

RETIREMENT WITHDRAWAL CONSIDERATIONS

**THE BENEFITS OF SYSTEMATIC TREND  
FOLLOWING FOR A SUCCESSFUL RETIREMENT**

SEPTEMBER 2017



ASPEN PARTNERS

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*A Thoughtful Approach to Investor Portfolio Diversification*

The investment strategy presented is not appropriate for every investor and you should review with your financial advisor(s) the terms and conditions and risk involved with specific products or services.

## The Goal

Maintain a consistent annual income, adjusted for cost of living increases, throughout retirement.

# Target Assumptions

- \$1,000,000 available at retirement
  - \$40,000 (4%) initial withdrawal
  - 2.5% annual cost of living increase
  - Ideally, investment base shouldn't fall below \$500,000
    - Allows for unforeseen extraordinary expenses
    - Otherwise, enables a significant bequest
- *Note: An annuity with a cost-of-living adjustment is an option if extraordinary expenses are not a concern and if a bequest is not desired.*

Assumptions are flexible. Contact Aspen Partners to model different target assumptions.

## Stock Portfolios: With and Without Trend

### —▲ “Stocks”

- 100% stock investments

### —★ “Stocks & Trend Following”

- 80% stocks and 20% trend following

Stocks: S&P 500

Trend Following (2003+): Aspen Managed Futures Beta Index

Trend Following (1988-2002): BarclayHedge BTOP50 Index

[Sources: Bloomberg, BarclayHedge, Aspen Partners]

Investment inputs are flexible. Contact Aspen Partners to model different inputs.

## Stock & Bond Portfolios: With and Without Trend

### — “Stocks & Bonds”

- 60% stock investments and 40% bond investments

### — “Stocks & Bonds & Trend Following”

- 80% “Stocks & Bonds” and 20% trend following
  - Equates to 48% stocks, 32% bonds, and 20% trend following

Stocks: S&P 500

Bonds: Bloomberg Barclays US Aggregate Bond Index

Trend Following (2003+): Aspen Managed Futures Beta Index

Trend Following (1988-2002): BarclayHedge BTOP50 Index

[Sources: Bloomberg, BarclayHedge, Aspen Partners]

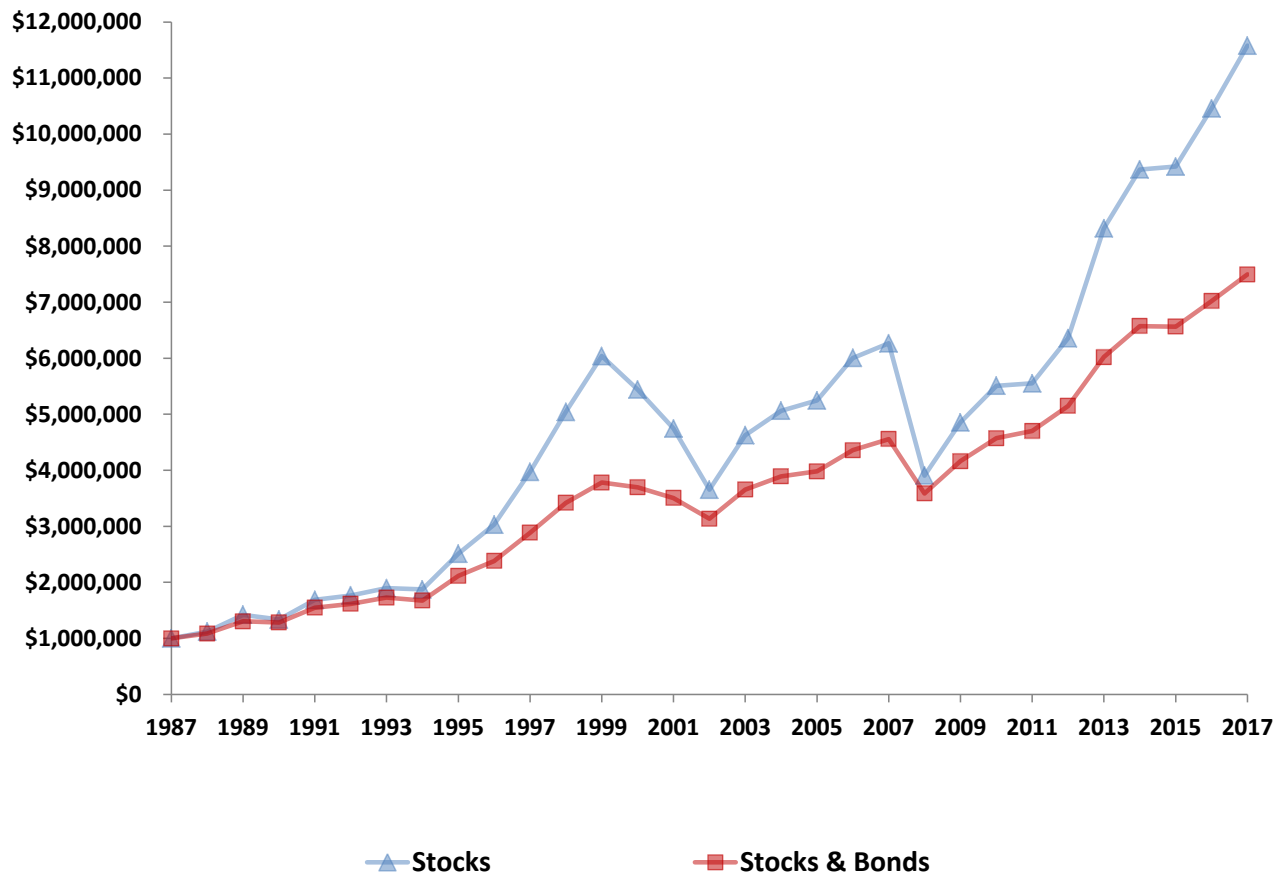
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# Preview: Concepts to be Illustrated

- **When stock/bond returns are good, *particularly in the early years of retirement*, success is virtually inevitable.**
  - Trend following adds little value in this case, but it also does not detract from the positive outcome.
- **When stock/bond returns are poor, *particularly in the early years of retirement*, sustainable income goals may be at risk.**
  - In this scenario, trend following can be a highly beneficial aid toward a sustainable retirement income.
- **Since it is helpful in the latter case and does not hurt in the former case, trend following can be a sensible retirement portfolio addition.**

# Illustration #1: Strong Stock/Bond Backdrop (1988+)

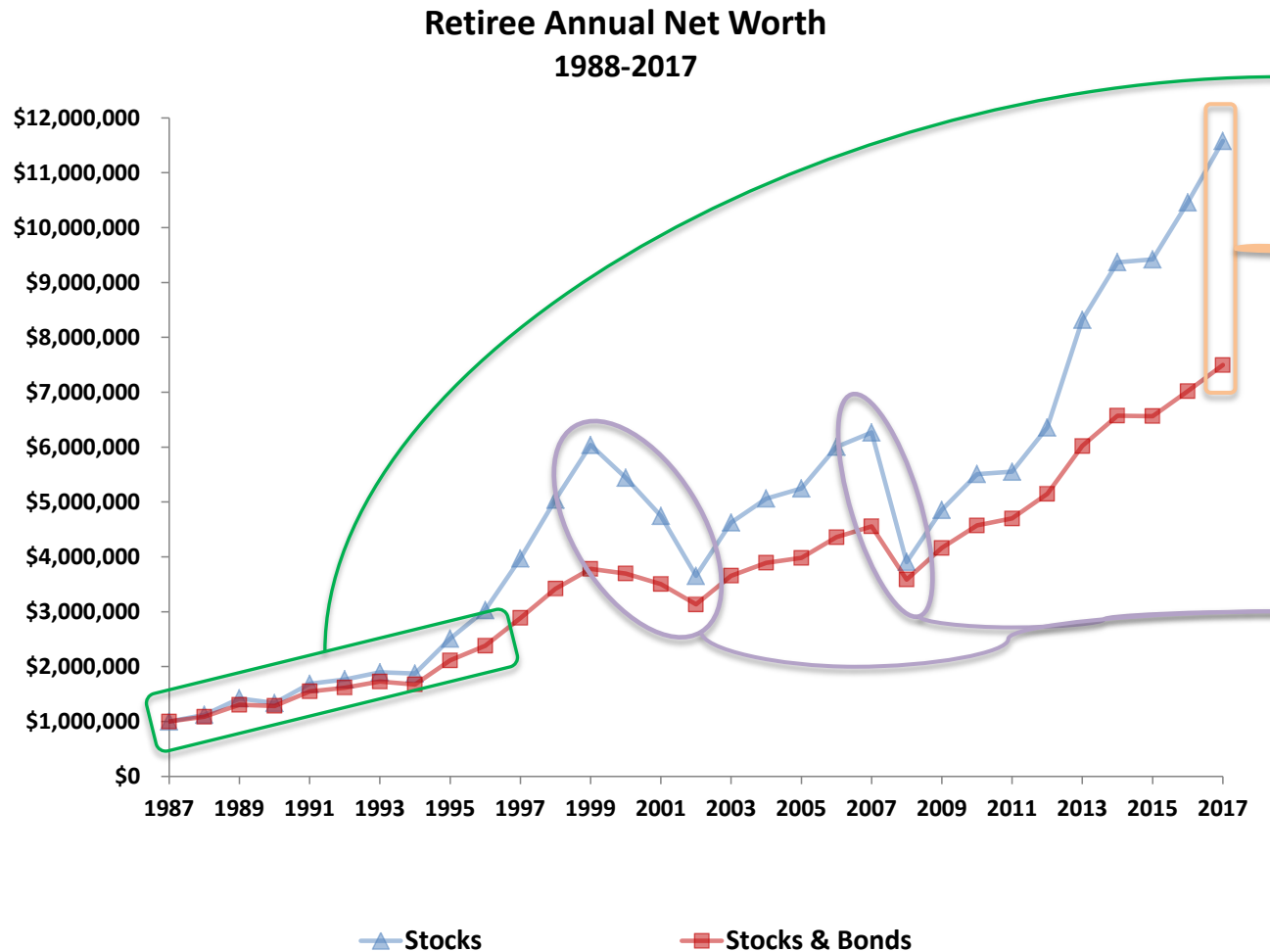
Retiree Annual Net Worth  
1988-2017



Strong stock/bond returns in the early years enable a 1988 retiree to complete a successful retirement with strong growth in net worth.

No late-year asset depletion even when poor investment returns occur in the 2000s, thanks to the buildup of wealth in the 1990s.

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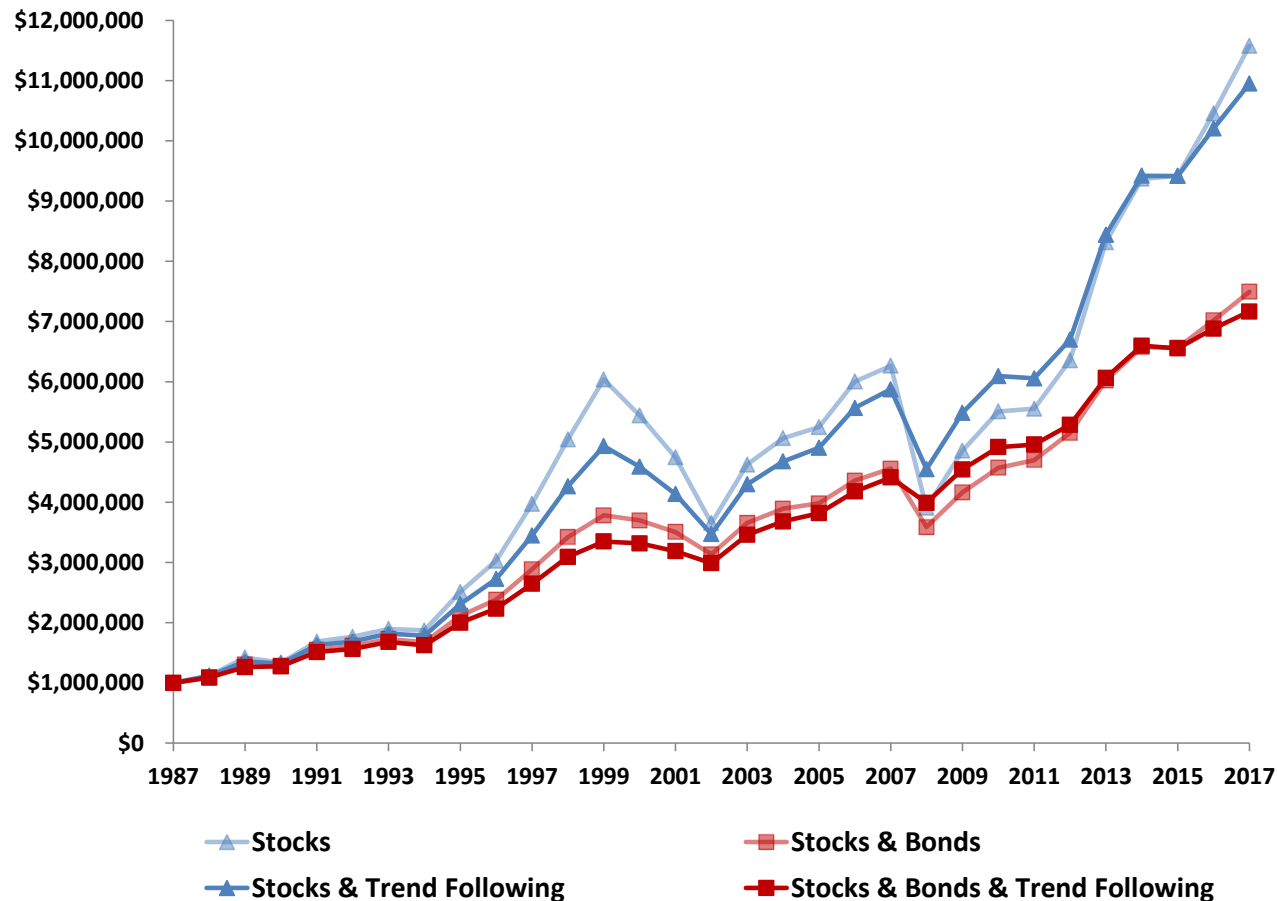
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1988-2017



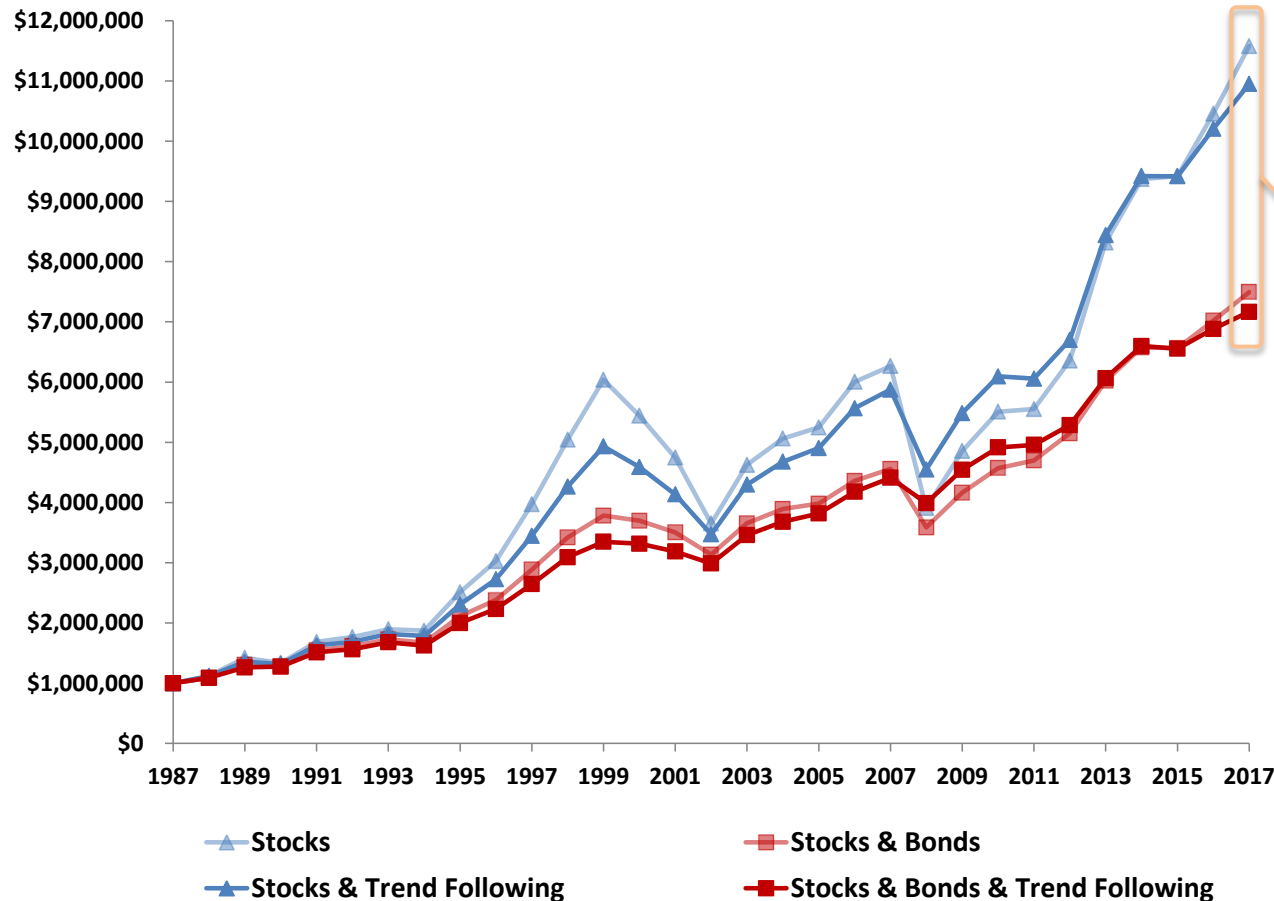
When stock/bond returns are already very strong, trend following does not enhance end-to-end performance.

However, trend following also does not meaningfully detract from end-to-end performance.

Because it does reduce volatility in retiree net worth, trend following can still be a good diversifier even when not required, in a scenario like 1988+.

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# Illustration #1: Strong Stock/Bond Backdrop (1988+)

## 1988-2017, Tabular Format

Year Ending	Retiree Withdrawal	Stocks		Stocks & Trend Following		Stocks & Bonds		Stocks & Bonds & Trend Following	
		Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth
12/31/1987			\$1,000,000		\$1,000,000		\$1,000,000		\$1,000,000
12/31/1988	\$40,000	16.6%	\$1,119,405	16.2%	\$1,115,765	13.1%	\$1,085,925	13.44%	\$1,088,980
12/31/1989	\$41,000	31.7%	\$1,420,111	26.0%	\$1,354,540	24.8%	\$1,304,313	20.54%	\$1,263,248
12/31/1990	\$42,025	-3.1%	\$1,335,306	0.6%	\$1,319,918	1.7%	\$1,284,018	4.42%	\$1,275,258
12/31/1991	\$43,076	30.5%	\$1,685,920	27.3%	\$1,625,532	24.7%	\$1,547,217	22.68%	\$1,511,650
12/31/1992	\$44,153	7.6%	\$1,766,860	6.6%	\$1,685,836	7.5%	\$1,616,279	6.54%	\$1,563,409
12/31/1993	\$45,256	10.1%	\$1,895,118	10.7%	\$1,816,899	9.9%	\$1,727,292	10.64%	\$1,679,715
12/31/1994	\$46,388	1.3%	\$1,873,143	0.9%	\$1,785,597	-0.4%	\$1,674,612	-0.50%	\$1,625,098
12/31/1995	\$47,547	37.6%	\$2,511,613	32.8%	\$2,308,865	29.9%	\$2,114,150	26.73%	\$1,999,219
12/31/1996	\$48,736	23.0%	\$3,028,360	20.6%	\$2,725,632	15.2%	\$2,379,941	14.41%	\$2,231,561
12/31/1997	\$49,955	33.4%	\$3,972,100	28.9%	\$3,447,903	23.9%	\$2,886,382	21.27%	\$2,645,724
12/31/1998	\$51,203	28.6%	\$5,041,434	25.5%	\$4,262,818	20.6%	\$3,419,846	19.13%	\$3,090,942
12/31/1999	\$52,483	21.0%	\$6,038,702	17.2%	\$4,932,860	12.3%	\$3,781,418	10.16%	\$3,347,301
12/31/2000	\$53,796	-9.1%	\$5,440,018	-6.0%	\$4,588,145	-0.8%	\$3,697,343	0.67%	\$3,315,606
12/31/2001	\$55,140	-11.9%	\$4,744,841	-8.7%	\$4,136,692	-3.8%	\$3,505,483	-2.24%	\$3,187,524
12/31/2002	\$56,519	-22.1%	\$3,652,178	-14.9%	\$3,470,438	-9.2%	\$3,133,096	-4.59%	\$2,987,289
12/31/2003	\$57,932	28.7%	\$4,625,240	25.9%	\$4,297,439	18.9%	\$3,654,907	18.07%	\$3,458,585
12/31/2004	\$59,380	10.9%	\$5,062,719	10.4%	\$4,678,679	8.3%	\$3,892,685	8.30%	\$3,681,434
12/31/2005	\$60,865	4.9%	\$5,247,543	6.2%	\$4,905,230	3.9%	\$3,981,982	5.43%	\$3,817,150
12/31/2006	\$62,386	15.8%	\$6,004,113	14.9%	\$5,565,220	11.2%	\$4,358,978	11.25%	\$4,177,133
12/31/2007	\$63,946	5.5%	\$6,266,517	6.8%	\$5,874,762	6.1%	\$4,556,302	7.26%	\$4,411,821
12/31/2008	\$65,545	-37.0%	\$3,906,747	-21.7%	\$4,548,293	-20.1%	\$3,587,992	-8.19%	\$3,990,338
12/31/2009	\$67,183	26.5%	\$4,855,685	22.4%	\$5,483,921	18.3%	\$4,163,393	15.81%	\$4,543,321
12/31/2010	\$68,863	15.1%	\$5,507,881	12.6%	\$6,095,237	11.7%	\$4,571,732	9.83%	\$4,914,469
12/31/2011	\$70,584	2.1%	\$5,552,120	0.5%	\$6,056,281	4.4%	\$4,699,366	2.36%	\$4,958,131
12/31/2012	\$72,349	16.0%	\$6,356,724	12.0%	\$6,699,787	11.3%	\$5,149,322	8.19%	\$5,285,962
12/31/2013	\$74,158	32.4%	\$8,317,372	27.4%	\$8,440,063	18.6%	\$6,020,327	16.37%	\$6,065,143
12/31/2014	\$76,012	13.7%	\$9,369,481	12.6%	\$9,421,293	10.6%	\$6,574,385	10.17%	\$6,598,173
12/31/2015	\$77,912	1.4%	\$9,420,150	0.8%	\$9,417,655	1.1%	\$6,564,703	0.53%	\$6,554,694
12/31/2016	\$79,860	12.0%	\$10,457,382	9.3%	\$10,204,576	8.2%	\$7,018,861	6.30%	\$6,882,906
12/31/2017	\$81,856	11.6%	\$11,578,046	8.2%	\$10,952,825	8.0%	\$7,494,713	5.36%	\$7,165,595
<b>Annualized Investment Return:</b>		<b>10.4%</b>		<b>10.2%</b>		<b>9.1%</b>		<b>9.0%</b>	
<b>Investment Volatility:</b>		<b>16.9%</b>		<b>13.2%</b>		<b>10.6%</b>		<b>8.3%</b>	
<b>Ending Balance:</b>			<b>\$11,578,046</b>		<b>\$10,952,825</b>		<b>\$7,494,713</b>		<b>\$7,165,595</b>

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Annualized Investment Return:		10.4%		10.2%		9.1%		9.0%	
Investment Volatility:		16.9%		16.9%		10.6%		10.6%	
Ending Balance:			\$11,578,046		\$10,952,825		\$7,494,713		\$7,165,595

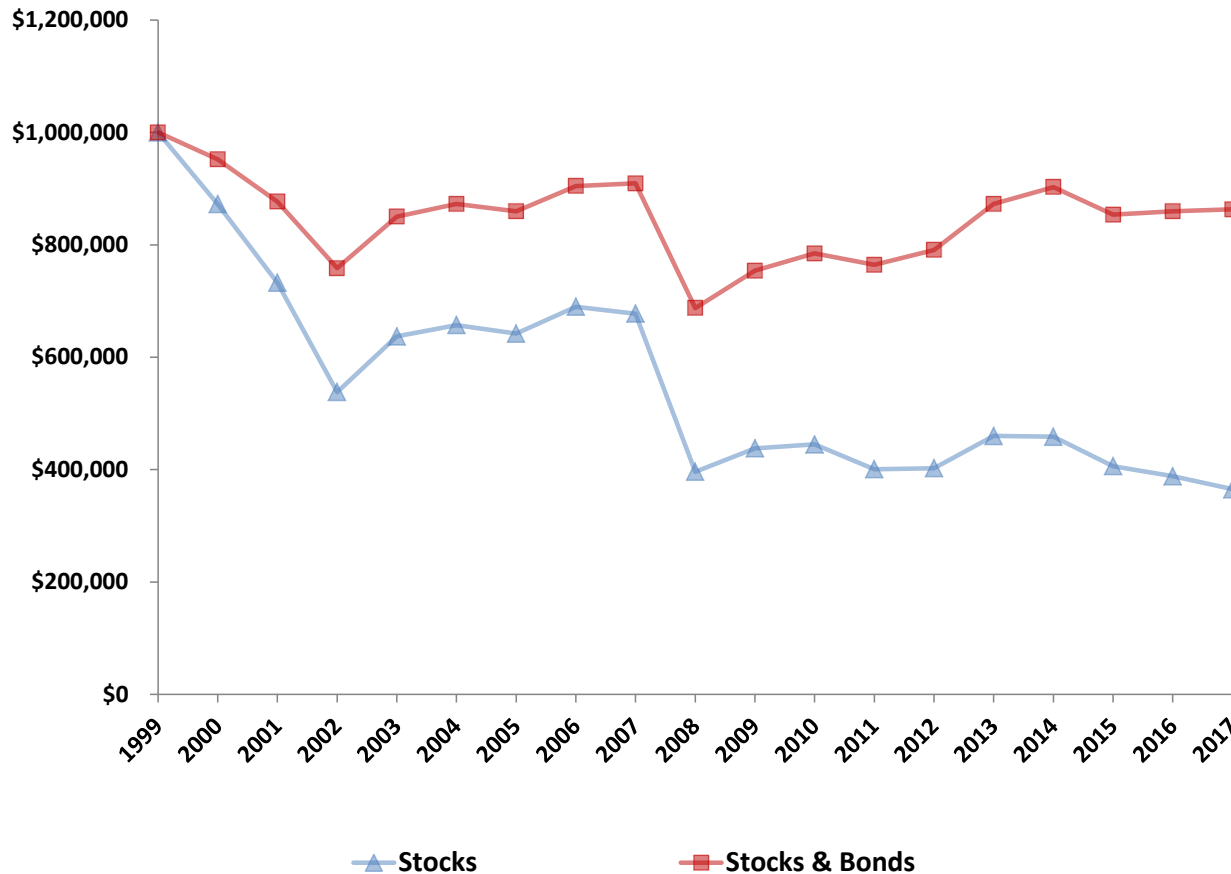
Nearly identical annualized investment return, but lower volatility when trend following is added.

Retiree's annual draw is shown in this column.

Trend following does not significantly alter the final outcome: Wealth grows to multiples of original size through retirement, withdrawals notwithstanding.

# Illustration #2: Weaker Stock/Bond Backdrop (2000+)

Retiree Annual Net Worth  
2000-2017

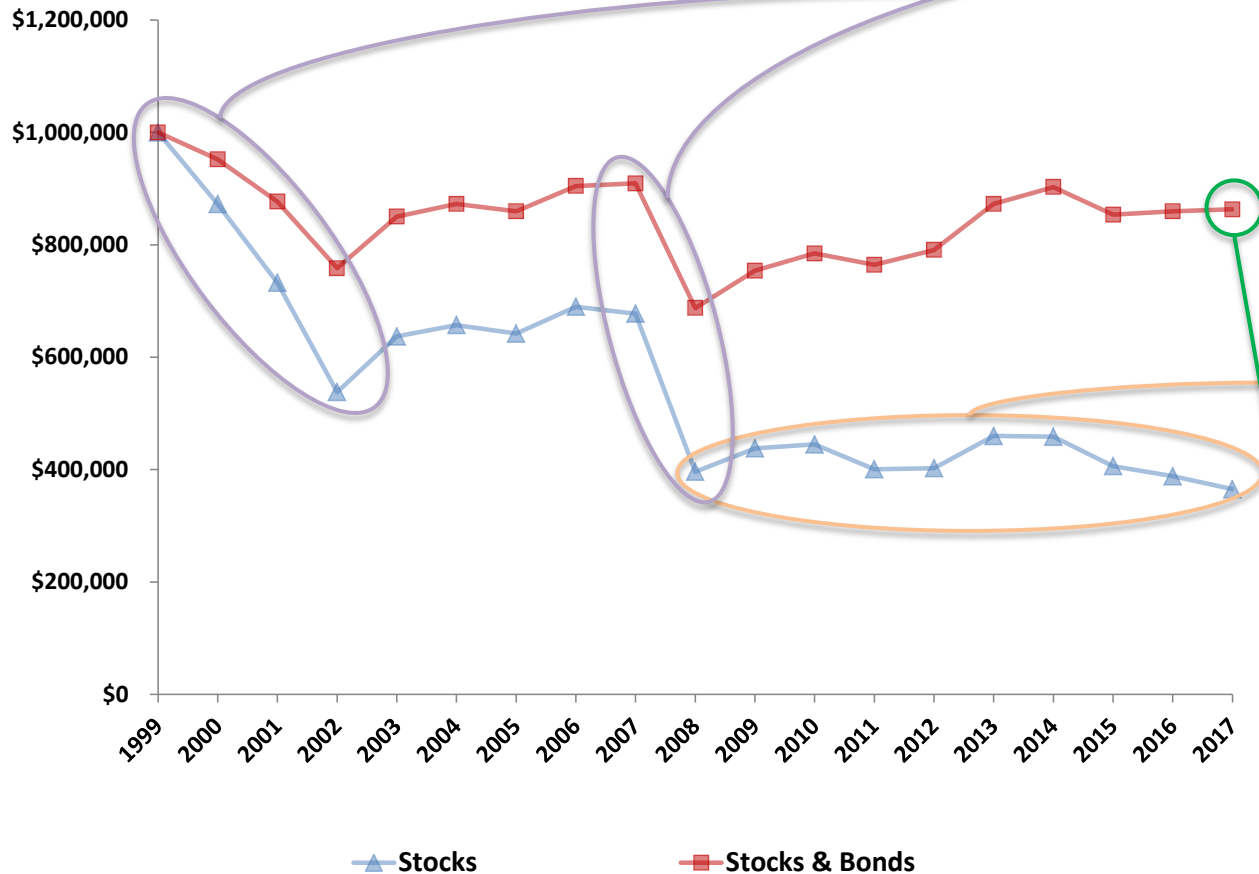


Two deep drawdowns in the first retirement decade leave a year 2000 retiree with an all-stock portfolio in a very tenuous place, already below the \$500k comfort level since the ninth year of retirement.

The stock & bond investor is better off, but is still alarmingly below the \$1MM initial investment level, with the biggest withdrawal years yet to come.

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Retiree Annual Net Worth  
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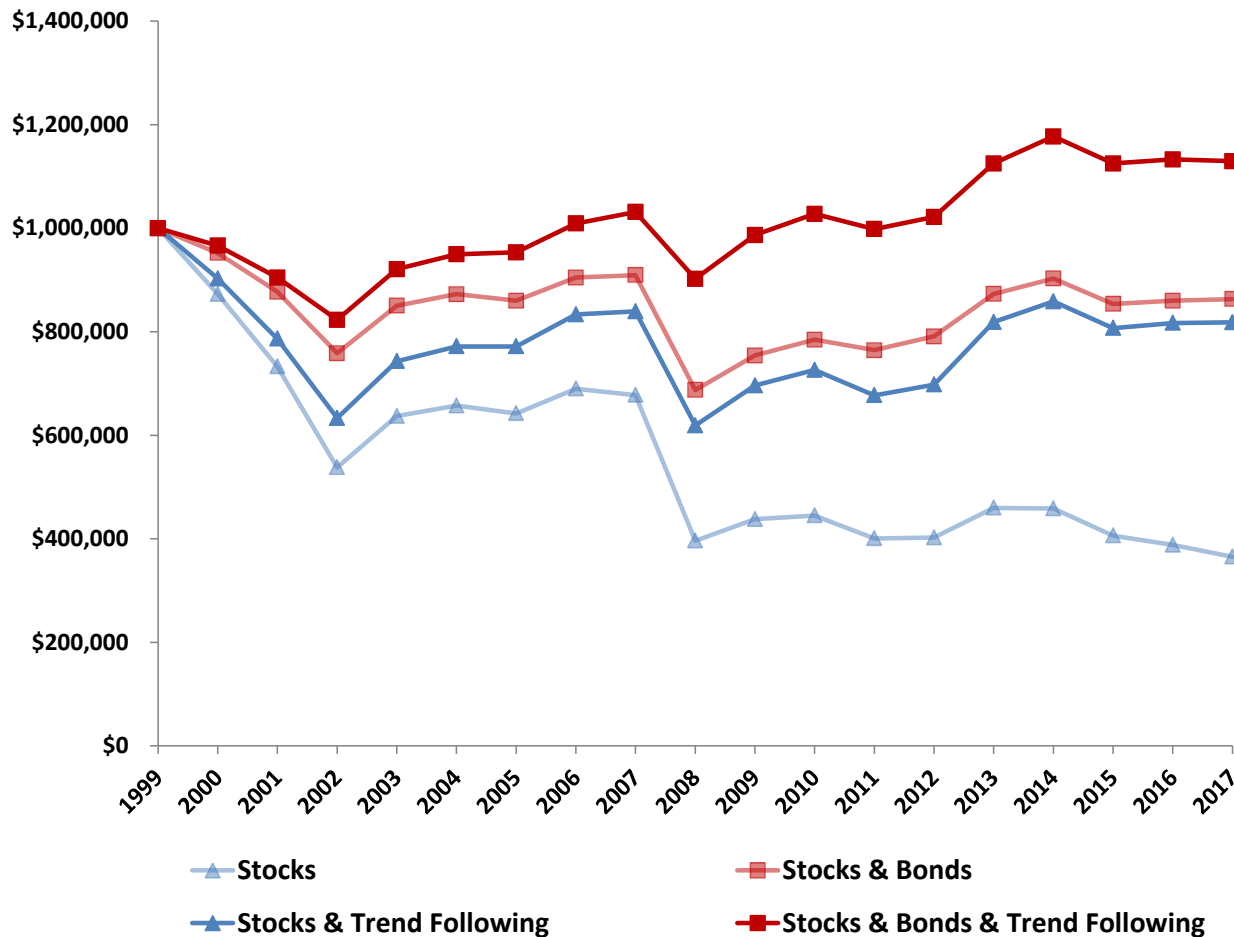


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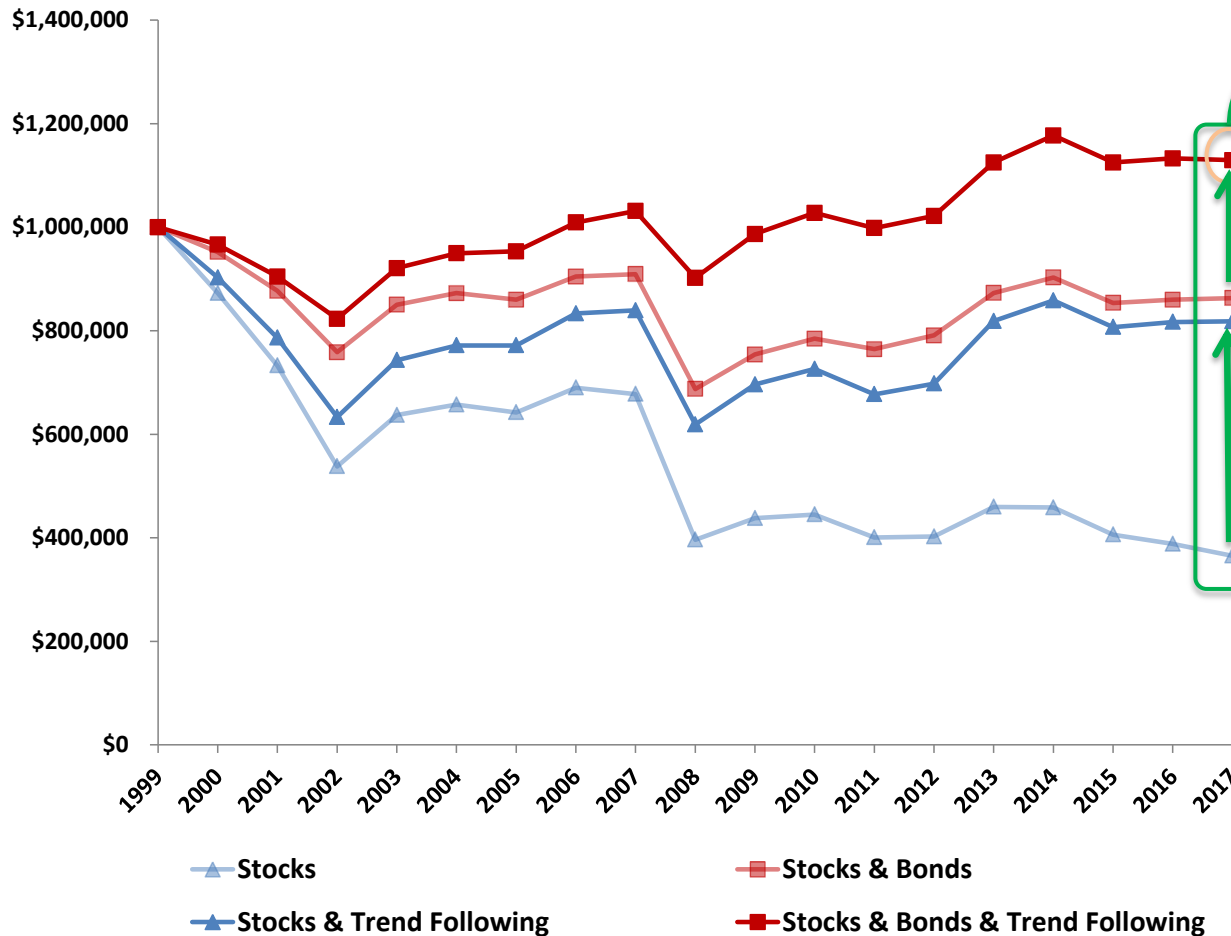


The addition of trend following enables a significant improvement through 2017 for both the stock-only and stock & bond investors.

The stock, bond, and trend following portfolio is the only one of the four whose net worth is above the initial \$1MM investment level by 2017.

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Retiree Annual Net Worth  
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## 2000-2017, Tabular Format

Year Ending	Retiree Withdrawal	Stocks		Stocks & Trend Following		Stocks & Bonds		Stocks & Bonds & Trend Following	
		Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth
12/31/1999	\$40,000		\$1,000,000		\$1,000,000		\$1,000,000		\$1,000,000
12/31/2000	\$41,000	-9.10%	\$872,598	-5.96%	\$902,759	-0.81%	\$952,202	0.67%	\$966,442
12/31/2001	\$42,025	-11.89%	\$732,756	-8.74%	\$786,417	-3.75%	\$876,998	-2.24%	\$904,738
12/31/2002	\$43,076	-22.10%	\$538,076	-14.94%	\$633,151	-9.16%	\$758,503	-4.59%	\$823,114
12/31/2003	\$44,153	28.68%	\$636,989	25.93%	\$743,094	18.85%	\$850,303	18.07%	\$920,963
12/31/2004	\$45,256	10.88%	\$657,349	10.40%	\$771,609	8.26%	\$872,776	8.30%	\$949,610
12/31/2005	\$46,388	4.91%	\$642,158	6.22%	\$771,561	3.92%	\$859,948	5.43%	\$953,456
12/31/2006	\$47,547	15.79%	\$689,868	14.92%	\$833,343	11.21%	\$904,760	11.25%	\$1,009,104
12/31/2007	\$48,736	5.49%	\$677,609	6.79%	\$839,144	6.08%	\$909,357	7.26%	\$1,031,369
12/31/2008	\$49,955	-37.00%	\$396,204	-21.71%	\$618,845	-20.10%	\$687,613	-8.19%	\$902,160
12/31/2009	\$51,203	26.46%	\$437,882	22.38%	\$696,201	18.25%	\$754,037	15.81%	\$986,921
12/31/2010	\$52,483	15.06%	\$444,926	12.56%	\$726,015	11.65%	\$784,747	9.83%	\$1,027,735
12/31/2011	\$53,796	2.11%	\$400,730	0.52%	\$677,067	4.40%	\$764,510	2.36%	\$998,253
12/31/2012	\$55,140	16.00%	\$402,456	11.96%	\$697,834	11.29%	\$790,941	8.19%	\$1,021,815
12/31/2013	\$56,519	32.39%	\$459,804	27.39%	\$818,695	18.62%	\$872,831	16.37%	\$1,124,951
12/31/2014	\$57,932	13.69%	\$458,489	12.64%	\$858,517	10.60%	\$902,837	10.17%	\$1,177,082
12/31/2015	\$59,380	1.38%	\$406,100	0.79%	\$806,950	1.05%	\$853,779	0.53%	\$1,125,060
12/31/2016	\$60,865	11.96%	\$388,188	9.28%	\$816,963	8.23%	\$859,816	6.30%	\$1,132,843
12/31/2017*	\$62,386	11.59%	\$365,260	8.20%	\$818,101	8.04%	\$863,184	5.36%	\$1,129,438
<b>Annualized Investment Return:</b>		<b>4.9%</b>		<b>5.8%</b>		<b>5.5%</b>		<b>5.9%</b>	
<b>Investment Volatility:</b>		<b>17.1%</b>		<b>12.9%</b>		<b>9.7%</b>		<b>7.0%</b>	
<b>Ending Balance:</b>			<b>\$365,260</b>	<b>\$818,101</b>		<b>\$863,184</b>		<b>\$1,129,438</b>	

\* 2017 as available through 7/31/2017

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## 2000-2017, Tabular Format

Year Ending	Retiree Withdrawal	Stocks		Stocks & Trend Following		Stocks & Bonds		Stocks & Bonds & Trend Following	
		Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth
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<b>Annualized Investment Return:</b>		<b>4.9%</b>		<b>5.8%</b>		<b>5.5%</b>		<b>5.9%</b>	
<b>Investment Volatility:</b>		<b>17.1%</b>		<b>12.9%</b>		<b>9.7%</b>		<b>7.0%</b>	
<b>Ending Balance:</b>			<b>\$365,260</b>	<b>\$818,101</b>		<b>\$863,184</b>		<b>\$1,129,438</b>	

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“Stocks” and “Stocks & Bonds” have similar returns, but the volatility of stock-only investing can be problematic in the withdrawal phase.

If diversification (adding bonds) is good, even more diversification (adding trend following as well) is even better.

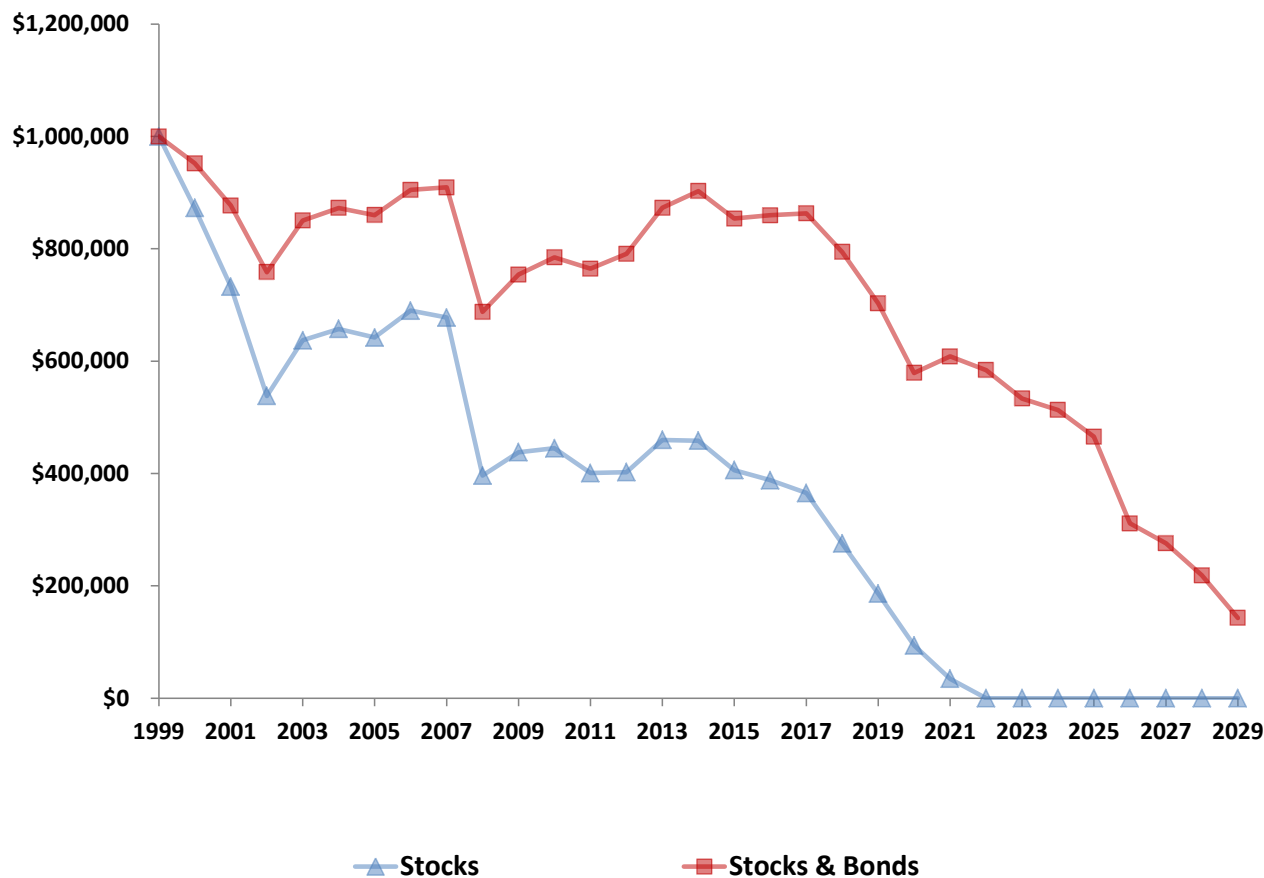
## Illustration #2: Weaker Stock/Bond Backdrop (2000+)

### How will the full 30 years look for the 2000 retiree?

- Possibility #1: Stocks/bonds have strong performance
  - The stock/bond investor could finish retirement successfully
  - Recall that a trend following allocation should not hurt here
- Possibility #2: 2018+ Stock/bond performance is weak
  - Risk of failure to meet goals, given 2000-2017 difficulty
  - How does trend following potentially help here?
- #1 is obviously desirable, but what if #2 occurs?
  - *To illustrate #2, suppose 2000+ returns repeat in 2018+*
  - *I.e., 2018 return = 2000 return, 2019 = 2001, etc.*

# Illustration #2: Weaker Stock/Bond Backdrop (2000+)

**Retiree Annual Net Worth**  
2000-2029 (2018-2029 repeats 2000-2011)



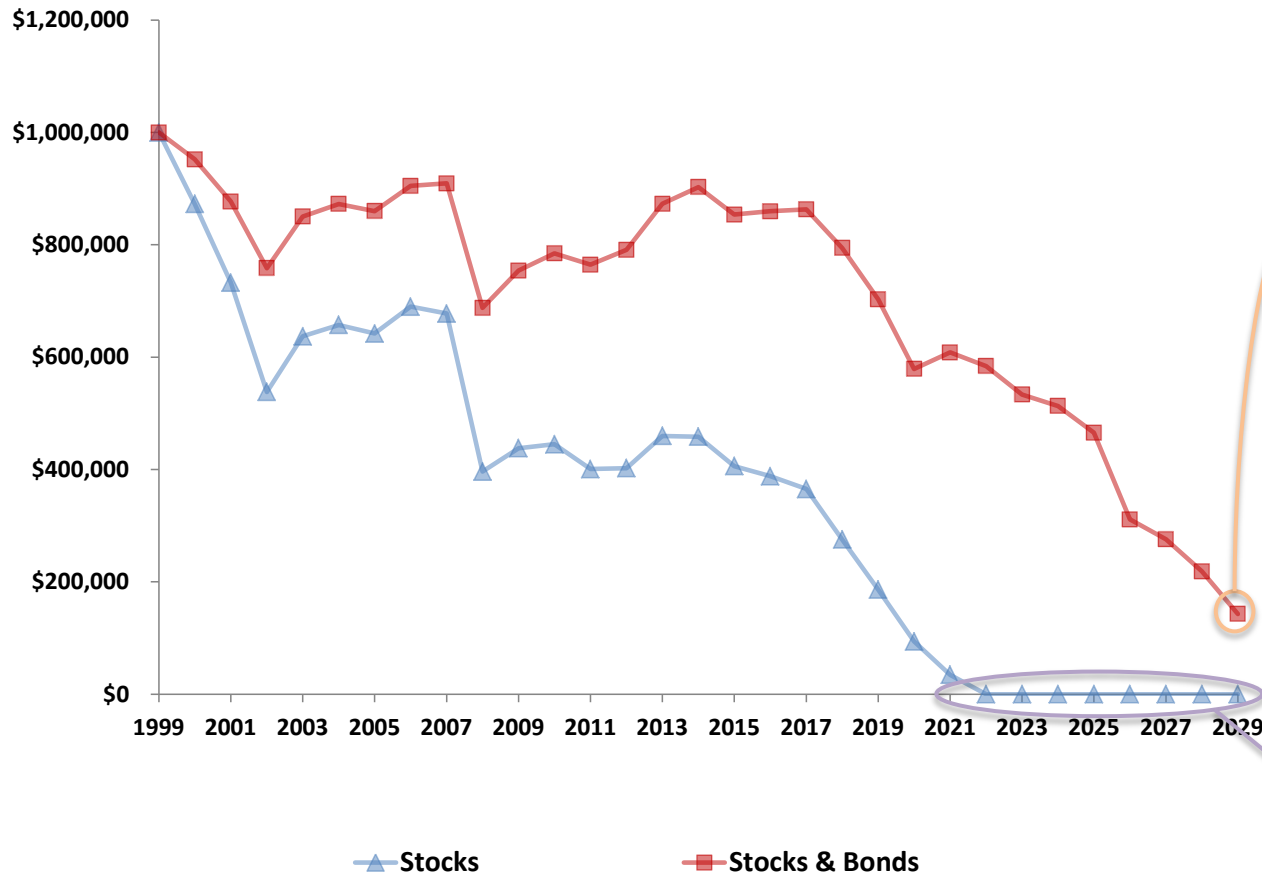
Reduced reserves + larger late-year withdrawal requirements = distress.

Stock & bond investors limp across the finish line with zero margin for error. Slightly worse investment performance or virtually any unforeseen expenditures—or a year or two more of retirement—could reduce savings to \$0.

Stock-only retirees do see their investments reduced to \$0, with nine years of planned retirement left.

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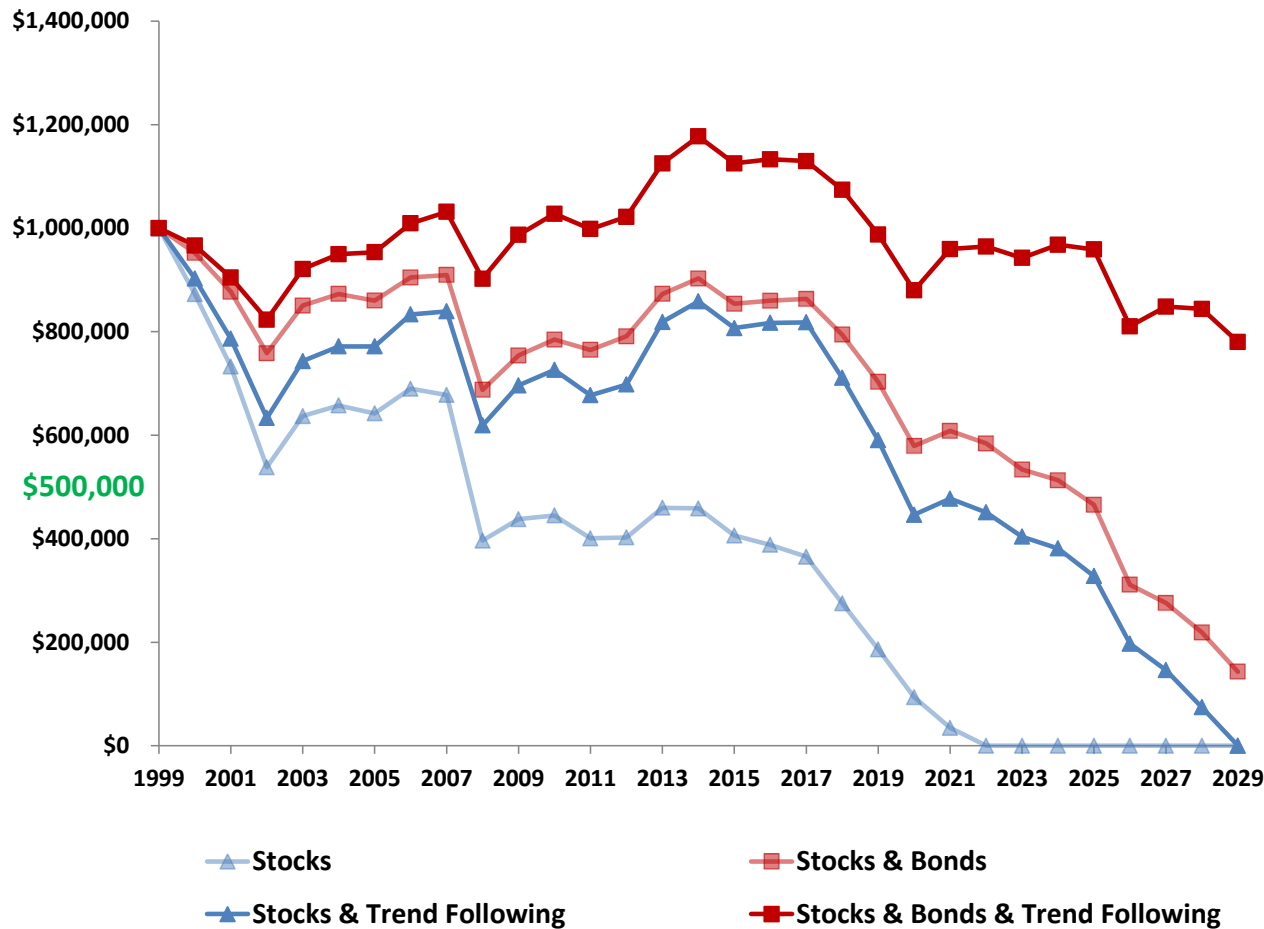
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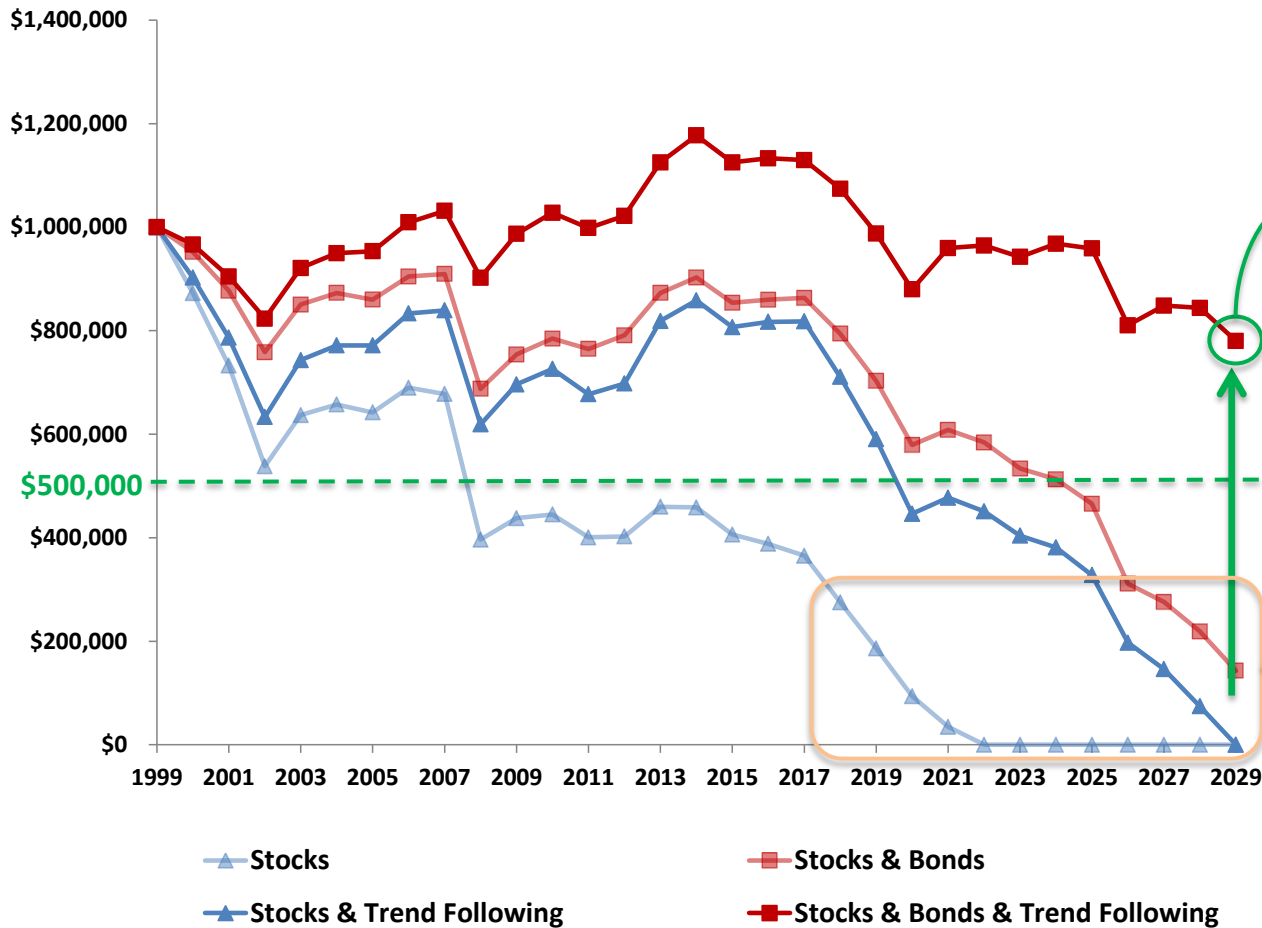


With **stocks & bonds & trend following**, not only is deep financial distress avoided, but the retiree manages to stay well above the \$500k comfort level throughout retirement.

Stocks alone, stocks combined only with bonds, or stocks combined only with trend following leads to financial distress in the late years of retirement in this example. Only the broadest diversification leads to success.

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# Illustration #2: Weaker Stock/Bond Backdrop (2000+)

2000-2030 (2018-2030 repeats 2000-2012), Tabular Format

Year Ending	Retiree Withdrawal	Stocks		Stocks & Trend Following		Stocks & Bonds		Stocks & Bonds & Trend Following	
		Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth	Investment Return	Year-End Net Worth
12/31/1999	\$40,000		\$1,000,000		\$1,000,000		\$1,000,000		\$1,000,000
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12/31/2023**	\$72,349	4.91%	\$0	6.22%	\$404,028	3.92%	\$533,580	5.43%	\$942,449
12/31/2024**	\$74,158	15.79%	\$0	14.92%	\$381,154	11.21%	\$512,935	11.25%	\$967,977
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12/31/2026**	\$77,912	-37.00%	\$0	-21.71%	\$197,166	-20.10%	\$311,165	-8.19%	\$810,413
12/31/2027**	\$79,860	26.46%	\$0	22.38%	\$145,941	18.25%	\$275,824	15.81%	\$848,294
12/31/2028**	\$81,856	15.06%	\$0	12.56%	\$74,382	11.65%	\$218,803	9.83%	\$844,001
12/31/2029**	\$83,903	2.11%	\$0	0.52%	\$0	4.40%	\$142,978	2.36%	\$780,120
12/31/2030**	\$86,000	16.00%	\$0	11.96%	\$0	11.29%	\$65,744	8.19%	\$753,243
<b>Annualized Investment Return:</b>		<b>3.5%</b>		<b>4.9%</b>		<b>4.9%</b>		<b>5.7%</b>	
<b>Investment Volatility:</b>		<b>17.1%</b>		<b>12.9%</b>		<b>9.7%</b>		<b>7.0%</b>	
<b>Ending Balance:</b>			<b>\$0</b>		<b>\$0</b>		<b>\$142,978</b>		<b>\$780,120</b>

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\*\* 2018-2030 repeats 2000-2012 performance



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For a retiree, the biggest benefit of diversification with bonds and trend-following comes from loss reduction when the biggest crises occur in stocks.

A portfolio in the withdrawal phase has the most difficulty recovering from a large drawdown.

By mitigating losses, improving returns, and reducing volatility, diversification with bonds and trend following can greatly improve the final outcome.

## What Will the Future Actually Look Like?

- More like the 1988-2017 example?
  - Equity and bond returns have proven resilient for decades
  - If returns are that strong, a solid retirement will be secure
  - *Historical evidence indicates that the inclusion of a trend following allocation will not derail that security.*
- More like the 2000-2029 [part-simulated] example?
  - There are reasons to believe this is a risk:
    - Current equity valuations are high by historic standards
    - Interest rates are low, limiting potential bond returns
  - *Historical evidence indicates that trend following could prove strongly beneficial if returns follow this type of path.*

# Endnotes

## IMPORTANT DISCLOSURES

**PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.** There is no assurance that the investment process will consistently lead to successful investing. There is no guarantee that stated objectives will be met.

All Aspen MFBI monthly returns shown do not include transaction cost, but are net of 1.50% for estimated fees and other expenses. An investor cannot invest directly in an index. This document does not constitute an offer to sell or solicitation of an offer to buy any security. The information contained herein is provided for educational purposes only and is not intended to solicit interest in any investment opportunity.

Data has been obtained from reliable sources. Aspen Partners believes the information herein to be reliable; yet no warranty or guarantee is made as to its accuracy or completeness.

## BENCHMARKS & INDICES

“Bonds” represents the Bloomberg Barclays US Aggregate Bond Index, an index of investment grade US bonds.

“Stocks” represents the S&P 500 Index, a widely recognized index of 500 large-cap US stocks.

“Trend Following (1988-2002)” represents the Barclay BTOP50 Index, an index of the largest investable CTA programs.

“Trend Following (2003+)” represents the Aspen Managed Futures Beta Index (“AMFBI” or “Aspen MFBI”), a quantitative, rules-based model designed to replicate the trend-following and counter-trend exposure of futures markets by allocated assets to liquid futures contracts of certain financial and commodities futures markets. The Index therefore seeks to reflect the performance of strategies and exposures common to a broad universe of futures markets, i.e., managed futures beta.

The Barclay BTOP50 Index, Bloomberg Barclays US Aggregate Bond Index, and S&P 500 Index are unmanaged and do not represent the attempt of any manager to generate returns on an investment. These benchmark indices do not include transaction costs and other expenses. An investor cannot invest directly in an index.

## DEFINITIONS

**Annualized Investment Return:** The equivalent compound annual rate of return that would enable an investment to grow from its initial value to its terminal value over a given time period.

**Investment Volatility (Standard Deviation):** A measurement of the annual rate of return's dispersion from its mean, indicating an investment's volatility.