### I Can't Retire Now: A Fallacy of Composition

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### ABSTRACT

Recent economic events have caused some to re-evaluate their planned retirement dates, assuming the decline in current portfolio values has eroded their wealth. This paper explores some definitions and perceptions of wealth, but also offers a counter argument suggesting that plans to retire may not be thwarted. Presenting a less biased approach to evaluating potential wealth offers solace to those concerned with the current recession and confidence for the future.

## **INTRODUCTION**

Wealth can be defined in several ways. Generally, wealth is measured by the accumulation of economic value, most generally considered in the form of assets. For present purposes regarding retirement planning, financial assets (e.g. equities, bonds, and the like) constitute the majority position in the retirement portfolio. And as market values for these assets fluctuate, so does the perception of wealth. Many perceived great wealth when the Dow topped 14,000 in October of 2007 but claimed they could not retire when it fell through 8,000 and (supposedly) bottomed at 6,594.44 on March 5, 2009. These evaluations are flawed for two reasons.

First, no single point-in-time measure of wealth is sufficient unless the stock of assets is liquidated at that moment. Instead, retirement endowments are drawn down over time and are, thus, subject to variations in value across a much longer future investment horizon. That leads to the second condition. Because the endowment is not reduced to zero at retirement, the reinvestment horizon allows time for recovery from the regular and normal market swings—both up and down.

Some suggest the possibility of a "kinked" long-term return line, arguing the credit market problems have irreversibly altered the market return line. Others counter with claims that the physical capital assets have not disappeared in response to the credit market collapse, but instead are simply undervalued by the hysteria and over-reaction of the markets. Such behavioral responses may be nothing more than a manifestation of market forces at work—a correction. A third view argues that a trend is established across a defined time period. If the consequences of the credit market affect any short-term period (as the current decline evinces), the longer-term trend will simply be slightly flatter.

Over the period 1928 to present, the DJIA has earned annual average returns of just over 6% but has varied greatly. Using calendar year periods, the greatest swings occurred in 1931



where the value fell by 52.67% and rose by 66.69% in 1933. Similarly, the S&P 500 has seen ups and downs with declines of 20.47% in October of 1987 and advances of 11.58% in October of 2008.

This paper suggests objective criteria for evaluating retirement wealth centering on comparisons of portfolio performance relative to long-term average returns rather than single day market quotes. Using historical data, long-term annual average market returns (proxied by the DJIA) are compared against the annual returns for various buy-and-hold retirement portfolios. These portfolios are constructed using simple asset allocation models combining equities, corporate bonds, and U.S. government Treasury securities. The intention is to demonstrate (1) how returns tend to regress to the mean and (2) that interest and concern over short-term performance is misplaced when realistic investment horizons are considered. Of specific interest is a measurement of the deviation from the long-term trend (the expected rate of return) rather than a focus on short-term (year-to-year) returns. That is, examining the over-confidence exhorted in 2007 (and the unrealistic presumption of wealth) off-set by the downturn in 2008 and 2009.

#### DATA

Historical data form the basis for this study and are comprised of the Dow Jones Industrial Average--DJIA (YahooFinance), the Standard and Poor's 500 Index--S&P (Economagic), the consumer price index--CPI (Bureau of Labor Statistics), AAA Corporate Bonds and the 1-year U.S. treasury securities (FRED, St. Louis). Average annual returns are calculated for each asset's reported historical period and applied to the respective portfolios using a weighted average approach.

### METHOD

This present study applies a post-test only approach comparing various investment portfolios against the commonly used benchmark, the DJIA. Two disciplined investment approaches are employed in portfolio construction. The first shifts risk from equities to fixed income securities as the investor ages in what is sometimes referred to as the "100 less current age model". In the investor's earlier life, a greater proportion is invested in equities, but in later years, the proportions shift in favor of fixed income securities. The second approach simply allocates 50% to equities and 50% to fixed income throughout the investor's lifetime.

For purposes of this study, the S&P will serve as the proxy for equities, but fixed income will consider corporate bonds and 1-year US treasuries individually and combined. The fixed income portion will represent (1) 100% in corporate bonds, (2) 100% in 1-year US treasuries, and (3) 50% in corporate bonds and 50% in 1-year US treasuries. Therefore, 3 portfolios are constructed for comparison purposes, shown in Table I.

Portfolio	Construction
А	Equities with Corporate Bonds
В	Equities with 1-year US Treasuries
С	Equities with Corporate Bonds and 1-year US Treasuries

### **TABLE I: Construction of Portfolios**

Several simplifying assumptions are made to construct a personalized investor profile to demonstrate the investment outcomes. The investor is a college graduate who shows good potential for growth and development. In 1966, the investor is 22 years of age and begins work with a starting salary of \$5,000. Across a 43-year working career, income increases at an average of 6% per year and the total annual contribution to a retirement account is 10% of gross wages. (Although not relevant, assume a 5% employee contribution and 5% from the employer.) The investor wishes to retire at age 65, at the start of 2009. All cash flows are assumed to be made in full at the beginning of each year.

## RESULTS

The Benchmark

Of interest is a measure of investment success. To make such a comparison requires a yardstick or benchmark of returns. Because the DJIA is so often referenced as "the market", and to a large extent, shapes the daily perceptions of current wealth, it serves as the basis for comparison in this study. As such, then, some value of the DJIA must be assumed. For present purposes, the historical record is employed, but by two means of determination.

Assuming the investor uses a wholly naïve approach, the period 1926 to 1965 would serve as the basis for future projections. The average annual return for the DJIA for that period is 5.89% in nominal terms (4.08% in real or inflation adjusted terms). The investor could project a similar pattern for the future, and for example (and simplicity) assume 6% nominal and 4.1% real returns for the future. Alternatively, assuming the investor had the capacity to foresee the DJIA's performance for the next 43 years—a clear crystal ball, so to speak—the nominal and real returns would be 6.16% and 2.89%, respectively. Or assume the investor incorporates the new information gained from each succeeding year's market performance to that of the 1926-1965 period, and so forth. The nominal and real returns are 5.62% and 2.59%, respectively. For each historical period, the average compound (geometric) returns are also calculated to establish the actual growth rate of returns. Table II shows these returns as well as the average annual compound rates of return.



Period of Review	Average Nominal Annual Return	Average Real Annual Return	Average Nominal Compound Returns	Average Real Compound Returns
1926-1965	5.8870	4.0818	2.8669	1.4073
1926-2008 (Crystal Ball)	6.1613	2.8899	4.1159	0.8467
1926-2008 (Add-a-year)	5.6183	2.5912	3.1719	0.9437

TABLE II: Annual Returns for the DJIA (in %)

Obviously, the choice of the benchmark is made more difficult. Because most investors think in nominal terms, relying on fund statements and media reports for performance metrics, this paper limits the analysis to nominal returns. Further, because all alternatives are subject to the same forces of inflation, its consideration is not relevant to this study. For purposes of this study, the Annual Nominal Compound Return (add-a-year) is used. This value captures the variations of increases and decreases across the entire investment horizon into a single, levelized determinant. At 3.17%, the investor should expect the accumulated wealth at age 65 to be \$74,943.68.

# Actual Returns

Table III shows the dollar and percentage rates of return when the two disciplined investment approaches with associated asset allocations are employed. The compound rate of return for each asset is derived from the actual returns occurring in the period 1966 through 2008 and is used to calculate the portfolio returns.

Portfolio	Construction	Returns 100-less-age	Returns 50—50
А	S&P + AAA Bonds	\$146,151.99 5.54%	\$142,914.85 5.46%
В	S&P + Treasuries	\$115,789.43 4.72%	\$85,123.93 3.63%
С	S&P + AAA Bonds + Treasuries	\$127,228.91 5.05%	\$110,169.60 4.54%

**TABLE III:** Portfolio Performance, in dollar and compound percentage returns

[For those interested, a portfolio wholly comprised of the S&P would return \$147,733.23 or 5.57%.]

Remembering the benchmark of expected returns for the DJIA of 3.17% or \$74,943.68, the disciplined approaches to investment generate better outcomes. In all cases, the returns are greater than those reasonably expected from the market (i.e. the DJIA).

### CONCLUSION

This study seeks to objectively address a misconception in current thinking. Many claim they cannot afford to retire because the value of their investment portfolios has declined significantly over the last several years. This evaluation rests on a fallacy of the composition of the original premise; that is, they could afford to retire prior to the decline. Because most retirees gradually draw down their retirement endowments over a period of years, they are subject to the on-going variations in returns accruing to their investment accounts. Even if retirement had occurred when the markets were at their all-time highs, those investors would currently face the same financial wealth position. Coupling the decline in market value and any endowment draw-downs would have made matters worse. In short, the unrealistic perception of wealth led many to overvalue their expected retirement endowments.

Securities markets demonstrate wide variations in returns over their history and subjective evaluation of wealth based on point-in-time measures is misleading. Unless investors liquidate their holdings, their measure of true wealth is reduced to expected values. Using today's market value as a valid measure of wealth—when that wealth is intended to fund financial demands for many years into the future—defies logic. Instead, setting expectations using some rational basis, such as historical growth rates, can help avoid the illusions created by market bubbles or declines.

As already mentioned, the low for the DJIA for this year was 6,594.44, set on March 5, 2009. To date, the high, set on August 7, 2009 was 9,370.07. Anyone capitalizing their positions on March 5 and selling on August 7 would have earned more than a 42% return (less commissions, of course). By extension, those who are invested in market securities must also believe they are wealthier because the market has rebounded by that amount. But that does not tell the whole story. The closing value on January 2, 2009 was 9,034.69, so by August 7, the value increased by only 3.7%. This form of wealth measurement is ephemeral and flawed.

The only solace to this situation is how widely it is shared. While misery may love company, it doesn't generate better financial returns. And even if the market were to enjoy another upswing, the illusion of newly-found wealth would be met disappointment as values eventually fell. The evidence within this current research suggests that the DJIA generates nominal annual returns of about 6% in any given year (and about 4%, on average, in all years). Expecting the market to do better than the nominal return is reasonable, but so is the expectation that it will do worse.

The concluding advice from this study directs investors to re-calibrate their expected returns from their retirement accounts to more reasonably represent the historical average returns and discount current wealth estimates in favor of longer-term measures.

### LIMITATIONS

Many simplifying assumptions were made to create the sample case. The timing of funding of retirement accounts, steady-state estimates of income growth and retirement account contribution rates, and the choice of securities are unrealistically portrayed. Using the DJIA as a benchmark for performance is debated and often dismissed in the literature. The effects of inflation are treated as non-relevant to the analysis. Finally, there was no attempt to explore sub-



sets of the historical data for confirmation of the reliability of the rates of returns reported and employed.

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