right]+1\right)} \right].
 \end{aligned} \tag{4}$$

Because  $\left[ 1 + \frac{.25D\left(\left[\frac{i-1}{4}\right]+1\right)}{P\left(\left[\frac{i-1}{4}\right]+1\right)} \right]$  occurs as a factor in the above expression for each value of  $i$ , then by induction, at the end of  $m$  quarters,

$$S_E = S \left[ \prod_{i=1}^m \left[ 1 + \frac{.25D\left(\left[\frac{i-1}{4}\right]+1\right)}{P\left(\left[\frac{i-1}{4}\right]+1\right)} \right] \right]. \tag{5}$$

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

$$\begin{aligned}
 A &= (\text{Price per share during the } n^{\text{th}} \text{ year}) \cdot S_E \\
 &= P(n) \cdot S \left[ \prod_{i=1}^{4n} \left[ 1 + \frac{.25D\left(\left[\frac{i-1}{4}\right]+1\right)}{P\left(\left[\frac{i-1}{4}\right]+1\right)} \right] \right]. \quad (\text{Q-DRIP formula})
 \end{aligned} \tag{6}$$

### APPLICATIONS OF Q-DRIP FORMULA

Referencing Table 2, if one had invested \$5,000 in each of the 17 stocks and reinvested the dividends quarterly, then, at the end of 10 years, the portfolio would have grown in value from \$85,000 to \$199,396, resulting in a very nice 134.58% increase (annual rate of 8.9%).

In comparison, had the \$85,000 been invested in the S&P 500 Index instead and the dividends reinvested, then, at the end of 10 years, the index portfolio value would have grown to \$144,148, resulting in a 69.59% increase (annual rate of 6.04%) (S&P 500 Return Calculator, 2015).

**TABLE 2**  
**SELECT STOCK VALUE GROWTH WITH Q-DRIP PLAN**  
**1998-2007**

<b>Stocks Name</b>	<b>IIV</b>	<b>ICS</b>	<b>INS</b>	<b>FCS</b>	<b>FNS</b>	<b>FIV</b>	<b>% GAIN</b>	<b>ARR</b>
Abbot Labs	5,000	41.30	121.07	54.15	149.28	8,083.37	61.67	4.92
Aflac Inc.	5,000	17.00	294.12	54.55	322.11	17,571.00	251.42	13.39
Archer Daniels	5,000	16.10	310.56	38.75	357.29	13,845.10	176.902	10.72
Bard (C.R.), Inc.	5,000	19.70	253.81	85.95	288.42	24,789.20	395.79	17.36
Becton, D'son	5,000	37.00	135.14	77.60	151.72	11,773.10	135.46	8.94
CenturyTel Inc.	5,000	33.40	149.70	44.90	159.34	7,154.27	43.09	3.65
Chubb Corp.	5,000	36.05	138.70	50.85	170.93	8,691.57	73.83	5.68
Coca-Cola	5,000	71.25	70.18	54.95	84.14	4,623.56	-7.53	-0.78
Exxon Mobil	5,000	33.50	149.25	82.15	185.99	15,278.90	205.58	11.82
Family Dollar	5,000	16.95	294.99	26.70	330.70	8,829.63	76.59	5.85
Johnson & Johnson	5,000	38.3	130.55	64.25	155.07	9,963.18	99.26	7.14
Lowe's Cos.	5,000	9.20	543.48	28.35	564.63	16,007.30	220.15	12.34
McDonald's Corp.	5,000	31.05	161.03	53.00	187.06	9,914.16	98.28	7.08
PepsiCo, Inc.	5,000	36.20	138.12	70.45	161.85	11,402.10	128.04	8.59
Proctor & Gamble	5,000	40.00	125.00	67.80	148.16	10,045.30	100.91	7.23
3M Company	5,000	40.85	122.40	84.95	152.93	12,991.60	159.83	10.02
Wal-Mart Stores	5,000	30.10	166.11	46.75	180.38	8,432.93	68.66	5.37
<b>TOTAL</b>	<b>85,000</b>					<b>199,396.27</b>	<b>134.58</b>	<b>8.9</b>
IIV = Initial investment value ICS = Initial year's average cost per share ((high price – low price)/2) INS = Initial number of shares purchased FCS = Final year's average cost per share ((high price – low price)/2) FNS = Final number of shares FIV = Final investment value % GAIN = Percentage total return ARR = Annual rate of return in accumulations of stock value								

Notably, some of the stocks did significantly better than average. Bard had over a 395% gain in stock value at an annual rate of return of 17.36%. Even during the collapse of the stock market in 2008 and into the first quarter of 2009, Bard held up well, recouping most of its losses by the end of the fourth quarter of 2009.

Now notice by referencing Table 3, what would have happened had the investor pocketed the dividends instead of reinvesting them. The select stock portfolio would have grown in value to only \$173,403 (approximately \$26,000 less than with the Q-DRIP plan) for a percentage gain of 104% (annual rate of 7.39%).

And in comparison, had the \$85,000 been invested in the S&P 500 Index without reinvesting the dividends, the fund would have only grown to \$125,658, resulting in a 47.83% increase (annual rate of only 4.44%) (S&P 500 Return Calculator, 2015).

**TABLE 3**  
**SELECT STOCK VALUE GROWTH WITHOUT Q-DRIP PLAN**  
**1998-2007**

<b>Stocks Name</b>	<b>IIV</b>	<b>ICS</b>	<b>INS</b>	<b>FCS</b>	<b>FNS</b>	<b>FIV</b>	<b>% GAIN</b>	<b>ARR</b>
Abbot Labs	5,000	41.30	121.07	54.15	121.07	6,555.94	31.12	2.75
Aflac Inc.	5,000	17.00	294.12	54.55	294.12	16,044.25	220.89	12.37
Archer Daniels	5,000	16.10	310.56	38.75	310.56	12,034.20	140.68	9.18
Bard (C.R.), Inc.	5,000	19.70	253.81	85.95	253.81	21,814.97	336.30	15.87
Becton, D'son	5,000	37.00	135.14	77.60	135.14	10,486.86	109.74	7.69
CenturyTel Inc.	5,000	33.40	149.70	44.90	149.70	6,721.53	34.43	3.00
Chubb Corp.	5,000	36.05	138.70	50.85	138.70	7,052.90	41.06	3.50
Coca-Cola	5,000	71.25	70.18	54.95	70.18	3,856.39	-22.87	-2.56
Exxon Mobil	5,000	33.50	149.25	82.15	149.25	12,260.89	145.22	9.38
Family Dollar	5,000	16.95	294.99	26.70	294.99	7,876.23	57.52	4.65
Johnson & Johnson	5,000	38.3	130.55	64.25	130.55	8,387.84	67.76	5.31
Lowe's Cos.	5,000	9.20	543.48	28.35	543.48	15,407.66	208.15	11.91
McDonald's Corp.	5,000	31.05	161.03	53.00	161.03	8,534.59	70.69	5.49
PepsiCo, Inc.	5,000	36.20	138.12	70.45	138.12	9,730.55	94.61	6.88
Proctor & Gamble	5,000	40.00	125.00	67.80	125.00	8,475.00	69.50	5.42
3M Company	5,000	40.85	122.40	84.95	122.40	10,397.88	107.96	7.60
Wal-Mart Stores	5,000	30.10	166.11	46.75	166.11	7,765.64	55.31	4.50
<b>TOTAL</b>	<b>85,000</b>					<b>173,403.32</b>	<b>104.00</b>	<b>7.39</b>
IIV = Initial investment value ICS = Initial year's average cost per share ((high price – low price)/2) INS = Initial number of shares purchased FCS = Final year's average cost per share ((high price – low price)/2) FNS = Final number of shares FIV = Final investment value % GAIN = Percentage total return ARR = Annual rate of return in accumulations of stock value								

## SUMMARY

First of all, there is a substantial difference in the final value of the portfolios when the dividends are reinvested and when they are not. The difference is significant in both absolute dollar amount as well as percentage amount. This difference holds regardless of whether the investments are made in individual select stocks or in the S&P 500 index.

However, the difference is even more pronounced when comparing the portfolios of the individual select stocks with those from the S&P 500 Index. With dividends reinvested, the value of the stock portfolio is more than \$55,000 greater than the value of the portfolio invested in the S&P 500 Index (134.58% gain compared to 69.59%). And with the dividends not reinvested, the portfolio of the select stocks is close to \$48,000 more than the portfolio invested in the S&P 500 Index (104% versus 47.83%).

## CONCLUSION

There has been much discussion in literature concerning the attributes of index investing. The thesis is that index investing (passive investing) will beat an actively managed mutual fund or individual

portfolio. It has been shown that the vast majority of actively managed mutual funds do not perform as well as the market as measured by the S&P 500 Index. However, this paper demonstrated that if investments are made in individual stocks from the S&P 500 Dividend Aristocrats Index, the investments will outperform the S&P 500 Index. This outperformance is achieved regardless of whether the dividends are reinvested or not. It would appear that active investing in quality individual stocks provides superior results to index investing.

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