Note on Sustainable Income from an Investment Portfolio[1]

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This note is addressed to trustees, directors, and other fiduciaries who must consider what income can be prudently distributed from trusts, endowments, foundations, memorial funds, and other similar portfolios of long-term investments. The comments offered herein are based on the author's personal experience as trustee, director, or fiduciary over the past 25 years on a number of different non-profit boards. It is hoped that these practical suggestions will be useful to various trustees and directors of non-profit organizations who must wrestle with this issue.

Fiduciaries increasingly are being forced to consider what is meant when a donor specifies in his will or trust that "the income (or income only) shall be paid to the beneficiary." This phrase, or others with similar effect, is perhaps one of the most commonly expressed wishes of donors.[3] In earlier times, this provision concerning income never seemed to cause much of a problem. The principal was usually invested in bonds, and the interest was paid to the beneficiary. When inflation was low, the preservation of principal was never much of an issue. When inflation was a consideration, the donor would often provide that some portion of the "income" was to be re-invested, with the balance paid to the income beneficiary.

During the last forty years, however, inflation has frequently wreaked devastation on the purchasing power of the underlying principal. In addition, the advent of modern portfolio theory and the rapid development of alternative investment instruments have offered fiduciaries investment opportunities that previously were simply unavailable. Accordingly, thoughtful trustees have increasingly recognized the prudence of investing the principal in a balanced portfolio of diversified investment vehicles. Simultaneously, trustees have turned to the concept of managing a portfolio on a "total return" basis, which accounts for interest and dividends (previously thought of as "income") and for appreciation (both realized and unrealized) of the underlying principal. These changes have resulted in some real soul-searching for trustees, as they seek to sort out just what was/is meant by donors who specify "that the income (or income only) shall be paid to the beneficiary."

The problem is that "income", if defined to mean only the more traditional interest and dividends, could be woefully inadequate, and probably not what the donor intended, if most of the principal were to be invested in growth stocks paying low or zero dividends. On the other hand, if the full principal were to be invested in bonds and all the interest distributed as income to the income beneficiary, the principal would inevitably be wasted away over the long term by the certain, erosionary action of inflation. This too is probably not what the

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[1] Presentation paper for Annual Meeting of the National Association of United Methodist Foundations, New York, NY, November 2006

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[3] The earliest notation of this kind in the personal records of the author comes from a slate tablet in a small church in the Cotswold area of England, dated about 1500. The memorial, given by a well-to-do townsman, provided 100 pounds sterling, to be invested in "gilts" (English government bonds), the income from which was to be used to support the widows in the town.

original donor had in mind when he/she specified that "income [or income only] shall be paid to the beneficiary."

To address this dilemma, many trustees and institutions are beginning to distribute what might be called "sustainable income" to the income beneficiary (or to the operating budget of an endowed institution, e.g.). The thinking seems to be that what a donor had in mind when he/she specified "income [or income only]…" is that the donor wanted the income beneficiary to enjoy a long-term, sustainable income stream (perhaps growing to keep up with inflation). A further presumption is that the donor further wanted the principal to be protected against loss (including loss due to inflation) for continual production of income or for eventual distribution/use by the remainderman (or institution).

Concurrent with these changes in investment and income distribution patterns has been a change in the legal environment governing management of institutional and trust funds.[4] Prior to the 1960's, trustees largely followed the requirements of the so-called "Prudent Man Rule", which traces its origin to the 1830 case of *Harvard College vs. Amory*. In this landmark case, the Supreme Judicial Court of Massachusetts held that when investing, a trustee

> …is to observe how men of prudence, discretion, and intelligence manage their own affairs, not in regard to speculation, but in regard to the permanent disposition of their funds, considering the probable income, as well as the probable safety of the capital to be invested.

One of the consequences of this case was that trustees, for nearly 150 years, invested – often exclusively – in bonds. In the years following World War II, however, the investing environment began to change, particularly with the advent of modern portfolio theory and the quantification of risk and return that it offered. In 1969 the Ford Foundation produced a report, "The Law and Lore of Endowment Funds" that recognized the changed inflationary and investment environments. The Ford report led to the development of the "Prudent Investor Rule" which, in turn, provided the basis for the promulgation of the Uniform Management of Institutional Funds Act (UMIFA) in 1972, and the Uniform Prudent Investor Act (UPIA)[5] in 1994. The 1972 Act applies to institutional funds and the 1994 act to trusts. Both Acts give legal basis to the concepts of portfolio diversification, protection against inflation, and total return, as described and used elsewhere in this note. Section 6 of the UMIFA, for example, states that a board is to consider both "the long [asset preservation] and short [current operating budget] term needs of the institution".

The legal requirement to consider both the long and short term needs of the institution leads directly to a consideration of determining a level of sustainable income distribution that will

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[4] In 1997 The National Center for Nonprofit Boards published a booklet "Creating and Using Investment Policies" by Robert P. Fry, Jr., Esq. Portions of that publication provide the basis for the comments in this and the following paragraph. The Center has been re-named, and is now called BoardSource. They can be contacted at Suite 900, 1828 L Street NW, Washington, DC 20036, by phone at 1-800-883-6262, or on their web site at www.boardsource.org. Fry's 1997 booklet has been completely revised, and is now published as "Minding the Money: An Investment Guide for Nonprofit Board Members." It is available directly from BoardSource.

[5] By 1997, 40 states had adopted the UMIFA and 19 had adopted the UPIA. In Massachusetts, for example, the adopting jurisdiction for UMIFA is M.G.L.A. c.180A, sections 1 to 11.

allow the principal to be protected against loss over the long term. Fortunately, the history of investment returns can help with this determination.

The long-term total return from domestic common stocks in the U.S., for the 80 year period from 1926 through 2005, has been 10.4% per year.[6] The corresponding return for intermediate-term government bonds has been 5.3% per year. Inflation over this period has been 3.0% per year. If we assume a balanced portfolio comprised of 60% stocks and 40% bonds, then the weighted long-term total return will be 8.4% per year (.60 X 10.4% + .40 X 5.3%). From this 8.4% return, we must set aside 3.0% for re-investment to protect the principal against long-term inflation. This leaves a real total return from the balanced portfolio of 5.4%, which after a set-aside for management costs might be safely distributed to income beneficiaries.

One might reasonably ask about the effect of using different time periods to measure the projected total return on a balanced portfolio. The analysis above has been expanded in the table below to include various time periods ranging from 5 to 80 years, all ending on December 31, 2005.

	01-05 5Years	96-05 10Years	86-05 20Years	76-05 30Years	66-05 40Years	56-05 50Years	46-05 60Years	36-05 70Years	26-05 80Years
Inflation	2.5	2.5	3.0	4.3	4.7	4.1	4.0	3.9	3.0
Large Co. Stocks	0.5	9.1	11.9	12.7	10.3	10.4	11.5	11.0	10.4
Intermediate Government Bonds	5.2	5.7	7.4	8.3	7.7	6.7	5.8	5.4	5.3
60 % Stocks + 40% Bonds	2.4	7.7	10.1	10.9	9.3	8.9	9.2	8.8	8.4
Real Balanced Total Return	-0.1	5.2	7.1	6.6	4.6	4.8	5.2	4.9	5.4

The Real Balanced Total Return, based on a 60% stock and 40% bond portfolio and after subtracting out inflation, is the most pertinent line in the table above. It shows that for periods of 40 to 80 years, the inflation-adjusted (real) return is generally in the range of 4.5 to 5.5 percent per year. Only in unusual times, such as the 20 and 30 year periods ending in 2005, has the real return been above this range. Few prudent investors would count on a repeat of the remarkable stock market performance of the 1980's and 1990's far into the future, and returns of the past 5 years have certainly underscored this cautionary observation. The reader should also bear in mind that the returns presented above are theoretical returns. In the real world, management fees and transactional costs must be subtracted (perhaps of the order of ½ to 1 % or more per year) to arrive at a realistic rate upon which to base a sustainable income payout. This leads to the conclusion that a something like 4 % to 5% per year[7] is the right level for sustainable income distribution, if one is to maintain a high-quality

[6] All data on inflation and returns in this paragraph and the following table is from Stocks, Bonds, Bills, and Inflation 2006 Yearbook, Ibbotson and Associates, Chicago.

[7] It is interesting to note that the U.S. tax code requires that income equal to a minimum of 5% of the principal balance be distributed annually from private charitable foundations. This requirement presumably is to avoid excessive accumulation of principal in the foundation.

diversified portfolio, protect the principal against inflation and market loss, and avoid excessive volatility in income distributions.[8]

The annual dollar amount of sustainable income distribution from a portfolio is obtained by multiplying an allowable distribution percentage by the value of the underlying principal. In so doing, however, one quickly observes that the annual distribution is subject to substantial volatility due to the inevitable volatility in the annual valuation of the underlying principal. To smooth our this volatility and make the income distribution more predictable, many institutions base their sustainable income distribution policy on a moving average over several years, often three to five years, of the valuation of the underlying portfolio. Figure 1 illustrates how sustainable income available for annual distribution can be calculated, using a three-year moving average time period.

Figure 1 Calculation of Sustainable Income, Based on a 3 Year Moving Average

Year	Market Value at Year End	3 Year Moving Average Value	Sustainable Income for Distribution @4.0%
1999	900,000		
2000	1,000,000		
2001	1,100,000	1,000,000	
2002	1,050,000	1,050,000	40,000
2003	925,000	1.025,000	42,000
2004	1,100,000	1,025,000	41,000
2005	1,200,00	1,075,000	41,000

[8] See Appendices A and B for additional discussions that add the concept of the probability of maintaining the purchasing power of the principal over time, given different levels of income distribution.

The sustainable income policy suggested herein offers substantial advantages to fiduciaries who must simultaneously seek to distribute income for current income beneficiaries and also to protect the purchasing power of assets for use by succeeding generations. The following arguments support such a policy:

1. Sustainable income is founded on sound, long-term investment results.

2. The concepts involved – total return, diversification, preservation of capital – have all found codification in U.S. law.

3. Sustainable income provides a dependable level of income for the income beneficiary.

4. Sustainable income, in a long-term generally rising market environment, tends to rise, thereby helping the income beneficiary keep up with inflation.

5. Introduction of a multi-year moving average reduces the volatility of the income distributed to the income beneficiary over that which he/she would receive if the computations were made on the basis of the evaluation at the end of a single year.

6. The interests of the remaindermen are protected by retention of enough of the total return to allow growth of principal to keep up with inflation.

When directives for distribution of “income [or income only]” are involved, trustees and directors might be well-advised to adopt a policy for distribution of “income” that is based on a long-term sustainable income concept as described herein.

Appendix A

Historical Probability of Maintaining Purchasing Power of Principal

For the 80 Year Period 1926 – 2005

Suppose that a fiduciary has decided to maintain a balanced portfolio of high quality stocks (60% of portfolio in large cap domestic stocks) and bonds (40% of portfolio in intermediate term government bonds). The fiduciary might reasonably pose the following question:

> What are the chances (probability) that I can pay a sustainable income (say 4% of the market value of the portfolio each year) to the income beneficiary, and then turn over to the succeeding generation (say 25 years in the future) a principal amount that will have kept up with inflation during that generation?

One way of addressing this question is to look at the 80 year period (1926 – 2005) for which high quality data on returns from stocks and bonds in the U.S. are readily available[9]. One could then determine how often the principal of a balanced portfolio of stocks and bonds would have equalled or exceeded the inflation-adjusted original principal over a 25 year period, after allowing for the annual distribution to the income beneficiary (and presumably some annual management expenses, say 0.5%).

An analysis of this type was run on the 56 twenty-five year windows (1926 – 1950, 1927 – 1951, … 1981 – 2005) in the 1926 – 2005 period. The analysis allowed total withdrawals (sustainable income payment plus annual management fee) from the portfolio to range from 3.0% per annum to 6.0% per annum. The distribution between stocks and bonds was allowed to vary from 80% stocks and 20% bonds to 40% stocks and 60% bonds. The following table presents the percentage of times (probability) that the ending principal equalled or exceeded the inflation-adjusted original principal.

Probability that Ending Principal Equals or Exceeds Inflation-Adjusted Original Principal

Total Annual Withdrawal % (Income Distribution plus management fees)

Stocks /Bonds	3.0 %	3.5 %	4.0 %	4.5 %	5.0 %	5.5 %	6.0 %
80/20	96	93	80	75	70	64	55
70/30	93	88	77	75	64	59	52
60/40	91	82	77	70	59	48	39
50/50	89	79	73	55	43	29	16
40/60	88	68	48	29	18	14	14

The table shows, for example, that with a portfolio of 60% stocks and 40 % bonds, using a total withdrawal rate of 4.5% per year (say 4% to the income beneficiary and 0.5% for

[9] Stocks, Bonds, Bills, and Inflation 2006 Yearbook, Ibbotson and Associates, Chicago.

management expenses), the ending principal, after 25 years of withdrawals, equalled or exceeded the inflation-adjusted original principal 70% of the time.

Two conclusions can be drawn from this analysis. First, the probability of maintaining the purchasing power of the original principal over a long period of time (25 years) increases as the amount of the annual withdrawal decreases (thus diminishing the income beneficiary's share of the total return). Second, a higher percentage of stocks increases the probability of maintaining the purchasing power of the principal (albeit at increasing levels of volatility for the total portfolio). It is this latter fact that has lead most fiduciaries to lean at least slightly (say 60/40 stocks to bonds) towards greater equity exposure in their asset allocation.

There is of course no guarantee that the future will be like the past, and any analysis of this type must be looked at with that caveat. The analysis does, however, offer at least some guidance to the conscientious fiduciary in selecting both an asset allocation and annual distribution level that have some chance of balancing the conflicting goals of maximum annual distributions and maximum probability of preserving principal.

Appendix B

Monte Carlo Simulations for Endowment Portfolios

The material presented in Appendix A presents a historical perspective on what the chances of maintaining the purchasing power of endowment principal might have been for the 80 year period 1926 – 2005, given various asset allocations and annual withdrawal rates. The problem with the approach, however, is that it is limited to the exact set of market returns for that specific historical period. Although it seems likely that certain market characteristics in the future may resemble those of the past, at least over longer time periods, it is almost certain that future returns will deviate from the past – in timing, annual magnitudes, and volatility, for example. These certain deviations will, perforce, lead to many possible future returns on an investment portfolio.

These observations[10] have lead, especially over the past decade, to a new way of looking at portfolio behavior and returns for the future. In particular, the dimension of probability has been added to our vocabulary and to our way of thinking about future performance. With the availability of large computing power and sophisticated modeling programs, it is now reasonable to ask not for a single estimate, or even a range of estimates, of some future return on a portfolio, but rather to ask for the probability that the portfolio will achieve any of a range of possible results. For example, one can now expect an answer to the question "what is the probability that my endowment will keep up with inflation (or grow in real terms by a specified amount) if I withdraw an inflation-adjusted amount from the portfolio each year?"

The name that is most commonly applied to the technique used to answer this question is Monte Carlo simulation. It is named after the city in Monaco, where games of chance take place. Games of chance are based on the random variation of a set of possible outcomes (such as the roll of dice or a roulette wheel). The daily, monthly, or annual returns in the market exhibit much of this same random behavior, and it is this randomness that lies at the heart of the Monte Carlo simulation technique.

Although it is beyond the scope of this Appendix to explain the operation of the technique[11], it is appropriate to present a set of typical results based on a Monte Carlo simulation run. Such results are just beginning to appear in reports to trustees and finance committees, and will doubtless become more common in the future. The simulation results presented in the

[10] (1) That future market characteristics are likely to resemble certain basic market characteristics from the past (long term expected returns, volatility, correlation between asset classes, etc.) and (2) that these general market characteristics, randomly distributed across the years, will give rise to a large number of possible future portfolio returns

[11] A remarkably readable presentation, suitable for intelligent layperson reading and understanding, is contained in the Chapter "Wealth Forecasting with Monte Carlo Simulation" in Stocks, Bonds, Bills, and Inflation 2006 Yearbook, Ibbotson and Associates, Chicago.

"Probability of Capital Preservation" exhibit at the end of this appendix will give the reader an idea of what such reporting looks like[12].

The exhibit is based on a portfolio of 40% Intermediate-Term Bonds and 60% Large-Cap Stocks[13]. It has also assumed a 4.5% annual withdrawal or spending rate (presumably a distribution to the income beneficiary of about 4 % and a real-world management fee of about 0.5%). An inflation rate of 3.0% has also been included in the simulation as an annual set-aside to preserve the purchasing power of the original principal. All dollar figures are thereby presented as inflation-adjusted, using year 0 (2006) dollars.

The upper chart shows, for each of years 1 through 20, the 25th percentile dollar value (probability that the principal at the end of that year will equal or exceed the amount shown), the 50th percentile value (the so-called "expected value", or the "We have the greatest confidence that you will have …[this] value"), and the 75th percentile value. For example, if one starts with a portfolio of $10,000 in year 0 (say, 2006), then at the end of year 20 (2026), there is a 25% chance that the inflation-adjusted principal (in 2006 dollars) will equal or exceed $10,563. (And correspondingly, there is a 75% chance that the inflation-adjusted principal will fall below that $10,563.) There is a 50/50 chance that the inflation-adjusted principal will equal or exceed $7,752. And there is a 75% chance that the inflation-adjusted principal will equal or exceed $5,662. (And correspondingly, there is a 25% chance that the inflation-adjusted principal will fall below $5,662.)

The "Probability Curve" in the lower left corner of the exhibit shows the probability of maintaining the purchasing power of principal at various levels. For example, the probability of maintaining the purchasing power at the original $10,000 is only about 30%. The probability of being able to withdraw at the stated 4.5% level and of having the principal grow in real terms to $12,000 falls below 20%.

The results of such a Monte Carlo simulation can be sobering for the conscientious fiduciary. Although the addition of the probability dimension to the analysis is well established and provides insight into the range of possible future results, careful Monte Carlo simulations for real portfolios are likely to have one or more of the following results:

[12] The simulation presented here is the output of a proprietary "portfolio resampling" refinement of the classic Monte Carlo procedure. The underlying software was developed by New Frontier Advisors, and the simulation was run by Atlantic Trust Private Wealth Management, Boston, MA, April 2006.

[13] Estimated return of 4.7% for Bonds and 8.6% for stocks, with standard deviations of 6.7% and 16.8%, respectively, and with a correlation between the two returns of 0.211. Note that both estimated returns, as used by Atlantic Trust, are below the 80 year (1926 – 2005) annualized returns of 10.4% and 5.3%, respectively, for large cap stocks and intermediate-term bonds. One could argue that it is prudent to use such conservative estimates for predicting an uncertain future. Use of the lower returns, however, does materially diminish the probability of maintaining the purchasing power of principal if a normal distribution rate of 4 to 5 % is anticipated.

(1) A new level of caution in setting distribution levels for income beneficiaries, possibly reducing annual distributions to closer to 4% rather than the 5% levels that have been common in the past

(2) A certain anxiety level in being forced to accept the notion that one might have to accept an uncomfortably low probability (say only 50 to 70%) that preservation of principal purchasing power is possible, given the competing demands for reasonable income distribution

(3) Recognition that management costs do matter. Suppose, for example, that one settles on a 4% total annual withdrawal level in order to improve the chances of maintaining principal. And let us further assume that total portfolio management costs are 1% (100 basis points) for a combination of investment management fees, custodial fees, brokerage fees, bid-spread costs, proxy voting, reporting, and any other incidental costs. By this measure, 25% of the total annual withdrawal is consumed by costs, with only 75% of the withdrawal actually being paid to the income beneficiary.

Despite these slightly unsettling conclusions based on Monte Carlo simulations, it is the author's view that such additional understanding of the investment world can be helpful to the fiduciary who seeks to balance the competing needs of current and future generations in the use of accumulated endowment funds.

Assumptions:
$10 M portfolio value
4.5% annual spending
3.0% annual inflation

40/60 Portfolio (pre-tax)
Probability of Capital Preservation
March 2006

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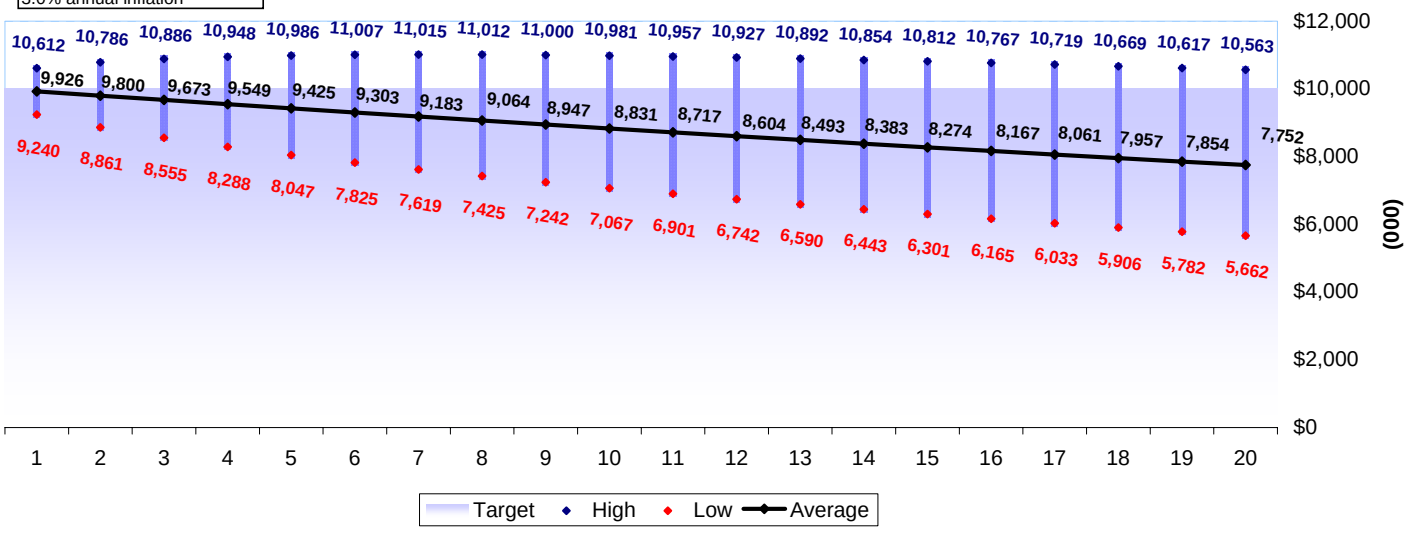
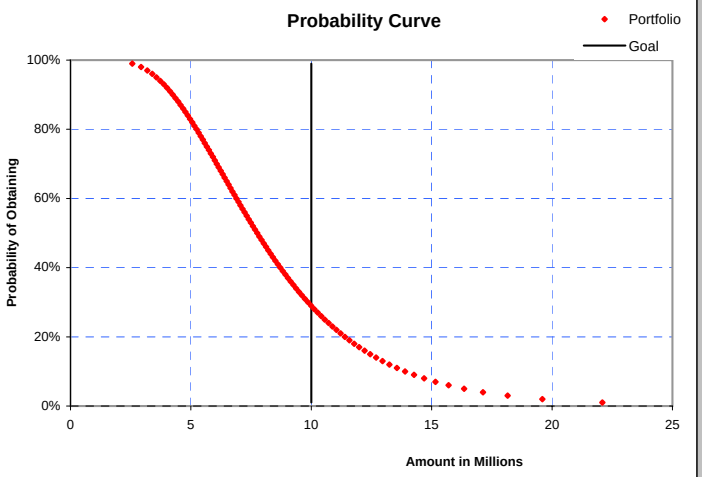
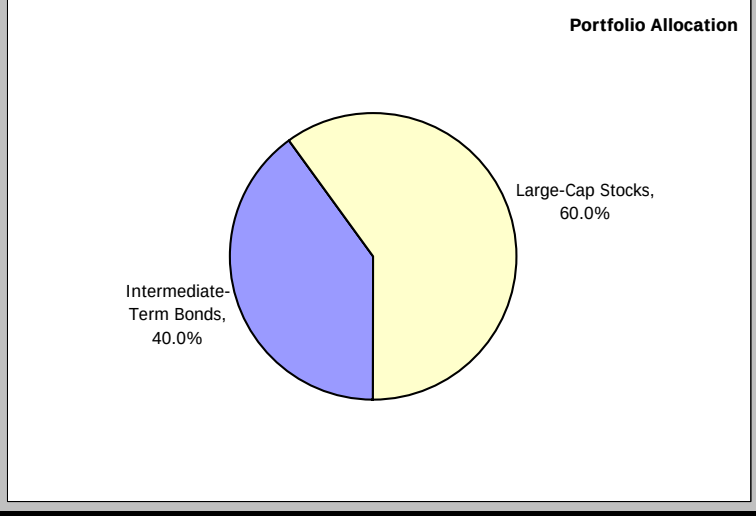


The top chart represents the ranges of ending capital per year for the portfolio over the 20 year time horizon. At the end of 20 years, you have a 75% chance of having *at least* the red value and a 25% chance of having *at least* the blue value. We have the greatest confidence that you will have the black value.

The bottom left chart shows the probability of obtaining the various ending dollar amounts at the end of the 20 year time horizon. The black vertical line denotes the probability of maintaining the starting value of the portfolio at the end of the 20 years. The bottom right chart shows the portfolio allocation of the portfolio shown in this model.





Projected future returns.
Actual returns may vary significantly.
Past performance is no guarantee of future results.