# Arbitrary versus Prudent Asset Allocation

December 6, 2021

## Study Method

This paper examines the effectiveness and cost of AAA in relation to PAA.

The time frame of the study is the Modern Era (starting in 1940) to use an adequately large sample to capture major events and avoid distortions that existed before modern regulatory framework was in place.

For purposes of this study, Growth investments are represented by the S & P 500 ("S&P") and Protective investments by 10 Year US Treasuries ("UST"). The Persistence (probability of repeating performance in a succeeding period) was calculated for the S&P and UST.

Arbitrary allocations tested were 0%, 20%, 40%, 60%, 80% and 100% of UST.

These allocations were tested for normal conditions (median) and extreme conditions (high and low cases).

One set of calculation determined a return for each tested blend for every year. The result showed the loss in return suffered at each blend, yielding the cost of that blend. Median, high and low years are identified.

A second set of calculations examined the S&P for every year in the Modern Era and categorized each as either:

- Expected… an increase in value or decline of less than 10%.
- Unexpected… a decline in value of 10% or more. This decline is considered to be the "Shock Level" for most investors. Two determinations were then made:
    - Number of years until the value was restored to the level before the Shock ("Recovery Period") for each blend.
    - Number of cases that changed from "Unexpected" to "Expected" as a result of each blend.

## Findings

### Economic

The economic benefit of Asset Allocation is the reduced loss when there is a market decline. If funds are needed before the market recovers, the investor suffers a real and unrecoverable loss. Asset Allocation places limits on such losses.

There were 8 years where losses reached Shock Levels during the 81 years of the Modern Era. This represents 9.9% of the years. The S&P fully recovered its value in each of these 8 cases. These years, recovery times and allocations were:

| Year | % S&P Decline | Recovery Time (Years) | Composite Return at Various Allocations | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 0% | 20% | 40% | 60% | 80% | 100% |
| **1940** | (10.7%) | 3 | (10.7%) | (7.5%) | (4.2%) | (1.0%) | 2.2% | 5.4% |
| **1941** | (12.8%) | 2 | (12.8%) | (10.6%) | (8.5%) | (6.3%) | (4.2%) | (2.0%) |
| **1957** | (10.5%) | 1 | (10.5%) | (7.0%) | (3.6%) | (0.1%) | 3.3% | 6.8% |
| **1973** | (14.3%) | 4 | (14.3%) | (10.7%) | (7.1%) | (3.5%) | 0.1% | 3.7% |
| **1974** | (25.9%) | 1 | (25.9%) | (19.6%) | (13.3%) | (7.0%) | (0.7%) | 5.6% |
| **2001** | (11.8%) | 5 | (11.8%) | (8.4%) | (4.9%) | (1.4%) | 2.1% | 5.6% |
| **2002** | (22.0%) | 1 | (22.0%) | (14.5%) | (7.1%) | 0.3% | 7.7% | 15.1% |
| **2008** | (36.6%) | 5 | (36.6%) | (25.2%) | (13.9%) | (2.6%) | 8.8% | 20.1% |
| **Annual Median Adjusted Return** | | | 14.8% | 12.5% | 10.2% | 7.8% | 5.5% | 3.2% |
| **Annual Cost** | | | 0.0% | (2.3%) | (4.6%) | (7.0%) | (9.3%) | (11.6%) |
| **Cost after 81 Years*** | | | 0.0% | (85.1%) | (97.9%) | (99.7%) | (100.0%) | (100.0%) |

* *Percentage of initial portfolio value lost to Arbitrary Asset Allocation*

From a purely economic perspective:

- The probability of experiencing a Shock Loss in any given year is 9.9%. This makes it unlikely that the need for cash would coincide with market declines. The probability is that needs would coincide with gains 10 times more frequently than coinciding losses.
- An allocation that would avoid any loss would have to exceed 80% to UST, which would eliminate 80% of the S&P gains.
- The cost of an Arbitrary Allocation at 40% for the entire Modern Era is 97.9% of initial portfolio value. The investor is left with only part of the profits with any higher allocation.
- The median wait time for recovery is 2.5 years. If waiting for recovery is not feasible, then sufficient funds should be held in Protective assets.

## Emotional

For the asset allocation strategy to change the emotional response and associated investment behavior that follows a market decline, combination of the following conditions is necessary:

- Confidence in the strategy being deployed, demonstrated by past success. Confidence is gained through a clear delineation of a valid strategy.
- Opportunity that exceeds any losses experienced, based on expected returns. Opportunity is made credible when a statistically valid forecast is provided with a calculated probability of occurring (Persistence).
- Personal protection from material loss, if investor’s own situation was unaffected. Personal protection is achieved if assets are not depressed when needed.

- Expectation of timely recovery, based on historical record. One year would ordinarily be considered timely, but timeliness is primarily based on the ability of the investor to function comfortably without the using the depressed assets.
- Losses were significantly mitigated, when assets are prudently allocated. Significant mitigation is generally recognized when a net loss it transformed into a net gain.
- No effective peer pressure to abandon the existing strategy, peers use an inferior investment strategy. Overcoming peer pressure requires a clear understanding of the strategy being deployed and how it applies to current market conditions.

Achieving these conditions require effective communication supported by credible data.

The emotional perspective is seldom clear and must be evaluated by the individual investor involved. The determination can be made based on response to key questions:

- What portion of future returns (estimated at 14.8% per year) are you willing to forfeit to avoid waiting for a normal 2.5 year market recovery?
- Would you be willing to secure the funds needed for the next five years and invest any remaining assets to achieve stock market returns with the associated volatility?

## Comparing Results

PAA was tested against AAA to determine the historical benefit over the past 20 years. The following assumptions were made for the tests:

- Investor five year spending requirements were the same for both PAA and AAA
- These spending requirements are funded by deposit accounts (Checking, Saving and CDs)
- AAA assets were split 60/40 in equities and bonds
- Both methods were tested each year from 2001 to 2020 for both one year and ten year time horizons
- For the growth component, the same investments were used in the same proportions for both PAA and AAA.

### Findings

- For 13 of 20 cases (65%) total return for the one year time horizon was superior for PAA
- For 12 of 20 cases (60%) total return for the ten year time horizon was superior for PAA
- In cases where AAA was superior, PAA permitted the investor to wait (up to five years) for a market recovery and avoid selling in a down market
- For the period ending 2020:
    - PAA outperformed AAA in one year returns (23.78% to 15.58%)
    - PAA outperformed AAA in ten year returns (98.62% to 60.94%)

## Test Results

Comparison of Arbitrary & Prudent Asset Allocation

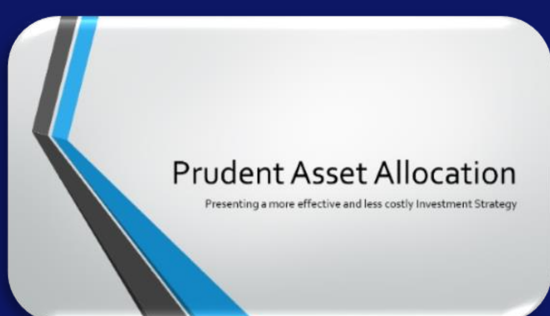
| For Year **2020** | | 1 Year Return | 10 Year Return | Arrbitrary Allocation | | | Prudent Allocation | | | 1 Year Winners | | 10 Year Winners | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Portfolio Holdings** | | | % of Holdings | 1 Year Return % | 10 Year Return % | % of Holdings | 1 Year Return % | 10 Year Return % | Arbitrary | Prudent | Arbitrary | Prudent |
| | | | | | | | | | | | | | |
| | Deposit Accounts | 0.09% | 4.91% | 25% | 0.02% | 1.23% | 25% | 0.02% | 1.23% | | | | |
| | DALBAR 10 Year US Treasury | 11.33% | 26.32% | 27% | 3.06% | 7.11% | 0% | 0.00% | 0.00% | 3.06% | | 7.11% | |
| | **Conservative Holdings** | | | **52%** | **3.08%** | **8.33%** | **25%** | **0.02%** | **1.23%** | **3.08%** | | **8.33%** | |
| | | | | | | | | | | | | | |
| | DALBAR Balanced Fund | 14.67% | 63.95% | 15% | 2.20% | 9.59% | 0% | 0.00% | 0.00% | 2.20% | | 9.59% | |
| | | | | | | | | | | | | | |
| | DALBAR Large Cap Equities | 18.01% | 101.58% | 16% | 2.88% | 16.25% | 37% | 6.67% | 37.58% | | 6.67% | | 37.58% |
| | DALBAR Growth | 43.64% | 157.39% | 17% | 7.42% | 26.76% | 38% | 16.58% | 59.81% | | 16.58% | | 59.81% |
| | **Aggressive Holdings** | | | **33%** | **10.30%** | **43.01%** | **75%** | **23.25%** | **97.39%** | | **23.25%** | | **97.39%** |
| | | | | | | | | | | | | | |
| | **Total Portfolio** | | | **100%** | **15.58%** | **60.94%** | **100%** | **23.27%** | **98.62%** | | **23.27%** | | **98.62%** |

## Conclusion

The historical analysis shows no economic value for an Arbitrary Asset Allocation. On the contrary, AAA is a highly ineffective and costly practice. It can therefore be concluded that from the economic perspective a permanent asset allocation is imprudent.

A Prudent Asset Allocation on the other hand is highly effective in circumstances where it is needed.

It is far more prudent to suffer a loss and wait for a recovery than to use a UST allocation to attempt to avoid the loss.




Learn More

### Prudent Asset Allocation Package

The package includes:

- Prudent Asset Allocation Explanation Slides
- Prudent Asset Allocation Worksheet User Guide
- Prudent Asset Allocation Worksheet Tool

## Preservation & Growth Investments

Investments used for preservation and those used for growth have historically displayed characteristics that show their relative suitability. DALBAR's *Persistence Analysis* reports on the characteristics of five investments that are most widely used. The time frame of the analysis is from 1928 through 2021. These results inform the use of these and similar investments for preservation and growth.

### PRESERVATIVE CHARACTERISTICS

The characteristics shown indicate the strengths of each investment to preserve assets. Preservative characteristics are examined over a short time frame (one year) since the purpose is to make withdrawals beginning immediately.

| Investment | Guaranteed at Maturity | Maximum Decline in Any Year | Frequency of a One Year Loss | Median One Year Return 1928-2021 |
|---|---|---|---|---|
| **Treasury Bills** | By US Government | No Declines | 0.0% | 3.0% |
| **10 Year US Treasuries** | By US Government | (11.1%) | 18.3% | 3.6% |
| **Baa Corporate Bonds** | No | (15.7%) | 16.1% | 6.5% |
| **S&P 500** | No | (43.8%) | 26.9% | 14.2% |
| **NASDAQ** | No | (40.5%) | 26.5% | 15.4% |
| **Inflation (CPI)** | **N/A** | **(10.3%)** | **10.8%** | **2.7%** |

#### *Most Suitable for Preservation*

- Treasury Bills are most suitable for preservation since there has never been a decline in value. This protection comes with low returns, only 3%, which in current times are close to zero.
- 10 Year US Treasuries provides the next best protection with a somewhat higher return but a substantial increase in risk.
- Other alternatives to consider, depending on prevailing interest rates, are guaranteed annuities and FDIC insured bank deposits.

#### *Least Suitable for Preservation*

- Equity investments (S&P 500 and NASDAQ) are unsuitable due to high probability of a loss in any one year.

## Growth Characteristics

The measures shown here indicate the ability of investments to produce longer term returns. For this reason, ten year returns over the entire study period are used. Investments for the long haul (ten years or longer) can tolerate severe declines when there is a high probability of recovery before the funds are actually needed by the investor.

| Investment | Median Ten Year Return | Probability of Ten Year Return | Frequency of One Year Loss | Frequency of One Year Recovery | Frequency of Five Year Recovery |
|---|---|---|---|---|---|
| **Treasury Bills** | 36.5% | 51.8% | 0.0% | N/A | N/A |
| **10 Year US Treasuries** | 49.1% | 36.1% | 18.3% | 88.2% | 100% |
| **Baa Corporate Bonds** | 97.8% | 36.1% | 16.1% | 86.1% | 100% |
| **S&P 500** | 156.4% | 24.1% | 26.9% | 68.0% | 100% |
| **NASDAQ** | 190.3% | 25.6% | 26.5% | 76.9% | 100% |
| **Inflation (CPI)** | **32.0%** | **59.0%** | **10.8%** | **50.0%** | **100%** |

*Most Suitable for Growth*

- As evidenced by the S&P 500 and NASDAQ, equity investments are the clear choice for growth due to superior returns and recovery that has consistently occurred in one to five years.
- Corporate bonds are a weak second choice and are mentioned only because of a higher probability of achieving the historical returns.
- More speculative investments can be considered for situations where investors are prepared to suffer permanent losses. These include individual securities, non-diversified investing, leveraged investing, options, currencies, commodities, etc.

*Least Suitable for Growth*

- The low ten year returns of Treasury Bills and 10 Year Treasury Bonds rule them out as growth investments.

## Deployment

The goal of the Prudent Asset Allocation strategy is to optimize the use of financial assets to achieve two separate but critical goals:

- Use income and assets to fund current expenses that investor considers to be important, taking as little risk as possible with the income and assets designated for that purpose. These are the Preservative class.

- Maximize growth of the remaining assets over a longer period of time, withdrawing when market conditions are favorable to do so. Withdrawals are made when needed to replenish the Preservative class or at the investor's discretion. These are Growth class.

## Prudent Procedure

The procedure is intended to continuously deplete the Preservative assets at a rate that is slower than the growth of the Growth class. When market conditions are favorable, Growth assets are used to replenish the Preservative class. This process protects investors from shocks to the Preservative class while benefiting from the long term returns of the Growth class.

Favorable conditions are considered to be any time except immediately following a decline, before a full recovery is achieved.

If there is a buildup of Preservative assets from income or unplanned events, or the less likely from appreciation in the Preservative class, the excess is transferred to the Growth class during an annual reevaluation.

These steps make the best use of principles of Prudent Asset Allocation and provides the supporting documentation for the decisions that are made.

### *Step 1 -Collect Key Data*

- Identify and obtain all information required by Prudent Asset Allocation Worksheet. This will include available information, estimates, forecasts and guesses. Note that a wild guess is far more useful than omitting an item because the information is unavailable or difficult to obtain.
- This initial information is modified as needed in Step 2 and in future years so it need only be approximate at this point.
- Enter the information into the Worksheet and examine the result.

### *Step 2 -Evaluate Worksheet Results*

- The feasibility of the results from the initial information provided is reviewed. There are three possible outcomes:
    1. No changes required
    2. Increase Assets in Preservative class
    3. Increase Assets in Growth class
- Test the feasibility by changing estimates and guesses and observe the results. Continue to test until a comfortable scenario is found.
- Changes to controllable factors may require reducing spending to affordable levels or forgoing planned expenditures.
- The evaluation may also indicate that spending can be comfortably increased in the near future or as far out as five years.

### *Step 3 -Implement Preservative Strategy*

- The next decision is the deployment of the Preservative class of assets. These would be low yielding with minimal risk of a decline in value.
- Alternatives include:

- Principal Guaranteed investments
- Guaranteed Income investments
- FDIC insured investments
- Unites State Treasury Securities
- Money Market funds
- Other cash equivalent securities

- Any one or a blend of these investments are suitable for Preservative class.

### *Step 4 -Implement Growth Strategy*

- A prudent growth strategy utilizes investments with historical evidence of potential for significant growth and the ability to recover value within five years of a decline.
- Growth investments should be diversified across uncorrelated asset classes to limit exposure to concentration risk.
- The Growth strategy should take into consideration the possibility of overspending the Preservative assets. Factors such as the persistence of income, level of discretionary spending and potential obligations such as emergencies and health care.
- The investor has the discretion to make non-conforming growth investments without violating the Prudent Principles, if funds in excess of long term needs are used.

These steps are repeated annually and at any other time that there are material changes, market declines or cash shortages. Any necessary revisions are made at these times.

## What If Considerations

Several events can occur that change the Preservative class requirements after the initial determination. Each such event requires a reevaluation with possible need for adjustments.

### *What If… A substantial portion of my expected income is lost?*

Loss of income can occur at any time so investors should continue to set aside a portion of income received in the event that the income source is lost. This set aside is held in Preservative assets until there is sufficient of an excess to transfer into Growth.

If income loss occurs before this cushion can be accumulated, the investor must transfer assets from the Growth class. Such transfers should be delayed if market conditions are unfavorable at the time that the income loss occurs.

### *What If… The expenditures in the current year exceed the Worksheet estimate?*

This will occur from time to time since no one has a crystal ball. The Prudent Asset Allocation process anticipates this and retains cash to survive for five years. When over-spending occurs, the investor can borrow from future years and replenish the funds from Growth assets when market conditions are favorable.

### *What If… An unexpected expenditure arises?*

This, of course depends on the magnitude of the expenditure. This situation is best handled by an immediate reevaluation.

*What If… There is a substantial inheritance?*

New funds received are best treated as Preservative assets until such time as the investor decides the desired a course of action:

- Add to Growth assets
- Change lifestyle
- Make major purchase(s)
- Pass on to heirs

*What If… My family situation changes?*

Births, deaths, marriages, divorces all change the financial picture and require a reevaluation of the Prudent Asset Allocation.

*What If… The value of my Growth assets declines significantly?*

Significant declines are to be expected roughly every 10 to 20 years. Fortunately, broad markets recover from declines within five years and usually in two or three. With such a short recovery time and the availability of the Preservative assets, the best course of action for the Prudent Asset Allocator is to wait out the decline until there is a full recovery.

**This does not apply to non-conforming Growth investments.**

*What If… The market does not recover in five years?*

In the unlikely event that there is no recovery within five years, it may be necessary to withdraw funds from Growth assets.

*What If… The value of my Preservative assets declines significantly?*

While not impossible, economic conditions can materially lower the value of even the least risky asset. Since this is unprecedented, the course of action will depend on an examination of other factors such as:

- The need for immediate cash
- The condition of the Growth assets
- The reason for the decline of the Preservative assets

*What If… The market never recovers (in my lifetime)?*

Inform heirs of the Prudent Asset Allocation strategy and advise continuing it.

## Sample Worksheet

The following is an example of the use of PAA to determine whether an investor is over-protected and should transfer assets from a Protective class into a Growth class or vice versa. See *Prudent Asset Allocation Guide* and *Worksheet* for additional details.

### Prudent Asset Allocation Worksheet

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | For: | *Charlie Fontuli* | | | | | |
| | For Year: | 2022 | 2022 | 2023 | 2024 | 2025 | 2026 |
| | | | Enter approximate or estimated amounts in thousands for the years they are most likely to take place | | | | |
| **Beginning** | | | | | | | |
| | Bank Deposits | | $25 | | | | Includes checking, saving and CDs |
| | Government Bonds | | $100 | | | | All US bond funds and other US bonds |
| | Other Protected Assets | | $10 | | | | Other forms of low risk assets |
| **Additions** | | | | | | | |
| | Income | | $45 | $47 | $50 | $52 | $54 | Take home pay, distributions or other |
| | Expected Payments | | $80 | $80 | $80 | $80 | $80 | Annuity payments, inheritance, refunds, etc. |
| | OtherAdditions | | $0 | $55 | $0 | $0 | $0 | Any payments not included above |
| **Usage** | | | | | | | |
| | Living Expenses | | $97 | $101 | $105 | $107 | $109 | All routine expenses |
| | Major Purchases | | $0 | $65 | $0 | $0 | $0 | Additional outlays planned |
| | Taxes | | $17 | $17 | $17 | $17 | $17 | Taxes owed in excess of withholding |
| | Other Expenditures | | $0 | $0 | $0 | $0 | $0 | Any expenses not included above |
| **Recap** | | | | | | | |
| | Beginning Balance | | $135 | | | | |
| | Additions | | $125 | $182 | $130 | $132 | $134 |
| | Usage | | $114 | $183 | $122 | $124 | $126 |
| **Actions** | | | | | | | |
| | Transfer from Growth | | | | | | |
| | Addition to Growth | | **$169** | | | | |