Perpetual Distribution Rates for Foundations, Endowments and Charitable Trusts: A Non-Gaussian Analysis

A White Paper from Aftcast.com

Disclaimer: Throughout this paper, terms "successful", "unsuccessful", "failure", "certainty" and any similar words refer only to statistical outcomes of the market history since 1900. Future outcomes will likely be different.

First Draft, May 22, 2011

Perpetual Distribution Rates for Foundations, Endowments and Charitable Trusts: A Non-Gaussian Analysis

Executive Summary:

In this paper, we analyze various perpetual distribution scenarios. These are applicable to foundations, endowments, charitable trusts and any type of distribution planning where perpetuity is the prime objective.

Throughout this paper, we avoid using any deterministic and Gaussian forecast methodology, such as assumed future growth rates, future inflation rates, or any type of Monte Carlo simulators. Instead we use our propriety aftcasting methodology that uses the actual market history. Aftcasting reflects the actual sequence of events, the actual sequence of returns (stocks, interest rates and inflation), the actual correlation between stocks, interest rates and inflation, and actual volatility as they occurred since 1900. Aftcasting methodology and calculation tools for writing this article was developed by the author of this paper.

We did not include any tax consequences in our analysis. We only looked at portfolio performances, excluding any tax implications, if any.

We analyzed the following scenarios:

1. Capital remains in perpetuity in today's dollars, distributions are not indexed to CPI (Scenario 1)
2. Capital remains in perpetuity in today's dollars, distributions are indexed to CPI as a minimum (Scenario 2)
3. Capital grows in perpetuity indexed to CPI, distributions are not indexed to CPI (Scenario 3)
4. Capital grows in perpetuity indexed to CPI, distributions are indexed to CPI as a minimum (Scenario 4)
5. A minimum of 5% of the preceding yearend's asset value must be distributed. (Scenario 5)

Summary of Findings:

Distribution Strategy: Keep the distribution strategy as simple as possible. The following strategies are listed from the least to the most sophisticated:

- If you only want a fixed dollar amount of distributions, then the perpetual distribution rate is 2.8% per year, calculated as a percentage of the initial asset value.
- If you want a fixed dollar amount of distributions that are indexed to CPI, then the starting perpetual distribution rate is 2.3% percent, calculated as a percentage of the initial asset value.
- If you want to harvest part of the portfolio growth each year, then the perpetual annual distribution rate consist of two parts: 1. A constant 1.8% of the initial asset value, plus 2. Twenty-five percent of the growth of the portfolio during the preceding calendar year.

  Harvesting the growth benefits you in three ways: 1. It removes part of the growth from the portfolio when times are good, 2. It trims losses when markets eventually turn negative, and 3. It allows larger distributions.

  Optimum participation rate is about 25% of the portfolio growth.

  If you want to smoothen distributions over time, then use a five-year moving average on the fluctuating part of distributions.
- If you are required to distribute 5% of the assets each year, then the dollar amount of distributions might decrease over time. You will likely need to add new capital (new donations and/or contributions) to the asset pool to keep distributions steady and perpetual.
- The perpetual withdrawal rates cited above are based on historical worst-case scenarios and require periodic reviews.

Periodic Reviews: Distributions should be reviewed every five years. It is very likely that the dollar amount of distributions will increase at the review. However, if the asset value drops by more than 20% since the last review, the distributions might have to be decreased out of abundance of caution. Do not recalculate the distributions more often than once every five years, unless required by the interim review.

Interim Reviews: An interim review should be undertaken when unexpected cash outflows of over 10% occur that is over and above the planned distributions.

Asset Allocation: Allocate no more than 50% to equities.

Investment Performance: Both alpha (relative performance of equities) and yield premium (relative performance of fixed income) have a direct relation to perpetual withdrawal rates. Care should be exercised to make sure that fund managers with great track records are hired, and they should be monitored closely. Otherwise, broad-based, minimum cost ETFs can be used more efficiently.

Economic Assumptions and Forecast: Since our analysis is entirely based on historical experience (aftcasting), there is no place to impose any assumptions of future portfolio growth rates or future inflation into our calculations. Furthermore, periodic reviews mitigate the effect of any deviations from the historical experience. Our entire analysis is free of any forward-looking economic assumptions.

Introduction:

One of the challenges of distribution planning is to make sure to estimate the proper amount of withdrawals such that market risk, longevity risk and the inflation risks are covered for the given time horizon. In this paper, we are considering a perpetual time horizon. This makes the outcomes significantly more sensitive to the remaining two risks (market and inflation risks). At all times, the assets must be large enough to finance not only the distributions, but also provide sufficient cushion to overcome the effects these two risk factors in perpetuity.

The most important determinant of portfolio longevity is the withdrawal rate. The second is the sequence of returns[1]. This is followed by the inflation factor. After that it gets a little blurry; the fourth place is a tie between “asset selection and monitoring” and “asset allocation”.

Asset allocation is an important tool to control the volatility of returns. However, it does very little to control the sequence of returns. Hence, as withdrawals approach the sustainable withdrawal rates –whether for a specific time horizon or in perpetuity-, the well-publicized importance of asset allocation diminishes significantly and it is replaced by the importance of sequence of returns.

[1] Otar, Jim, “Unveiling the Retirement Myth”, 2009, Chapter 31 “Determinants of a Portfolio’s Success”

Aftcast of an Investment Portfolio:

In most distribution portfolios, the sequence of returns is the largest determinant of success. Yet its effect is missed by all man-made simulators that are based on Gaussian mindset. That is because of their inherent flaws: They can simulate the volatility of returns rather well. However, they cannot model the patterns of sequence of returns. These patterns are as a result of specific correlations between various economic factors such as equities, bond yields, interest rates and inflation in typical market cycles.

Secular Trends: Most Monte Carlo simulators use an average growth rate with some "standard deviation" attached to it, as depicted in Figure 1. The reality is, in the long term, market might be in a secular bullish trend lasting 20 years (1920-1929, 1949-1962, 1982-1999). It might be in a secular sideways trend lasting as long as 20 years (1900-1920, 1938-1948, 1964-1982), as depicted in Figure 2.

It might also be in a secular bearish trend similar to the Nikkei 225 index over the last 25 years. Gaussian tools are insufficient to account for trend discontinuities that have the greatest impact on wealth creation, wealth preservation, and wealth destruction.

Figure 1: Index value over time (on a semi-log scale) in a randomly generated simulation

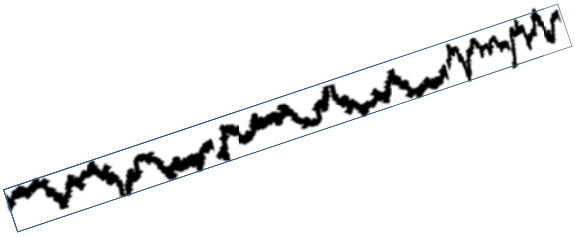
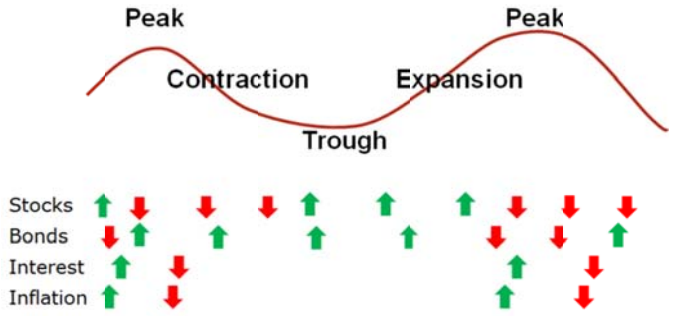


Figure 2: Index value over time (on a semi-log scale) of actual market history starting in 1900

Cyclical Trends: Each secular trend is made up of cyclical trends which are generally caused by business cycles (see Figure 3). The cyclical trends create specific **sequence of events**; which we define as "patterns of directions in inflation, interest rates, bond yields and equities with a specific array of inter-correlations and phase gaps".

Figure 3: Cyclical trends



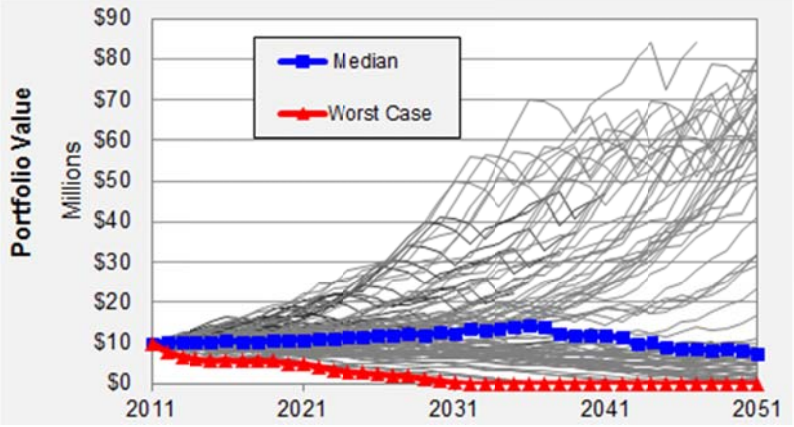
There are four distinct phases and four distinct objects in this pattern. When randomized, there is a one in sixteen chance of modeling this particular sequence of events correctly. In other words, when you run sixteen-thousand random simulations, only one-thousand of those will likely have the correct pattern. The remaining fifteen-thousand simulations will not only be wrong but they will render the entire outcome useless. The unbounded, fanning-out effect of the accumulation outcomes visible in many Monte Carlo simulations do not happen in real life; an extreme in one direction eventually begets another extreme in the opposite direction until the excess of either side is expended.

On the other hand, aftcasting reflects the sequence of returns exactly as it happened in history. As opposed to forecasting, aftcasting is a method developed by the author for analyzing investment outcomes. It includes the actual historical equity performance, inflation rate and interest rate, as well as the actual historical sequencing of these data sets.

Aftcasting displays the outcome of all historical asset values of all portfolios since 1900 on the same chart, as if a scenario starts in each of the years between 1900 and 2000. It gives a bird's-eye view of all outcomes. It also provides the success and failure statistics with exact historical accuracy, as opposed to man-made simulation models.

Let's work thorough an example: XYZ Foundation has assets of $10 million. They distribute $500,000 each year. The current asset mix is 40% equities and 60% fixed income[2]. The aftcast of this scenario is depicted in Figure 4. On this chart, we see the thin, gray aftcast lines. There is one line starting at the left vertical axis for each year since 1900. There are 40 years of data on each aftcast line for all starting years before 1972. After 1971, each aftcast line ends at the end of year 2010. Thus, there are 3675 data points that reflect the exact, actual market history which is exactly in-line with realistic correlations and patterns of performance of equities, bond yields, interest rates and inflation.

Figure 4: The aftcast of assets of the XYZ Foundation



We observe that the assets of XYZ Foundation will deplete by year 2032 in the worst case outcome. This type of distribution cannot be considered as perpetual.

[2] Equity proxy: Dow Jones Industrial Average since 1900. In this study, to keep things simple, we assume any dividends collected by the fund is used up for expenses, including management fees and all trading costs, for a net-net alpha of 0%. In reality, our model can accommodate different alphas. For fixed income, we used net returns (after all expenses), a historic 6-month CD rate plus 1%. Inflation: we used the historic CPI for each year since 1914. Between 1900 and 1913, we used the US Bureau of Labor Statistics wholesale price index because the CPI did not exist prior to 1914). Distributions are redeemed and paid out at the end of each year.

On the same aftcast chart (Figure 4), we also see "worst-case" and "median" lines. Let's define what these terms mean:

- The red line indicates the worst-case portfolio performance for all years. We will use this line as our design criteria for the definition of "perpetual"
- The blue line indicates the median outcome where half of the scenarios are better and half are worse. We will use it for statistical calculations.

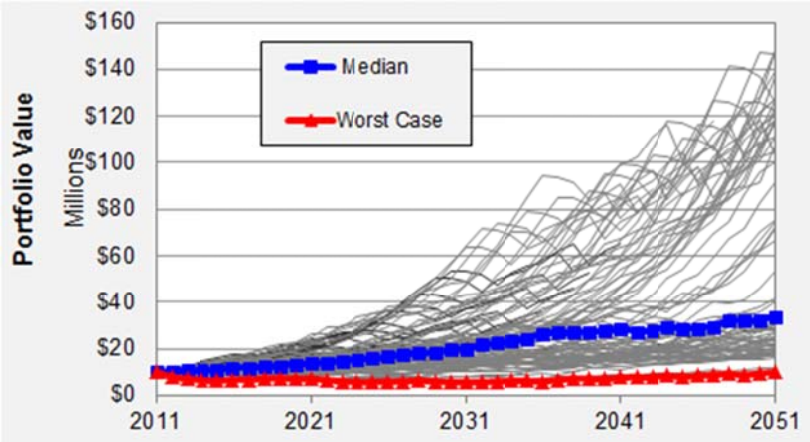
Defining "Perpetual":

In order to calculate perpetual distributions, we first need to define "perpetual".

In a perpetual portfolio, we need to make sure that the portfolio asset value does not decline over the entire life of the portfolio, regardless of the underlying secular trends. Since our aftcasting model shows rolling time periods of 40 years, we define "perpetual" as:

> *A portfolio is considered perpetual if, after 40 years, the asset value of the worst-case portfolio is not lower than its starting amount and no portfolio depletes during this 40-year time horizon.*
>
> *However, the aftcast shows that in extreme cases, the drawdown during this time horizon may be as much as 50% of the initial portfolio value.*

Figure 5: The aftcast of perpetual portfolios

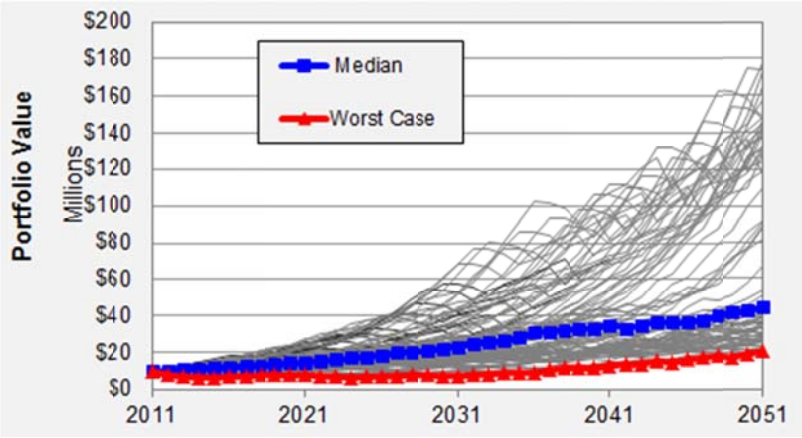


If the asset value is required to keep pace with CPI then the aftcast would show an upward-sloping[3] worst-case line. However, we run into one problem: Which CPI do we use? The inflation rate changes from year to year, sometimes significantly. Furthermore, the worst-case asset value does not necessarily mean the worst case inflation. In the past, bear markets were generally accompanied by deflation (1930s) or high inflation (1970s). Which one would you pick? It is impossible to come up with a non-zero, fixed perpetual withdrawal rate that will ensure that a portfolio keeps up with inflation each and every year. Even if distributions were zero, there are many time periods where portfolios do not grow at all, let alone keeping pace with inflation (1900-1920, 1936-1949, and 1964-1982).

To circumvent this dilemma, we only looked at the worst-case outcome, and then figured out the perpetual withdrawal rate that ensures that *this* worst-case line keeps pace with its historical CPI over the 40-year time horizon. This does not ensure that asset value keeps up with the CPI each and every year; however, in the worst-case it does so over the "perpetual" time period. Periodic reviews will further help to hone in on these "moving targets".

Once we accept this methodology, then we have an aftcast as depicted in Figure 6.

Figure 6: The aftcast of perpetual portfolios, worst-case asset value is CPI-indexed



[3] In deflationary time periods, it slopes downwards.

The Necessity of Periodic Reviews:

According to the National Bureau of Economic Research[4], the average peak-to-peak business cycle since 1854 was 55 months, since 1945, it was 66 months. We use 60 months (5-years) as our average period for a typical cyclical trend.

Therefore, it is essential to review the distribution numbers every five years. At each review, recalculate the perpetual withdrawal rate anew and use this for subsequent distributions until the next review. Do not recalculate the perpetual withdrawal rate more often than once every five years, except when dictated by an interim review (see below).

We are basing the perpetual withdrawal rate on the worst-case scenario. That means most of the time; we can expect that the portfolio assets will be higher.

In theory, once you determine the PWR, then you should never need to decrease the constant portion of the distributions. However, since our numbers are based on history, we can never be sure that the extremes of the future will not be worse than the extremes of the past. Our recommendation is that, if the asset value is lower by more than 20% (excluding any new cash inflows) compared with the last review, a new (lower) PWR should be calculated and implemented. How often did this happen historically? For the fixed PWR in Scenarios 1 and 2 with no growth participation, a pay-cut after a five-year review happened only 4 times during the last century[5]. This works out to about 0.54% probability of occurrence. And even then, each of these pay-cuts was followed by a pay increase in the subsequent review. Therefore, pay-cut considerations are pre-emptive measures to cover our uncertainty about the degree of future market extremes, nothing more.

Interim Reviews:

When there is a cash inflow (incoming donations/contributions) or cash outflow (unexpected expenses/distributions over and above the existing PWR) that exceeds 10% of the current total asset value, then an interim review should be carried out and a new PWR calculated. If this new PWR is lower, it should be implemented immediately. If it is higher, then you have a choice of implementing immediately or waiting until the next periodic review.

[4] www.nber.org

[5] There are a total of 721 five-year reviews for all rolling periods of up to 40-years, starting in year 1900 and ending in year 2010, inclusive.

Optimum Asset Mix:

Our earlier work[6] indicates that for distribution portfolios, an asset allocation of 40% equity and 60% fixed income is *approximately* the optimum mix. Our model is capable of optimizing the asset mix for any major index, alpha, cash flow and for many other factors. We wanted to keep this paper simple and we did not want to add several new dimensions.

Therefore, throughout this paper, we used an asset mix of 40% equity and 60% fixed income. If you are tempted to use higher equity content for higher potential growth, then you might eventually find that the distributions must be reduced significantly to keep them perpetual.

Quality of Distributions:

The quality of distributions is one of the important considerations when choosing a distribution strategy.

We include two types of measurements:

1. **The growth ratio of distributions:** This measures the general direction (increase or decrease) of the annual distributions over long periods of time. We calculate the *median* annual distribution for the first year and the 40th year of each aftcast line. Then we divide the dollar amount of the distribution on the 40th year by the dollar amount of distribution in the first year. If this number is larger than 1 then payments generally increase over time. For example, if distributions are constant and there is no increase or decrease over the 40 year time horizon, then this number is 1.00. Another example: If you have a distributions of 10% per year in a portfolio that happens to grow at 5% per year then this number is 0.11; not a good thing if you don't want distributions to decrease over time.
2. **The volatility of distributions:** Here is how we measure the volatility of distributions: We calculate the bottom decile annual distribution for each year of the aftcast (first year, second year etc.). Then we take the average of these bottom decile numbers for all starting years (1900, 1901, etc.). Then we repeat the same for the top decile. We take the difference between the two and divide this by the average top decile.[7]

[6] Otar, Jim, "Unveiling the Retirement Myth", 2009

[7] This includes the volatility of distributions due to the market performance as well as the fluctuations of the CPI.

For the lack of creativity, we call this the "Ulcer Index". The highest value of the Ulcer Index is one, the lowest is zero. If the distribution is constant (no indexation to CPI, no growth participation), then it is zero. Keep in mind, the Ulcer index reflects the volatility that stems from both market fluctuations and inflation fluctuations. For example, if the constant portion of distributions is indexed to CPI and there is no growth participation, then the Ulcer Index reflects the volatility due to the fluctuation of the CPI only.

If you prefer a low fluctuation of annual distributions, then pick a distribution strategy with the lowest Ulcer Index. Otherwise, ignore the Ulcer Index.

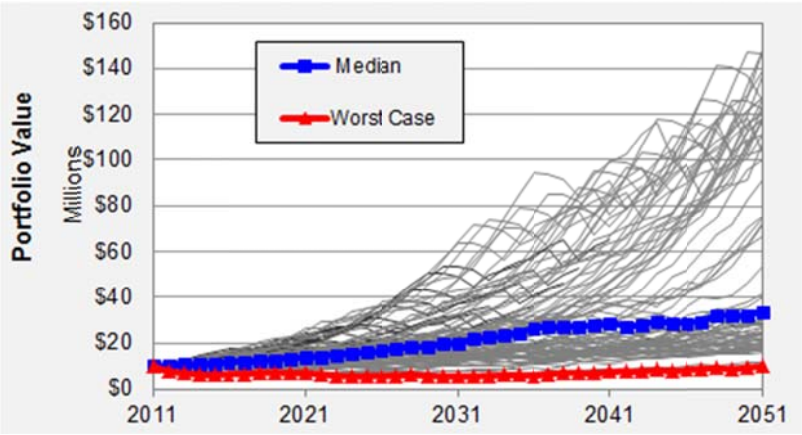
Scenario 1:

We can now start looking at our scenarios. In Scenario 1, the capital remains in perpetuity in today's dollars, distributions are not indexed to CPI.

Using a 40/60 asset mix (equity/fixed income), $10 million starting capital, we calculate a perpetual annual distribution (fixed dollar amount) of $281,000. The aftcast chart is depicted in Figure 7. Note that the last point on the red line (2051) is not lower than the first point (2011), which meets our definition of "perpetual portfolio".

For ease of use, we like to make the perpetual withdrawal rate dimensionless. So, instead of in dollars, we express it in terms of initial capital. In this scenario, $281,000 from an initial capital of $10 million is a 2.81% Perpetual Withdrawal Rate (**PWR**).

Figure 7: The aftcast, PWR is 2.81% of the initial capital



Fluctuating Distributions: In addition to, or instead of, distributing a constant dollar amount each year, the administrator might want to distribute fluctuating amounts that relate to the portfolio growth or portfolio value. The annual distributions consist of two components: a constant base amount and a fluctuating amount.

There are two popular ways of doing this:

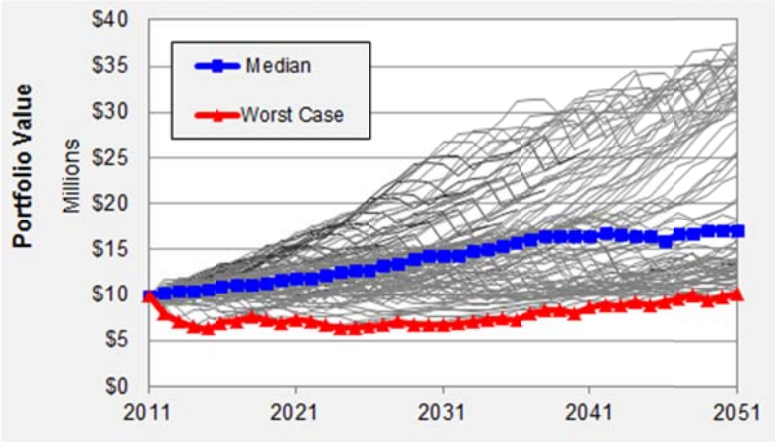
1. The fluctuating amount is based on a specific percentage of portfolio assets (Scenario 5),
2. The fluctuating amount is based on a specific percentage of the portfolio growth (Scenarios 1 through 4).

In this scenario, we focus on the portfolio growth. Basing the fluctuating amount on the portfolio growth creates a natural tendency to "ring the cash register" when times are good. It gives you a higher payout than having a constant distribution.

We call the percentage of the growth that we harvest each year, the "participation rate". If the portfolio growth is zero or negative in the preceding calendar year, then the fluctuating amount is zero (the floating amount cannot be negative) and only the constant base amount is distributed.

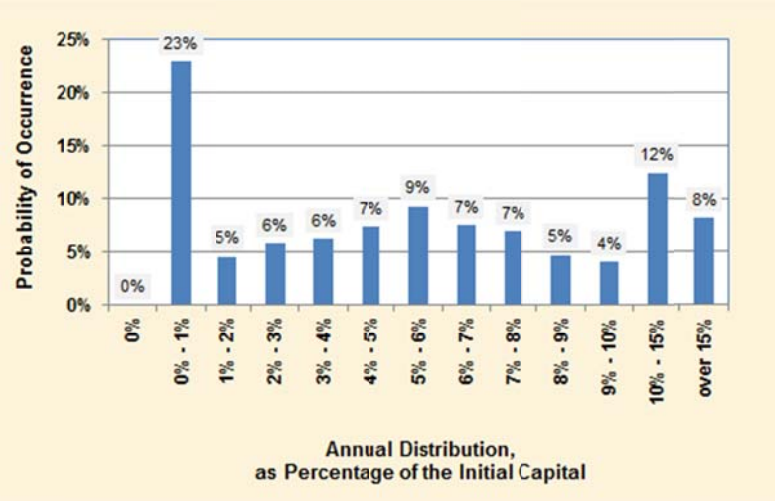
Using a 40/60 asset mix (equity/fixed income), $10 million starting capital, we calculate a perpetual annual distribution of $81,000 **plus** 50% participation rate. Expressed in percentage of the initial capital, the PWR is 0.81% of the initial capital plus 50% of the portfolio growth during the preceding year. Note that, once you include part of the growth in the distribution, the portfolio asset value has a larger downside fluctuation risk and the upside is much more limited because of larger amount of distributions (see Figure 8).

Figure 8: The aftcast, PWR is 0.81% of the initial capital plus 50% participation rate



You might be curious to know how much distribution to expect with what probability. Figure 9 depicts the histogram chart depicting the probability of receiving various ranges of PWR for all rolling time periods. Note that, in about 23% of the time, the PWR consist of the constant base amount only, i.e. 0.81% of the initial capital.

Figure 9: The PWR histogram, PWR is 0.81% of the initial capital plus 50% participation rate



Let's reduce the participation rate to 25%. In this case, the fixed portion of the portfolio becomes 1.83%. Figure 10 depicts the aftcast.

Figure 10: The aftcast, PWR is 1.83% of the initial capital plus 25% participation rate

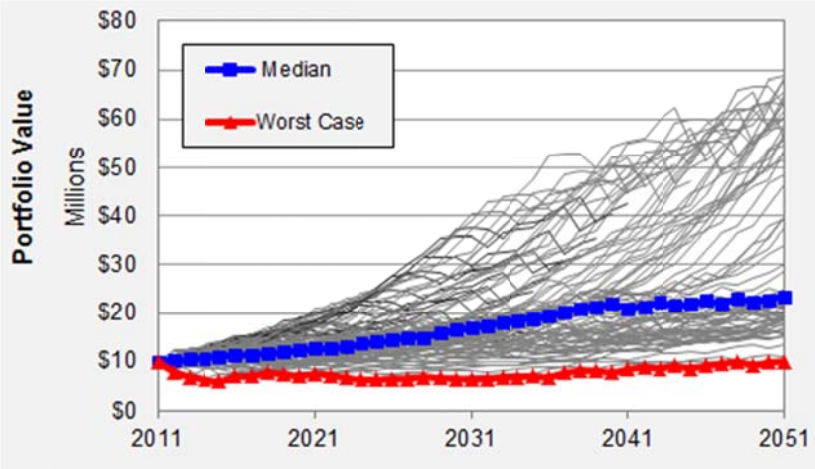
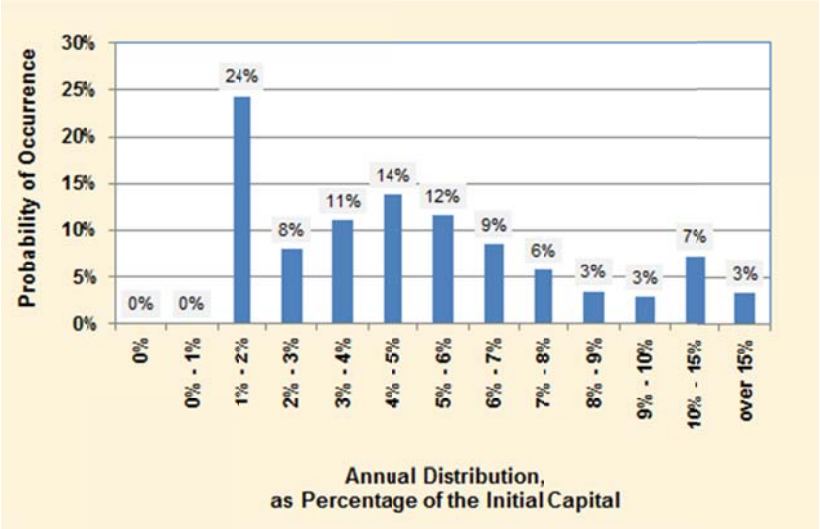


Figure 11 depicts the histogram chart that indicates the probabilities of receiving various ranges of PWR for all rolling time periods. Note that, in about 24% of the time, the PWR consist of the constant base amount only, i.e. 1.83% of the initial capital.

Figure 11: The PWR histogram, PWR is 1.83% of the initial capital plus 25% participation rate



Note that; at lower participation rates, the downside fluctuation risk of assets is slightly lower and the upside is significantly better when compared to higher participation rates.

Optimum Participation Rate: There is a specific upper threshold for the participation rate beyond which the portfolio is no longer considered perpetual. This threshold is between 60% and 70% for the type of distributions described in Scenario 1.

The total average lifetime distributions (**TALD**) increases as the participation rate increases. We observe that in Scenarios 1 and 2, where we are not required to keep the portfolio asset values in pace with CPI, TALD peaks near this threshold. For Scenarios 3 and 4 (where we are required to keep the worst-case portfolio asset values in pace with CPI), we observed that TALD peaks well beyond the threshold.

You might be tempted to use a high participation rate to harvest more of the growth. However, you don't need to do that. Our recommended participation rate is well below this threshold, between 15% and 25%. This lower participation rate makes the expected dollar amount more reliable, while still providing a sizeable participation in growth. At the next periodic review, if you find that you have more accumulation as a result of retention of this growth, simply recalculate and start paying larger distributions then.

Smoothening fluctuating distributions over time: While histograms are good in depicting the probability of distributions (Figures 9 and 11), they do not give a clue about the duration of a streak of no-growth. With the portfolio parameters we have been using (asset mix, alpha, etc.), we observe the following statistics: the probability of having zero payout[8] that lasted only one year is about 13%. The probabilities of having zero payouts that lasted two, three or four years are about 3% each. There were no streaks of zero payouts that lasted more than four years.

Therefore, if you want to smoothen the floating component of the distributions over time, we recommend using a five-year moving average. While this does not affect the portfolio performance and outcomes at all, it allows you distribute more evenly over time.

Follow this process for the fluctuating part of the payout:

Step 1: Calculate the dollar amount of growth participation for that year.

Step 2: Take this dollar amount out of the investments into a separate, virtual cash balance account each year, while maintaining the original target asset mix in the investment portfolio.

Step 3: Figure out one fifth of the total amount in this virtual "envelope" and pay this as your fluctuating dollar amount for that year. This is your five-year moving average.

[8] from the fluctuating part of the payouts that depends on the portfolio growth

Do not leave the money that is calculated in Step 1 invested in the investment portfolio; doing so can (and likely will) create problems later on as it fluctuates.

We summarize our findings for Scenario 1 in Table 1. Here are some additional explanations about the following tables:

- The first column is the equity proxy used in the equity portion of the portfolio for these calculations. We included DJIA, S&P500 and SP/TSX in our analysis.
- The constant portion is the distributions made out each year as a percentage of the initial capital. These distributions are not indexed for Scenarios 1 and 3. They are indexed to CPI in Scenarios 2 and 4.
- The floating portion is the growth participation rate.
- The ulcer index and the growth ratio were covered earlier.
- Average 1st Distribution indicates the historical average total distribution, including constant and floating portions, as a percentage of the initial capital at the end of the first year of the plan. Keep in mind; the actual, year-by-year distributions will vary widely from this average.
- The last column, "Total Distribution", indicates total average lifetime distributions over a 40-year time period, expressed as a percentage of the initial capital, assuming the same distribution rates are used over this entire time horizon. However, in all likelihood, distributions will be increased over time. Therefore, these are useful only to show the relative payout of each case. They should not be used to calculate the absolute payout.

Notice; the constant portion of distributions in the last row for each equity proxy group is 0%. Therefore, the corresponding floating portion is the largest allowable participation rate that meets our definition of perpetual, i.e. the threshold participation rate that we discussed earlier.

Table 1: Summary of perpetual withdrawal rates for Scenario 1. The total annual distribution is the total of the constant portion and the floating portion

Equity Proxy	Constant Portion (not indexed)	Floating Portion (participation rate)	Ulcer Index	Growth Ratio of Distributions	Average 1st Distribution	Total Distributions
DJIA	2.81%	0%	0.00	1.00	2.81%	112%
	2.23%	15%	0.73	1.66	3.39%	187%
	1.83%	25%	0.83	1.78	3.76%	218%
	0.81%	50%	0.94	1.61	4.67%	254%
	0.00%	63%	1.00	1.73	4.86%	262%
S&P500	2.86%	0%	0.00	1.00	2.86%	114%
	2.32%	15%	0.73	1.63	3.41%	192%
	1.94%	25%	0.82	1.72	3.76%	223%
	0.92%	50%	0.94	1.73	4.57%	260%
	0.00%	65%	1.00	1.86	4.74%	266%
SP/TSX	2.77%	0%	0.00	1.00	2.77%	111%
	2.25%	15%	0.72	1.68	3.34%	187%
	1.89%	25%	0.82	1.80	3.71%	218%
	0.92%	50%	0.93	1.72	4.56%	254%
	0.00%	71%	1.00	1.68	5.16%	262%

Scenario 2:

In Scenario 2, the capital remains in perpetuity in today's dollars. The "constant" portion of the distributions is indexed to CPI annually. For example a 2% constant portion from a $10 million portfolio means that the distributions are $200,000 in the first year and then this $200,000 is indexed to CPI (historic actual CPI for each year of the aftcast) in each of the subsequent years.

The indexation does not apply to the floating portion.

Table 2: Summary of perpetual withdrawal rates for Scenario 2

Equity Proxy	Constant Portion (indexed)	Floating Portion (participation rate)	Ulcer Index	Growth Ratio of Distributions	Average 1st Distribution	Total Distributions
DJIA	2.30%	0%	0.61	3.60	2.30%	193%
	1.87%	15%	0.74	3.20	3.03%	243%
	1.57%	25%	0.80	2.81	3.50%	259%
	0.62%	50%	0.93	1.84	4.48%	266%
	0.00%	63%	1.00	1.73	4.86%	262%
S&P500	2.27%	0%	0.61	3.60	2.27%	191%
	1.85%	15%	0.74	3.12	2.94%	245%
	1.49%	25%	0.81	2.81	3.31%	260%
	0.60%	50%	0.93	2.05	4.25%	271%
	0.00%	65%	1.00	1.86	4.74%	266%
SP/TSX	2.34%	0%	0.61	3.60	2.34%	197%
	1.92%	15%	0.73	3.29	3.01%	246%
	1.62%	25%	0.79	3.01	3.44%	262%
	0.75%	50%	0.90	2.09	4.39%	270%
	0.00%	71%	1.00	1.68	5.16%	262%

We observe that the growth ratio of the median portfolio with no growth participation was 3.60%. That means the median distributions needed to increase from $1 during the first year to $3.60 in the fortieth year just to keep up with inflation. This works out to about 3.25% average annual inflation since 1900. If the growth ratio for a given case with a time horizon of 40 years is smaller than 3.60, then it means that the distributions from at least half of the portfolios (using that particular strategy) do not keep up with CPI.

In this scenario, higher growth participation increases the total distribution while decreasing the growth ratio. That means any amount of growth participation will cause a less-than-full CPI growth for *most* distribution streams. But remaining *fewer* distribution streams will experience a significantly better-than-CPI growth, pushing up the average overall total distributions. In other words, those few lucky ones will be significantly more lucky than the majority who are "average" unlucky.

Scenario 3:

In Scenario 3, the distributions are not indexed to CPI. However, the worst-case portfolio value is required to keep up with CPI over the entire aftcast time horizon (40 years). Keep in mind; there will be some years within this 40-year time period, where the portfolio does not grow in pace with CPI.

The "constant" portion of the distributions is not indexed to CPI.

Table 3: Summary of perpetual withdrawal rates for Scenario 3

Equity Proxy	Constant Portion (not indexed)	Floating Portion (participation rate)	Ulcer Index	Growth Ratio of Distributions	Average 1st Distribution	Total Distributions
DJIA	1.99%	0%	0.00	1.00	1.99%	80%
	1.20%	15%	0.86	2.54	2.36%	165%
	0.63%	25%	0.94	3.04	2.56%	203%
	0.00%	35%	1.00	3.43	2.70%	230%
S&P500	2.07%	0%	0.00	1.00	2.07%	83%
	1.30%	15%	0.85	2.42	2.39%	171%
	0.81%	25%	0.93	3.00	2.63%	210%
	0.00%	39%	1.00	3.58	2.84%	246%
SP/TSX	1.94%	0%	0.00	1.00	1.94%	78%
	1.22%	15%	0.85	2.46	2.31%	165%
	0.73%	25%	0.93	3.00	2.55%	204%
	0.00%	38%	1.00	3.74	2.76%	237%

Scenario 4:

In Scenario 4, the worst-case portfolio value is required to keep up with CPI over the entire aftcast time horizon (40 years). Keep in mind; there will be some years within this 40 year time period, where the portfolio does not grow in pace with CPI.

The "constant" portion of the distributions is also indexed to CPI annually.

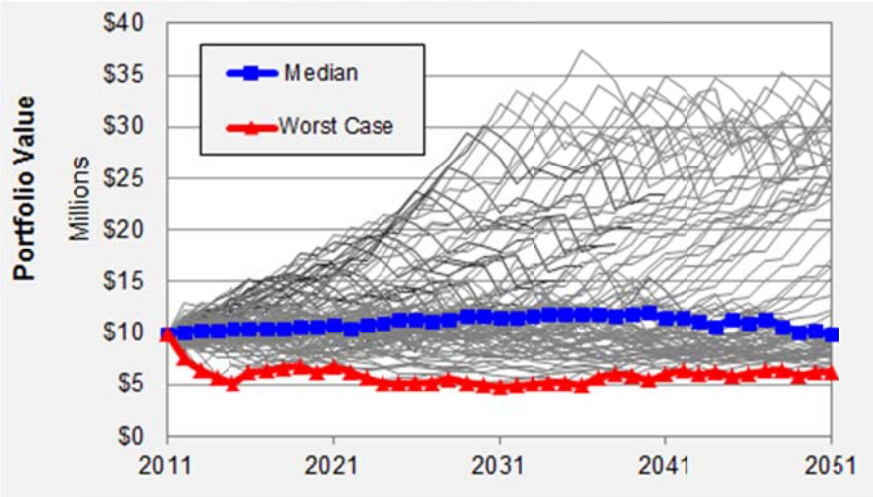
Table 4: Summary of perpetual withdrawal rates for Scenario 4

Equity Proxy	Constant Portion (indexed)	Floating Portion (participation rate)	Ulcer Index	Growth Ratio of Distributions	Average 1st Distribution	Total Distributions
DJIA	1.75%	0%	0.61	3.60	1.75%	147%
	1.04%	15%	0.83	3.21	2.20%	197%
	0.54%	25%	0.93	3.45	2.47%	218%
	0.00%	35%	1.00	3.43	2.70%	230%
S&P500	1.83%	0%	0.61	3.60	1.83%	154%
	1.17%	15%	0.82	3.29	2.26%	208%
	0.70%	25%	0.91	3.44	2.52%	229%
	0.00%	39%	1.00	3.58	2.84%	246%
SP/TSX	1.72%	0%	0.61	3.60	1.72%	145%
	1.07%	15%	0.82	3.65	2.16%	198%
	0.63%	25%	0.90	3.68	2.45%	221%
	0.00%	38%	1.00	3.74	2.76%	237%

Scenario 5:

Certain foundations and/or charitable trusts are required to distribute each year a minimum of 5% of the portfolio asset value of the preceding year. Figure 12 depicts the aftcast of this scenario.

Figure 12: The aftcast, minimum distribution rate 5% of the portfolio value at the preceding yearend



In this case, the worst-case portfolio value (red line) declines over time. This violates our definition of perpetual, which says the end value (2051) of the worst-case asset value must not be lower than its starting value (2011). We observe that even the median portfolio is barely flat.

To meet our definition of perpetual and your benchmark equity index DJIA, then we need to add cash to the asset pool over time. In this case, a minimum of 1.02% of the original capital plus any and all annual operating expenses must be added as new contributions to the foundation/trust each year. Otherwise, plenty of luck is required. For S&P500, this number is 1.60%. For SP/TSX, it is 0.83%.

We just want to clarify one thing: Just because this distribution strategy does not meet *our* criteria of perpetuity, it does not mean it is not perpetual. When you take a fixed percentage of the current portfolio value each year, the portfolio never runs out of money and it *is* perpetual. However the dollar amount of distributions can shrink over time to a level that can be significantly lower than the starting amount.

Figure 13 depicts the histogram chart that indicates the probabilities of receiving various ranges of distributions as a percentage of the starting capital.

Figure 13: The distribution histogram, 5% of the portfolio value of the preceding yearend

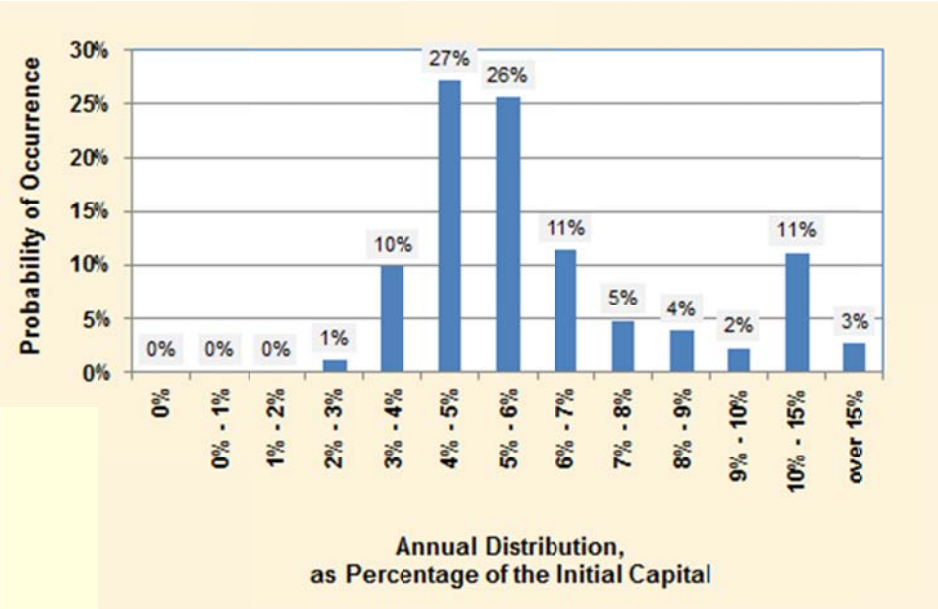


Table 5 shows the perpetual distribution rates using a constant portion and a floating portion. In this scenario neither distributions, nor portfolio value are required to keep pace with CPI. The floating portion is the payout as a percentage of the portfolio value at the preceding yearend.

Table 5: Summary of perpetual withdrawal rates for Scenario 5

Equity Proxy	Constant Portion (not indexed)	Floating Portion (% of portfolio value)	Ulcer Index	Growth Ratio of Distributions	Average 1st Distribution	Total Distributions
DJIA	2.08%	1%	0.47	1.60	3.08%	176%
	1.35%	2%	0.56	1.74	3.35%	218%
	0.61%	3%	0.62	1.69	3.61%	243%
	0%, NPD*	4%	0.64	1.48	4.00%	258%
S&P500	2.14%	1%	0.49	1.51	3.14%	179%
	1.43%	2%	0.60	1.65	3.43%	220%
	0.55%	3%	0.66	1.76	3.55%	245%
	0%, NPD	4%	0.67	1.56	4.00%	261%
SP/TSX	2.06%	1%	0.45	1.55	3.06%	175%
	1.35%	2%	0.56	1.70	3.35%	216%
	0.64%	3%	0.61	1.65	3.64%	241%
	0%, NPD	4%	0.63	1.53	4.00%	255%

* NPD – Not Perpetual Distribution, according to our definition

Hybrid Participation Rate: Here, we replace the constant portion with growth participation. Table 6 shows the characteristics of this strategy. The indicated participation rate is the maximum percentage for a perpetual withdrawal rate.

Table 6: Summary of perpetual withdrawal rates for hybrid distribution strategy

Equity Proxy	Floating Portion (participation rate)	Floating Portion (% of portfolio value)	Ulcer Index	Growth Ratio of Distributions	Average 1st Distribution	Total Distributions
DJIA	49%	1%	0.91	1.60	4.78%	261%
	32%	2%	0.80	1.74	4.47%	259%
	14%	3%	0.67	1.64	4.08%	258%
S&P500	47%	1%	0.91	1.85	4.43%	266%
	29%	2%	0.80	2.03	4.11%	263%
	10%	3%	0.69	1.81	3.73%	258%
SP/TSX	53%	1%	0.91	1.64	4.85%	261%
	35%	2%	0.80	1.69	4.54%	260%
	16%	3%	0.68	1.64	4.16%	258%

The hybrid strategy yields larger total distributions than the strategy depicted in Table 5.

The Effect of Alpha:

Alpha quantifies excess return of equities over and above its benchmark index.

In this paper, we use alpha as a "catch-all" number for the overall equity perfomance relative to the index for any factor, including:

- Dividends increase alpha.
- Management fees, portfolio costs, bid/ask spreads, trading costs, taxes generally decrease your alpha.
- Actively managed funds that beat the index over the long term consistently[9], can increase alpha.
- Using technical analysis tools succesfully can increase alpha. On the other hand, following one's emotions for market timing can decrease alpha.

Tables 7 through 13 show the sensitivity of PWR with respect to alpha for all the scenarios we looked at earlier using alpha=0. Only the differences in the constant portion of distributions and total distributions are shown.

Table 7: Sensitivity of PWR with respect to alpha for Scenario 1

Equity Proxy	Constant Portion (not indexed to CPI)			Floating Portion (participation rate)	Total Distributions		
	For Alpha:				For Alpha:		
	-2%	0%	+2%		-2%	0%	+2%
DJIA	2.24%	2.81%	3.40%	0%	90%	112%	136%
	1.71%	2.23%	2.77%	15%	150%	187%	227%
	1.33%	1.83%	2.35%	25%	176%	218%	262%
	0.38%	0.81%	1.22%	50%	212%	254%	299%
S&P500	2.25%	2.86%	3.44%	0%	90%	114%	138%
	1.79%	2.32%	2.82%	15%	154%	192%	232%
	1.44%	1.94%	2.41%	25%	181%	223%	268%
	0.35%	0.92%	1.34%	50%	216%	260%	304%
SP/TSX	2.19%	2.77%	3.33%	0%	88%	111%	133%
	1.71%	2.25%	2.79%	15%	149%	187%	228%
	1.39%	1.89%	2.39%	25%	176%	218%	263%
	0.53%	0.92%	1.34%	50%	213%	254%	298%

[9] The author's experience has been that about 3% of portfolio managers beat the index consistently (over and above luck) over the long term. This is about the same proportion of "extreme" versus "normal" markets.

Table 8: Sensitivity of PWR with respect to alpha for Scenario 2

Equity Proxy	Constant Portion (indexed to CPI)			Floating Portion (participation rate)	Total Distributions		
	For Alpha:				For Alpha:		
	-2%	0%	+2%		-2%	0%	+2%
DJIA	1.85%	2.30%	2.75%	0%	156%	193%	231%
	1.45%	1.87%	2.27%	15%	195%	243%	292%
	1.12%	1.57%	1.95%	25%	207%	259%	311%
	NPD*	0.62%	0.98%	50%	NPD	266%	316%
S&P500	1.84%	2.27%	2.70%	0%	155%	191%	227%
	1.37%	1.85%	2.24%	15%	193%	245%	295%
	1.04%	1.49%	1.93%	25%	206%	260%	316%
	0.21%	0.60%	0.95%	50%	221%	271%	322%
SP/TSX	1.89%	2.34%	2.81%	0%	159%	197%	236%
	1.46%	1.92%	2.33%	15%	196%	246%	297%
	1.17%	1.62%	2.00%	25%	210%	262%	315%
	0.43%	0.75%	1.12%	50%	222%	270%	319%

*NPD – Not Perpetual Distribution, according to our definition

Table 9: Sensitivity of PWR with respect to alpha for Scenario 3

Equity Proxy	Constant Portion (not indexed to CPI)			Floating Portion (participation rate)	Total Distributions		
	For Alpha:				For Alpha:		
	-2%	0%	+2%		-2%	0%	+2%
DJIA	1.20%	1.99%	2.69%	0%	48%	80%	108%
	0.45%	1.20%	1.87%	15%	118%	165%	212%
	NPD*	0.63%	1.29%	25%	NPD	203%	255%
S&P500	1.36%	2.07%	2.73%	0%	54%	83%	109%
	0.64%	1.30%	2.02%	15%	126%	171%	219%
	0.14%	0.81%	1.46%	25%	159%	210%	263%
SP/TSX	1.22%	1.94%	2.67%	0%	49%	78%	107%
	0.53%	1.22%	1.92%	15%	119%	165%	213%
	0.05%	0.73%	1.39%	25%	152%	204%	256%

*NPD – Not Perpetual Distribution, according to our definition

Table 10: Sensitivity of PWR with respect to alpha for Scenario 4

Equity Proxy	Constant Portion (indexed to CPI)			Floating Portion (participation rate)	Total Distributions		
	For Alpha:				For Alpha:		
	-2%	0%	+2%		-2%	0%	+2%
DJIA	1.04%	1.75%	2.45%	0%	87%	147%	206%
	0.38%	1.04%	1.68%	15%	130%	197%	263%
	NPD*	0.54%	1.13%	25%	NPD	218%	283%
S&P500	1.21%	1.83%	2.54%	0%	102%	154%	214%
	0.54%	1.17%	1.78%	15%	142%	208%	273%
	0.12%	0.70%	1.27%	25%	162%	229%	295%
SP/TSX	1.06%	1.72%	2.44%	0%	89%	145%	205%
	0.46%	1.07%	1.71%	15%	134%	198%	266%
	0.04%	0.63%	1.21%	25%	154%	221%	288%

* NPD – Not Perpetual Distribution, according to our definition

Finally, if you want to make sure that distributions of 5% of the portfolio value (Scenario 5) meets our definition of perpetual, then Table 11 depicts the annual contributions (donations) required as percentage of the initial capital.

Table 11: Sensitivity of new, annual contributions required with respect to alpha for Scenario 5

Equity Proxy	Minimum new, annual contributions required (as percentage of the initial capital)		
	For Alpha:		
	-2%	0%	+2%
DJIA	1.86%	1.02%	0.26%
S&P500	2.58%	1.60%	0.69%
SP/TSX	1.50%	0.83%	0.20%

Table 12: Sensitivity of PWR with respect to alpha for Scenario 5

Equity Proxy	Constant Portion (not indexed)			Floating Portion (% of portfolio value)	Total Distributions		
	For Alpha:				For Alpha:		
	-2%	0%	+2%		-2%	0%	+2%
DJIA	1.51%	2.08%	2.67%	1%	144%	176%	211%
	0.76%	1.35%	1.94%	2%	179%	218%	259%
	0.02%	0.61%	1.22%	3%	202%	243%	287%
S&P500	1.56%	2.14%	2.72%	1%	146%	179%	213%
	0.77%	1.43%	2.01%	2%	180%	220%	261%
	NPD*	0.55%	1.30%	3%	NPD	245%	290%
SP/TSX	1.49%	2.06%	2.61%	1%	143%	175%	210%
	0.72%	1.35%	1.90%	2%	178%	216%	258%
	0.05%	0.64%	1.20%	3%	200%	241%	286%

*NPD – Not Perpetual Distribution, according to our definition

Table 13: Sensitivity of PWR with respect to alpha for Scenario 5 using the hybrid distribution strategy

Equity Proxy	Floating Portion (participation rate)			Floating Portion (% of portfolio value)	Total Distributions		
	For Alpha:				For Alpha:		
	-2%	0%	+2%		-2%	0%	+2%
DJIA	39%	49%	56%	1%	213%	261%	306%
	20%	32%	42%	2%	209%	259%	307%
	0%	14%	26%	3%	202%	258%	309%
S&P500	36%	47%	56%	1%	215%	266%	312%
	15%	29%	39%	2%	205%	263%	314%
	NPD*	10%	23%	3%	NPD	258%	315%
SP/TSX	43%	53%	61%	1%	217%	261%	302%
	22%	35%	45%	2%	210%	260%	305%
	1%	16%	28%	3%	201%	258%	306%

*NPD – Not Perpetual Distribution, according to our definition

The Effect of Fixed Income Yields:

In our aftcasts earlier, for the fixed income portion of our portfolio, we used a yield that is 1% over and above the historical, annualized interest of a 6-month CD. We call this our yield premium. Some bond managers can do better and some do worse than this.

To determine the sensitivity of PWR, we varied the yield premium and calculated the constant portion of distributions. Tables 14 through 20 summarize the results.

Table 14: Sensitivity of PWR with respect to yield premium of the fixed income in the portfolio for Scenario 1

Equity Proxy	Constant Portion (not indexed to CPI)			Floating Portion (participation rate)	Total Distributions		
	For Yield Premium:				For Yield Premium:		
	0%	+1%	+2%		0%	+1%	+2%
DJIA	2.37%	2.81%	3.24%	0%	95%	112%	130%
	1.83%	2.23%	2.63%	15%	159%	187%	217%
	1.46%	1.83%	2.21%	25%	186%	218%	251%
	0.50%	0.81%	1.12%	50%	223%	254%	288%
S&P500	2.43%	2.86%	3.29%	0%	97%	114%	132%
	1.92%	2.32%	2.71%	15%	163%	192%	222%
	1.56%	1.94%	2.31%	25%	191%	223%	256%
	0.50%	0.92%	1.23%	50%	227%	260%	293%
SP/TSX	2.34%	2.77%	3.19%	0%	94%	111%	128%
	1.86%	2.25%	2.65%	15%	158%	187%	217%
	1.52%	1.89%	2.26%	25%	186%	218%	251%
	0.61%	0.92%	1.23%	50%	222%	254%	287%

Table 15: Sensitivity of PWR with respect to yield premium of the fixed income in the portfolio for Scenario 2

Equity Proxy	Constant Portion (indexed to CPI)			Floating Portion (participation rate)	Total Distributions		
	For Yield Premium:				For Yield Premium:		
	0%	+1%	+2%		0%	+1%	+2%
DJIA	1.97%	2.30%	2.64%	0%	166%	193%	222%
	1.58%	1.87%	2.16%	15%	208%	243%	279%
	1.23%	1.57%	1.85%	25%	220%	259%	298%
	0.34%	0.62%	0.90%	50%	229%	266%	304%
S&P500	1.95%	2.27%	2.60%	0%	164%	191%	219%
	1.49%	1.85%	2.13%	15%	206%	245%	281%
	1.14%	1.49%	1.83%	25%	219%	260%	302%
	0.32%	0.60%	0.86%	50%	233%	271%	309%
SP/TSX	2.02%	2.34%	2.68%	0%	170%	197%	225%
	1.59%	1.92%	2.22%	15%	209%	246%	284%
	1.28%	1.62%	1.91%	25%	222%	262%	302%
	0.49%	0.75%	1.01%	50%	233%	270%	307%

Table 16: Sensitivity of PWR with respect to yield premium of the fixed income in the portfolio for Scenario 3

Equity Proxy	Constant Portion (not indexed to CPI)			Floating Portion (participation rate)	Total Distributions		
	For Yield Premium:				For Yield Premium:		
	0%	+1%	+2%		0%	+1%	+2%
DJIA	1.41%	1.99%	2.54%	0%	56%	80%	102%
	0.67%	1.20%	1.73%	15%	131%	165%	201%
	0.12%	0.63%	1.14%	25%	165%	203%	242%
S&P500	1.51%	2.07%	2.61%	0%	60%	83%	104%
	0.78%	1.30%	1.83%	15%	137%	171%	207%
	0.31%	0.81%	1.30%	25%	173%	210%	250%
SP/TSX	1.38%	1.94%	2.48%	0%	55%	78%	99%
	0.70%	1.22%	1.75%	15%	130%	165%	200%
	0.23%	0.73%	1.22%	25%	166%	204%	243%

Table 17: Sensitivity of PWR with respect to yield premium of the fixed income in the portfolio for Scenario 4

Equity Proxy	Constant Portion (indexed to CPI)			Floating Portion (participation rate)	Total Distributions		
	For Yield Premium:				For Yield Premium:		
	0%	+1%	+2%		0%	+1%	+2%
DJIA	1.22%	1.75%	2.27%	0%	103%	147%	191%
	0.56%	1.04%	1.52%	15%	148%	197%	247%
	0.10%	0.54%	0.99%	25%	168%	218%	268%
S&P500	1.32%	1.83%	2.34%	0%	111%	154%	197%
	0.70%	1.17%	1.64%	15%	160%	208%	257%
	0.26%	0.70%	1.13%	25%	180%	229%	279%
SP/TSX	1.20%	1.72%	2.23%	0%	101%	145%	188%
	0.60%	1.07%	1.54%	15%	149%	198%	248%
	0.19%	0.63%	1.05%	25%	171%	221%	271%

As for Scenario 5, if you want to make sure that distributions of 5% of the portfolio value meet our definition of perpetual, then Table 18 depicts annual contributions (donations) required as percentage of the initial capital.

Table 18: Sensitivity of new, annual contributions required with respect to yield premium of fixed income for Scenario 5

Equity Proxy	Minimum new, annual contributions required (as percentage of the initial capital)		
	For Yield Premium:		
	0%	+1%	+2%
DJIA	1.67%	1.02%	0.43%
S&P500	2.31%	1.60%	0.91%
SP/TSX	1.31%	0.83%	0.37%

Table 19: Sensitivity of PWR with respect to yield premium for Scenario 5

Equity Proxy	Constant Portion (not indexed)			Floating Portion (% of portfolio value)	Total Distributions		
	For Yield Premium:				For Yield Premium:		
	0%	+1%	+2%		0%	+1%	+2%
DJIA	1.64%	2.08%	2.52%	1%	152%	176%	202%
	0.91%	1.35%	1.79%	2%	189%	218%	248%
	0.17%	0.61%	1.05%	3%	212%	243%	276%
S&P500	1.72%	2.14%	2.57%	1%	154%	179%	204%
	0.96%	1.43%	1.86%	2%	191%	220%	250%
	NPD*	0.55%	1.15%	3%	NPD	245%	278%
SP/TSX	1.64%	2.06%	2.48%	1%	151%	175%	200%
	0.92%	1.35%	1.27%	2%	187%	216%	246%
	0.21%	0.64%	1.06%	3%	210%	241%	274%

*NPD – Not Perpetual Distribution, according to our definition

Table 20: Sensitivity of PWR with respect to yield premium for Scenario 5 using the hybrid distribution strategy

Equity Proxy	Floating Portion (participation rate)			Floating Portion (% of portfolio value)	Total Distributions		
	For Yield Premium:				For Yield Premium:		
	0%	+1%	+2%		0%	+1%	+2%
DJIA	42%	49%	54%	1%	226%	261%	296%
	23%	32%	40%	2%	221%	259%	296%
	4%	14%	23%	3%	217%	258%	296%
S&P500	39%	47%	54%	1%	228%	266%	300%
	19%	29%	37%	2%	221%	263%	301%
	NPD*	10%	20%	3%	NPD	258%	301%
SP/TSX	45%	53%	59%	1%	227%	261%	292%
	26%	35%	42%	2%	224%	260%	294%
	5%	16%	25%	3%	216%	258%	295%

*NPD – Not Perpetual Distribution, according to our definition

The numbers in Tables 14 through 20 indicate that the performance of the fixed income portion of the portfolio is just as important as the performance of equities. Keep in mind, extreme low bond yield premiums that the North American markets have been experiencing during the last few years, can go on for long periods of time, as is the case in the Japanese markets for the last couple of decades. Searching for and finding excellent bond managers should be of prime importance for administrators of foundations and charitable trusts.

Example:

XYZ Foundation has $15 million in assets, allocated as 45% in stocks and 55% in fixed income. Annual administrative expenses (indexed to CPI) are $10,000. The foundation wants to distribute scholarships in perpetuity. It does not expect additional funding in the future.

The administrator has the following questions:

1. **What is the simplest distribution strategy?**

   The simplest strategy is to distribute a fixed amount each year, i.e. Scenario 1 with no growth participation.

   Asset Allocation: If you just want a *preliminary* look, and if your equity allocation is somewhere between 30% and 55%, then you can use the data depicted in all tables. If the equity allocation is outside this range, then you will likely have a smaller PWR[10].

   How much can be distributed? First, calculate how much of the assets are required to finance the administrative expenses. Since they are CPI indexed, we look at Table 2. Using S&P500 as our equity proxy, we see that the constant portion of the distributions is 2.27%. We calculate the capital required to generate this cash flow: $10,000 / 0.0227 = $440,529.

   Now, we have $14,559,471 capital available to distribute, calculated as $15,000,000 less $440,529. We read on Table 1 that we can distribute 2.86%. Therefore we can distribute $416,400 each year (calculated as 2.86% of $14,559,471) until the next review.

2. **Which distribution strategy would maximize distributions without exceeding a growth participation of 25%?**

   One would be tempted to look at the total long-term distributions on each table and find the highest number. However, that would be misleading. The total distributions are based on keeping the distribution rate the same over the entire time horizon. This is unlikely to occur. There are periodic reviews every five years and the distribution amounts will likely go up. Therefore, we do not use total long-term distributions.

[10] A more detailed analysis for a specific asset allocation or rebalancing strategy can be achieved using our aftcast calculator.

Instead, we use the "Average 1st Distribution". This is a more realistic number because it reflects -to a great extent- the average annual distributions until the next review.

Scenario 1 (Table 1): The largest average 1st distribution -without exceeding 25% participation rate- is 3.76%

Scenario 2 (Table 2): 3.31%

Scenario 3: (Table 3): 2.63%

Scenario 4: (Table 4): 2.52%

Scenario 5: (Table 5): 3.55%

Scenario 5 – hybrid: (Table 6): 3.73%

Answer: Scenario 1, i.e. paying a constant, non-indexed amount of 1.94% of the initial portfolio asset value plus 25% of the portfolio growth during the preceding calendar year, would likely pay the highest amount of distributions until the next review.

3. Five years later, at the next periodic review, assets are $19 million. A new part-time assistant was hired and the annual administrative costs jumped to $26,000.

   A prospective fund manager claims he can get a 3% alpha on equities and 2% yield premium over and above 6-month CDs in the fixed income portion of the portfolio, if XYZ Foundation were to employ him to manage the investment portfolio.

   How much can they expect to distribute next year, using the results from Question #2?

   A fund manager beating the index is generally a good thing. The assets can potentially grow larger faster, as we have indicated in Tables 7 through 20. However, when calculating distributions, ignore any expected or past performance figures of any portfolio manager and use Tables 1 through 6. If the fund manager indeed outperforms the benchmark, this will be reflected in the portfolio asset value, which in turn will result in higher distributions after the next periodic review.

   First, we calculate how much of the assets are needed to pay the increased administrative expenses on an ongoing basis. Since they are CPI indexed, we look at Table 2. Again, using S&P500 as our equity proxy, we see that the constant portion of the distributions is 2.27%. The required capital to generate this cash flow: $26,000 / 0.0227 = $1,145,374.

   Now we have $17,854,626 capital available to distribute, calculated as $19,000,000 less $1,145,374. In Question 2, we calculated paying a constant, non-indexed amount of 1.94% of the initial portfolio asset value **plus** 25% of the portfolio growth during the preceding calendar year.

   Therefore, XYZ Foundation can distribute $346,379 annually (1.94% of $17,854,626) **plus** the dollar amount of 25% of the portfolio growth in the preceding year, starting now and until the next review.

   As you can see, since this entire process is based on the aftcast, we were never required to assume any future portfolio growth rates or inflation.

About Aftcast.com

Aftcast.com provides research to its clients in the area of distributions. The research is based on non-Gaussian philosophy using actual market history. It helps its clients to better understand the behavior and impact of various distribution strategies.

This report was researched and authored by Jim Otar, CFP, CMT, BASc, MEng, who is the founder of aftcast.com.

For your comments and feedback, or to learn more about aftcasting, please visit www.aftcast.com or send an email to jim@retirementoptimizer.com