Asset Protection Strategies

February 28, 2020

Is it insanity to raise questions about the value of asset allocation in managing investments? Certainly, all asset allocations can't be best…

The purpose of asset allocation is to maximize returns and minimize risk. In its simplest form, asset allocations combine high risk components with uncorrelated low risk components to achieve a tolerable level of risk. Typically, the high risk components are the more volatile stocks, while the offsetting low risk is achieved by the less volatile cash and bonds.

This system of risk mitigation is costly to investors who forfeit returns in exchange for the ability to cushion volatility in the equity markets. The cost of risk mitigation is referred to as "Opportunity Cost", and is substantial as shown in this analysis. The Opportunity Cost is over and above the fees, expenses, trading and other costs.

The economic benefit of this cushion is the reduced likelihood that investors will panic and withdraw funds in a down market and thus suffer significant losses. There is also the psychological benefit of avoiding some of the stress caused by exposure to the stock market.

Strategies for mitigating risk and limiting Opportunity Cost rely on blending uncorrelated asset classes while also continuing to produce returns. The following table highlights strategies currently in use.

Strategy	Mitigation Method	Return Method	Protection	Opportunity Cost
Allocate Assets to Cash	Allocate based on risk tolerance.	Cash equivalents paying low rates.	Varies based on allocation.	Extremely High.
Allocate Assets to Bonds	Allocate based on risk tolerance.	Subject to bond yields.	Relies on allocation and stable prices.	High.
Provide Guarantee	Insurer protection from loss/inflation.	Stated interest or market returns.	100%	Varies based on interest or market.
Share of High Return	Insurer protection from loss/inflation.	% of positive index returns.	100%	Returns exceed market rates.
Offset Losses With Gains	100% negative correlation.	100% of high risk/ return investment.	100%	Low.

The Opportunity Costs and benefits raise four important questions:

- When are the benefits worth the cost?
- Can the same benefits be derived at lower costs?
- Can greater benefits be derived for the same or lower costs?
- Are there benefits beyond the return and protection?

In order to answer these questions, the history of the stock, cash and bond markets were examined and compared to inflation cost. These results are compared to the alternatives of using fixed and indexed annuities instead of the cash and bond allocation in a portfolio. The results since 1928 are presented in *Appendix A -Annual Returns and Inflation From 1928 to 2019*.

Summary of Findings

Investors had a very low return on investment for holding funds in cash or bonds each year since 1928 instead of the S&P 500. Since returns are not predictable, allocations must remain in place every year.

- Investors who held $100,000 in cash enjoyed $332,670 in protection for a cost of $687,670.
- Investors who held $100,000 in bonds enjoyed the same protection for a cost of $545,240.

In the most extreme cases, the benefits would be moderate:

- The maximum loss case since 1928 occurred in 1931. In that year the S&P 500 lost 44.84% of its value after fees and expenses. This represented a loss of $44,840 on a $100,000 investment in that index.
- In 1931, if 40% of assets were allocated to cash, the loss would have been reduced to $26,648, saving the investor $18,192. If the allocation were in 10 year treasury bonds instead, the investor savings would have been $19,052.

The number of times an investor would benefit from allocating assets to cash or bonds is low:

- Since 1928, the S&P 500 had gains in 67 years and losses in 25 years (up 72.83% of the time).
- In only 8 of the 25 years did investors wait more than 1 year for a gain. The longest wait occurred from 1929 to 1932.

Use of annuities and options can mitigate risks with low Opportunity Costs:

- Fixed annuities can provide guarantees against loss of principal, lifetime income and inflation.
- Indexed annuities can provide the protection of fixed annuities in addition to equity market participation only when the markets rise.
- Options (Long-Term Equity Anticipation Securities (“LEAPS”) Puts) can provide 100% offsetting returns when there is a market decline.

Effectiveness of Asset Allocation Protection

While the possibility exists for a year of severe market decline, the reality is that the greatest loss suffered by the S&P 500 was 44.84% in 1931 (after fees and expenses). There have only been 6 years in which the S&P declined more than 20%. This record and the asset allocation classes used for protection show the effect of a 40% allocation in each of these cases:

Six S&P 500 Declines Over 20%

Year	S&P 500 Return	Loss on $100,000		
		With 0% Allocated	With 40% Allocated to Cash	With 40% Allocated to Bonds
2002	-22.97%	($22,970)	($13,526)	($12,666)
1930	-26.12%	($26,120)	($15,416)	($14,556)
1974	-26.90%	($26,900)	($15,884)	($15,024)
1937	-36.34%	($36,340)	($21,548)	($20,688)
2008	-37.55%	($37,550)	($22,274)	($21,414)
1931	-44.84%	($44,840)	($26,648)	($25,788)

Need for Protection

The protection derived from limiting exposure to stocks was found to be valuable in only 27.17% of years and only for brief periods. Since predicting these periods is highly unreliable, the rational conclusion is to avoid attempts at prediction and remain invested until funds are needed. The following table highlights the frequency of down markets when protection added value.

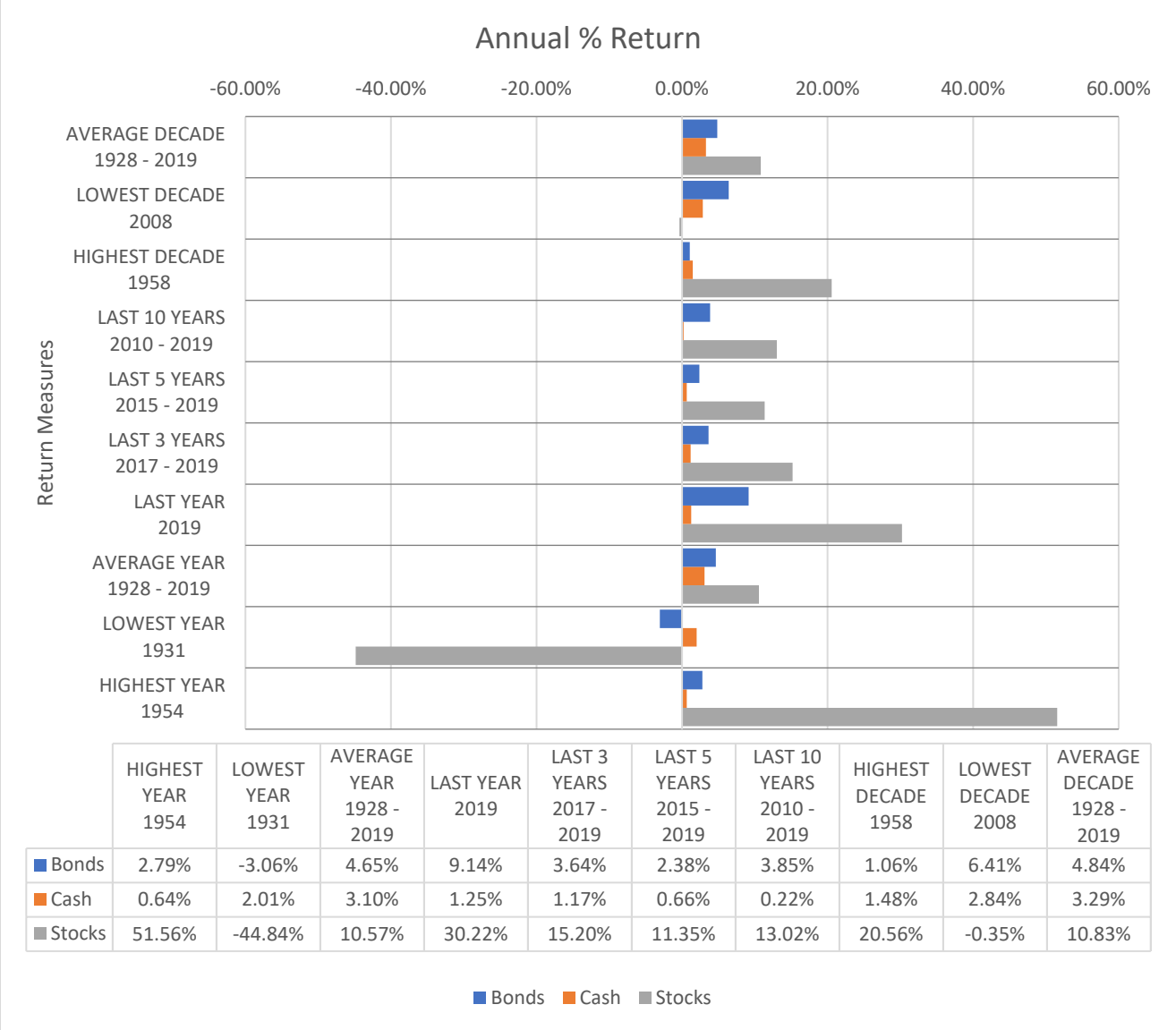
Since 1928…	For Stocks	For Cash	For Bonds
Number of Up Years	67	92	77
Number of Down Years	25	0	15
Frequency of Up Years	72.83%	100.00%	81.52%
Frequency of Down Years	27.17%		
Number of 2 or More Consecutive Down Years	8		
Maximum Consecutive Down Years (1929 – 1932)	-66.76%		
Most Recent Consecutive Down Years (2000 – 2002)	-39.60%		

While there is a 27.17% chance of actually needing the protection, the loss of return occurs in 100% of the 92 years. The table also shows that bonds gave protection in 18.48% of years. Cash, while yielding lower returns, provided protection 100% of the time when it was actually needed.

Value of Stocks over Cash and Bonds

There is compelling evidence that stocks produce higher returns over the long term. For example, in an average year since 1928, the S&P return was 10.57% after expenses, compared to an average of 3.10% for cash and 4.65% for US Treasury Bonds. Several additional measures were used to support the conclusion that stocks produce higher returns. It is evident that under most circumstances there is a substantial loss of long term returns for any assets that are allocated to cash or to bonds.

Using these averages, a portfolio with 60% in stocks only benefited from 60% of the 10.57% average. The remaining 40% if held in bonds benefited from the 4.65%. The greater the allocation to stocks, the greater the return.

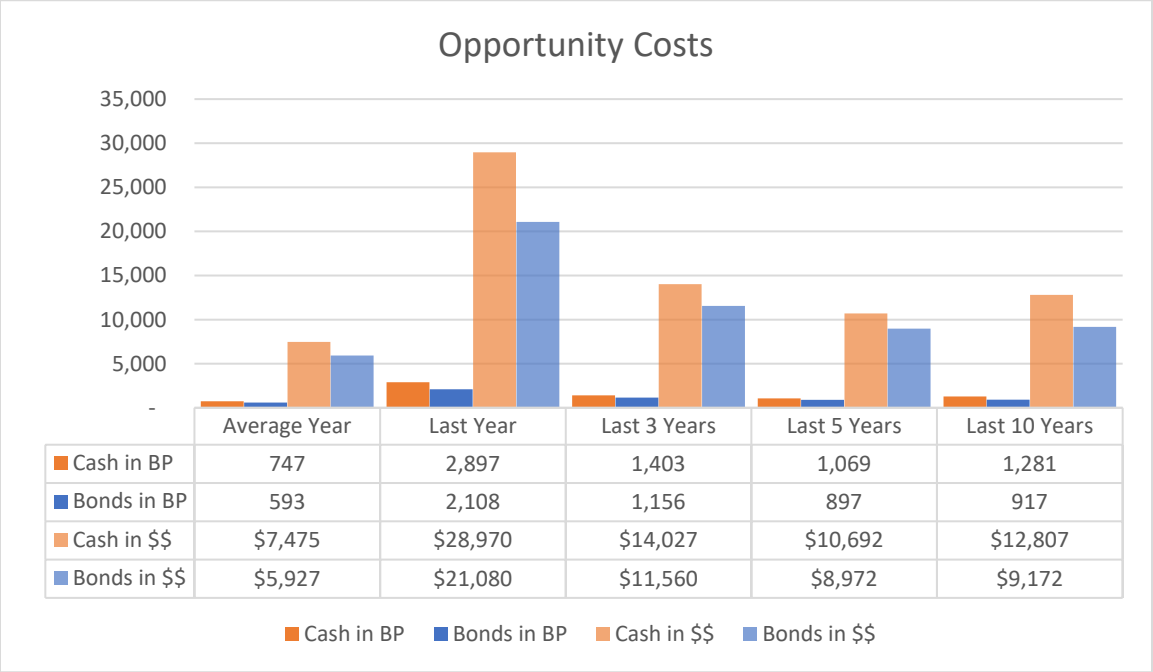


	HIGHEST YEAR 1954	LOWEST YEAR 1931	AVERAGE YEAR 1928 - 2019	LAST YEAR 2019	LAST 3 YEARS 2017 - 2019	LAST 5 YEARS 2015 - 2019	LAST 10 YEARS 2010 - 2019	HIGHEST DECADE 1958	LOWEST DECADE 2008	AVERAGE DECADE 1928 - 2019
Bonds	2.79%	-3.06%	4.65%	9.14%	3.64%	2.38%	3.85%	1.06%	6.41%	4.84%
Cash	0.64%	2.01%	3.10%	1.25%	1.17%	0.66%	0.22%	1.48%	2.84%	3.29%
Stocks	51.56%	-44.84%	10.57%	30.22%	15.20%	11.35%	13.02%	20.56%	-0.35%	10.83%

Cost of Asset Allocation Protection

The average annual cost due to the lower return of cash and bonds ("Opportunity Cost") was $8,175 for cash and $6,427 for bonds per $100,000 invested. The lower cost of bonds ($6,427) should be considered in the light of the foregoing discussion regarding the lower protection that is derived.

Since the averages are not an accurate reflection of all cases, several other measures of these Opportunity Costs were made. The results show that annual Opportunity Costs have been as high as $50,920 (1954). Out of the 92 years studied, in only one case (1931) did the return from cash and bonds exceed stocks.



	Average Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Cash in BP	747	2,897	1,403	1,069	1,281
Bonds in BP	593	2,108	1,156	897	917
Cash in $$	$7,475	$28,970	$14,027	$10,692	$12,807
Bonds in $$	$5,927	$21,080	$11,560	$8,972	$9,172

The Opportunity Cost can be compared to the cost of declines in stocks over the 92 years of the study. Without adjusting for inflation, the 27 cases of market declines amount to $332,670 with an Opportunity Cost of $687,670 to protect those assets with cash. The cost to benefit is nearly 2:1! The Opportunity Cost of protection using bonds was somewhat lower at $545,240.

Psychological Benefits

The psychological benefits present an entirely different picture. Market declines raise the concern for most investors about the duration and magnitude of the decline. The past and current fear of cascading declines lead investors to seek protection that will limit potential losses. Although the fear remains because there is no guarantee, historical evidence is overwhelming that markets recover in a short period.

This fear has cost investors as much as half of returns in certain periods, but the extent to which the allocation to cash and bonds alleviates this fear is unknown. For some fearful investors the prospect of higher returns from a portion of their assets is better than putting the entire portfolio at risk.

The effectiveness of asset allocation in preventing self-inflicted losses is debatable. What is not debatable is that Opportunity Cost of protection is nearly twice the potential loss.

Lower Cost Alternatives

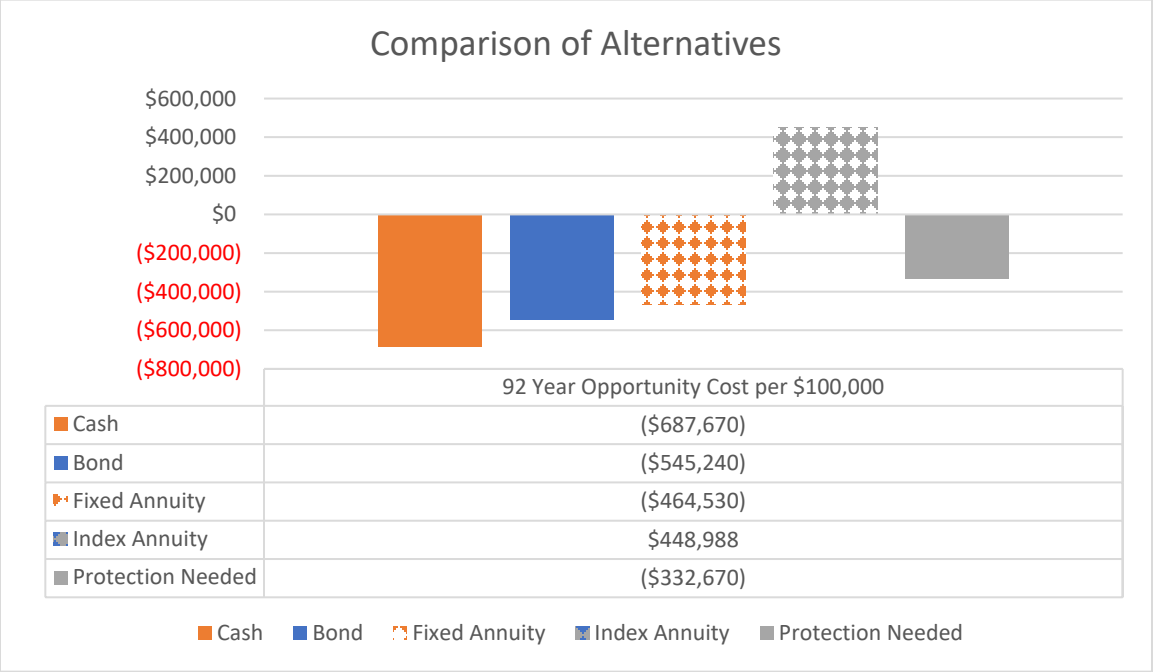
The enormously high cost of cash and bond allocation is sufficient to seek other ways of limiting portfolio losses. Consideration is given to alternatives that include principal guarantees and produce higher returns.

While cash equivalent products can offer guarantees, the returns impose very high Opportunity Costs.

Hedging strategies are an obvious choice for a low risk high return alternative. However, access to these may be uneconomical and difficult for average investors.

More accessible are products that employ hedging strategies, such as fixed and indexed annuities. These products can be configured with principal guarantees, inflation protection, market participation and lifetime income.

These products were analyzed and compared to the cash and bond alternatives for asset allocation:



Fixed Annuity

The fixed annuity is a simple choice.

The fixed annuity that was used in the analysis reduced the Opportunity Cost on $100,000 for the 92 year period to $464,530, due to the principal guarantee and inflation protection. Lifetime income guarantee is also available.

While this is better than cash or bonds it still falls far short of being a prudent choice for protection from a loss of $332,670.

Indexed Annuity

The indexed annuity has additional options.

The selected annuity is the only alternative analyzed that offered protection and produced higher returns than stocks. This advantage is due to the capture of a large proportion of the upside (70%) with none of the losses. In addition, interest is credited.

Using Long-Term Equity Anticipation Securities ("LEAPS") Puts

LEAPS are another alternative to asset allocation strategies. The one year LEAPS are purchased for approximately 3.5% of the protected assets each year. This lowers the returns but eliminates the possibility of further loss since the value of the LEAPS increase if the portfolio value declines. Even if the portfolio should lose all its value, the increase in LEAPS would fully offset that loss.

The market history shows that the protection of LEAPS will cost the investor, except for certain extreme periods where the return using LEAPS exceed the return without the protection. LEAPS costs compare favorably to traditional asset allocation strategies.

Returns on $100,000 Portfolio								
	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years	Last 30 Years	Last 40 Years	Last 92 Years
With No Protection	$30,220	$48,844	$65,501	$222,887	$164,415	$1,175,685	$5,693,995	$212,730,458
Using LEAPS Options	$26,720	$41,724	$47,284	$145,828	$267,829	$1,250,376	$4,644,400	$553,750,166
Opportunity Cost -LEAPS	($3,500)	($7,120)	($18,217)	($77,059)	$103,414	$74,691	($1,049,595)	$341,019,708
Annual %	-11.58%	-4.86%	-5.56%	-3.46%	3.14%	0.21%	-0.46%	1.74%
Allocating 40% Cash	$18,872	$31,149	$40,464	$114,310	$126,793	$634,043	$2,529,783	$57,558,721
Opportunity Cost -Cash	($11,348)	($17,695)	($25,037)	($108,578)	($37,622)	($541,642)	($3,164,212)	($155,171,736)
Annual %	-37.55%	-12.08%	-7.64%	-4.87%	-1.14%	-1.54%	-1.39%	-0.79%
LEAPS Advantage	25.97%	7.22%	2.08%	1.41%	4.29%	1.75%	0.93%	2.54%

It is assumed for purposes of this analysis, that:

- 12 month S&P 500 Put LEAPS are purchased at the start of each year
- Amounts purchased protects 100% of an S&P 500 portfolio.
- LEAPS are held until expiration and exercised at that time when in the money.
- Purchase cost is 3.5% of the index value at the time of purchase.
- Fees and expenses for stocks in the portfolio are 100 basis points and for cash is 30 basis points.
- The portfolio mirrors the S&P 500 index with zero tracking error.

Other Benefits of Cash & Bonds

In considering asset allocation alternatives, it should be noted that cash may also be used to maintain a level of liquidity. The cash can generally be withdrawn at any time without concern of loss for doing so in a down market and without encountering restrictions.

Conclusion

Cash and bonds fall short of being the ideal low risk component in an asset allocation strategy for several reasons.

- Bonds have become volatile during the most severe market declines and make them unreliable protection. Of the 20 most severe stock decline years, bonds counteracted the movement decisively in only two cases (2000 and 2002). On two occasions bonds declined in value as well as stocks (1941 and 1969).
- Cash and short term bonds offer protection from volatility at the cost of lowered returns. $100,000 allocated to bonds for 92 years would be worth $5 million after expenses, compared to an equivalent investment in the S&P 500 which would be worth $213 million, representing an Opportunity Cost of $208 million. The cost of cash would be even greater. $100,000 in cash would be worth $2 million, representing an Opportunity Cost of nearly $211 million.
- The most frequently used forms of cash equivalents and bonds have no maximum loss guarantees. The primary cash equivalent are money market funds that “broke the buck” during the 2008 market decline.
- The proportion of cash to bonds is ambiguous. The asset allocation is further complicated by the volatility of bonds. The greater the allocation to cash the lower the risk but higher allocations of cash also lowers the returns.

For these reasons, investment managers should examine other alternatives for the management of asset allocation in various applications such as:

- Computer Models
- Managed Accounts
- Model Portfolios
- Target Risk Funds
- Target Date Funds

Alternatives worth considering include annuities that offer:

- Guaranteed Principal
- Net returns that exceed cash and short term bonds
- Inflation protection
- No volatility of principal
- Substantially lower risk at a far lower effective cost
- Ability to set dollar level of protection

Applications for Asset Allocation Alternatives

401k

Annuities may be used as substitutes for cash or cash equivalents when they meet ERISA requirements:

- The designated investment option available for participant election. Annuities must qualify under 404(c).
- The short term default in automatic enrollment. Annuities must meet QDIA requirements.
- The cash allocation in target date and target risk funds. Annuity provider must be appointed as sub-advisor of the investment manager.

Annuities may be used as substitutes for short bonds:

- The bond allocation in target date and target risk funds. Annuity provider must be appointed as sub-advisor of the investment manager.

DB Plans

Plans that employ liability driven investing "LDI" are required to de-risk portfolios after achieving adequate funding. By moving assets into a fixed annuity, the plan increases its safe earnings as well as obtaining a downside guarantee. The annuity provider must be selected by plan investment committee.

IRAs

The cash and bond allocations are imbedded within investment products and separately to balance the portfolio risk. Products that use insured annuities generally pay higher returns than the cash and short term bonds. Such products have a built-in advantage over the cash bond allocations. Model portfolios can also enjoy the advantages of using fixed annuities instead of cash and bonds.

Taxable Accounts

In addition to the previously discussed advantages, taxable accounts can take advantage of the deferral available through annuities.

Appendix A

Annual Returns and Inflation: 1928 to 2019

Asset Classes	Stock		Cash		Bond		Corp Bond		Inflation		Fixed Annuity		Indexed Annuity	
	Return %	Return Period	Return %	Opportunity Cost @ $100,000	Return %	Opportunity Cost @ $100,000	Return %	Opportunity Cost @ $100,000	Inflation %	Inflation Cost @ $100,000	Estimated Interest	Opportunity Cost @ $100,000	Estimated Return %	Opportunity Cost @ $100,000
	S&P 500		3-month T.Bill		US 10 yr T. Bond		Baa Bond		CPI		Inflation Protected		Int. + 70% of S&P 500	
Fees & Expenses Applied	1.00%		0.30%		0.50%		0.60%		N/A		1.50%		1.50%	
POSITIVE (+) YEARS	67	1928 - 2019	92		75		77		81		92		92	
NEGATIVE (-) YEARS	25	1928 - 2019	0		17		15		10		0		0	
+ RATIO: ALL YEARS	72.83%	1928 - 2019	100.00%		81.52%		83.70%		88.04%		100.00%		100.00%	
CONSECUTIVE DOWN YEARS	8 Times		Most Severe: 1929 - 1932		66.76%									
	8.70% Likelyhood		Most Recent: 2000 - 2002		39,60%									
HIGHEST YEAR	51.56%	1954	0.64%	($50,920)	2.79%	($48,770)	5.56%	($46,000)	0.31%	($310)	-0.03%	($51,590)	36.62%	($14,945)
LOWEST YEAR	-44.84%	1931	2.01%	$46,850	-3.06%	$41,780	-16.28%	$28,560	-8.93%	$8,930	1.03%	$45,870	0.78%	$45,617
AVERAGE YEAR	**10.57%**	1928 - 2019	**3.10%**	**($7,475)**	**4.65%**	**($5,927)**	**6.62%**	**($3,954)**	**3.04%**	**($3,044)**	**5.52%**	**($5,049)**	**15.45%**	**$4,880**
LAST YEAR	30.22%	2019	1.25%	($28,970)	9.14%	($21,080)	14.73%	($15,490)	2.44%	($2,440)	2.50%	($27,720)	23.95%	($6,266)
LAST 3 YEARS	15.20%	2017 - 2019	1.17%	($14,027)	3.64%	($11,560)	6.83%	($8,370)	2.34%	($2,337)	2.33%	($12,867)	14.28%	($923)
LAST 5 YEARS	11.35%	2015 - 2019	0.66%	($10,692)	2.38%	($8,972)	5.79%	($5,558)	1.68%	($1,678)	2.40%	($8,950)	11.25%	($103)
LAST 10 YEARS	13.02%	2010 - 2019	0.22%	($12,807)	3.85%	($9,172)	6.63%	($6,390)	1.83%	($1,834)	2.75%	($10,273)	12.44%	($586)
HIGHEST DECADE	20.56%	1958	1.48%	($19,084)	1.06%	($19,500)	2.11%	($18,454)	1.87%	($1,871)	2.49%	($18,068)	18.00%	($2,559)
LOWEST DECADE	-0.35%	2008	2.84%	$3,192	6.41%	$6,760	5.76%	$6,113	2.83%	($2,825)	4.45%	$4,799	9.87%	$10,218
AVERAGE DECADE	**10.83%**	1928 - 2019	**3.29%**	**($7,542)**	**4.84%**	**($5,989)**	**6.75%**	**($4,080)**	**3.44%**	**($3,441)**	**5.90%**	**($4,925)**	**15.76%**	**$4,927**
VOLATILITY (Annual Std Dev)	0.196	1928 - 2019	0.030		0.077		0.076		0.038		0.00		0.104	
CORRELATION (With Stocks)	1.000	1928 - 2019	(0.031)		(0.015)		0.405		0.003		(0.079)		0.851	
AGGREGATE NEGATIVE RETURN		($332,670)		$0		($65,080)		($49,460)		($33,180)		$0		$0
AGGREGATE COST				($687,670)		($545,240)		($363,740)		($280,010)		($464,530)		$448,988

Spreadsheet Notes

Asset Classes

The spreadsheet is based on annual returns in various asset classes. The classes are represented by investments that are typical for the class. The following are used to represent their respective classes:

- Stocks: S&P 500 Index with dividends reinvested.
- Cash: 3 Month US Treasury Bill.
- Bond: 10 Year US Treasury Bond.
- Corp Bond: Corporate Bond Index for bonds rated Baa.
- Fixed Annuity: Average of Single Premium Deferred Annuities with Inflation Protection. Historical estimated interest before 1983 are calculated to reflect the post 1983 rates. Estimates are calculated as the sum of the Cash rate and positive Inflation with .22% added to reflect post 1983.
- Indexed Annuities: Product paying 90% of fixed annuity rate and 70% of S&P 500 less spread as Fees & Expenses Applied.

Return %

Represents the net annualized return after fees and expenses for the period.

Return Period

Specifies the years used for each calculation listed.

Opportunity Cost

The dollar amounts an investor starting with $100,000 would lose in one year after fees and expenses by investing in alternatives other than stocks.

Inflation %

The annualized inflation rate based on the consumer price index (CPI) for the Return Period

Inflation Cost

The annualized dollar impact of inflation on a $100,000 investment

Fees & Expenses Applied

Returns for each asset class are calculated net of fees and expenses specified for that class. These fees and expenses may be adjusted as needed.

POSITIVE (+) YEARS

The number of years during the Return Period in which the asset class had positive returns

NEGATIVE (-) YEARS

The number of years during the Return Period in which the asset class had negative returns

+ RATIO: ALL YEARS

The ratio of positive return years to the total number of years in the Return Period. This is an indication of the probability of encountering a positive return in each asset class.

CONSECUTIVE DOWN YEARS

Number of times during the Return Period a down year was followed by another down year. Also shown are the most severe and most recent consecutive down periods.

Spreadsheet Notes

HIGHEST YEAR

Specifies the year in which Stocks had the highest return and shows the returns for Stocks and other asset classes in that year. The Opportunity Cost is calculated for all asset classes in relation to the HIGHEST YEAR Return for Stocks.

LOWEST YEAR

Specifies the year in which Stocks had the lowest return and shows the returns for Stocks and other asset classes in that year. The Opportunity Cost is calculated for all asset classes in relation to the LOWEST YEAR Return for Stocks.

AVERAGE YEAR

The average Returns in each asset class for the entire Return Period. The Opportunity Cost is calculated for all asset classes in relation to the average Return for Stocks.

LAST YEAR

The return in each asset class for the previous year. The Opportunity Cost is calculated for all asset classes in relation to the LAST YEAR Return for Stocks.

LAST 3 YEARS

The annualized return in each asset class for the previous 3 years. The Opportunity Cost is calculated for all asset classes in relation to the LAST 3 YEARS Return for Stocks.

LAST 5 YEARS

The annualized return in each asset class for the previous 5 years. The Opportunity Cost is calculated for all asset classes in relation to the LAST 5 YEARS Return for Stocks.

LAST 10 YEARS

The annualized return in each asset class for the previous 10 years. The Opportunity Cost is calculated for all asset classes in relation to the LAST 10 YEARS Return for Stocks.

HIGHEST DECADE

Specifies the decade with the highest average annual returns for Stocks and the returns for Stocks and other asset classes during the Reporting Period. The Oportunity Cost is calculated for all asset classes in relation to the HIGHEST DECADE Return for Stocks.

LOWEST DECADE

Specifies the decade with the lowest average annual returns for Stocks and shows the returns for Stocks and other asset classes during the Reporting Period. The Oportunity Cost is calculated for all asset classes in relation to the LOWEST DECADE Return for Stocks.

AVERAGE DECADE

The annualized returns in each asset class for the ten year period with the average annualized returns in each asset class for the entire Reporting Period. The Opportunity Cost is calculated for all asset classes in relation to the AVERAGE DECADE Return for Stocks.

VOLATILITY (Annual Std Dev)

The standard deviation for annualized returns in each class for the entire Reporting Period.

CORRELATION (With Stocks)

The correlation coefficient for the Return Period.

Spreadsheet Notes

AGGREGATE NEGATIVE RETURN

Total of any annual losses on $100,000 invested each year during entire Return Period.

AGGREGATE COST

Sum of annual Opportunity Cost per $100,000 for each year during entire Return Period.