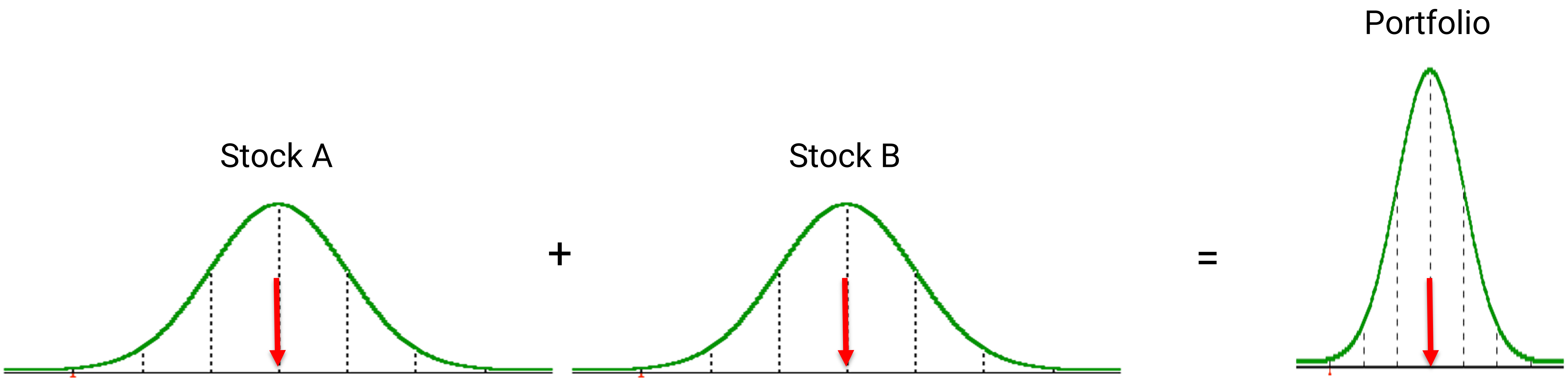
Asset Allocation Theory

Investment Risk...

What if you owned 2 stocks...with similar levels of risk



By owning 2 stocks you reduce your investment risk:
you have diversified your portfolio.

Investment Risk…

A critical element to diversification:

The stocks need to be "uncorrelated" – often achieved by being in different industries.

Owning 10 shares of GM and 10 shares of Ford:

Ex. Consumers are in buying moods after being in lockdown due to Covid – car sales surge. In all likelihood GM's stock price and Ford's stock price both go up. These are correlated.

Owning 10 shares of GM and 10 shares of Facebook:

Ex. Car sales may surge, driving GM's stock price higher. What will happen to Facebook's stock price? Who knows! It has nothing to do w/ consumer car sales. These are uncorrelated.

Diversification is about owning uncorrelated stocks; the idea being when one goes down others go up, and such price fluctuations are moderated over time.

Asset Classes Defined…

Asset classes are categories of stocks, bonds and other types of financial assets.

Cash (Money Market Funds)

US-Based Bonds
- Short-term bonds
- Long-term Bonds
- Corporate Bonds

US-Based Stocks
- Large Caps
- Small Caps

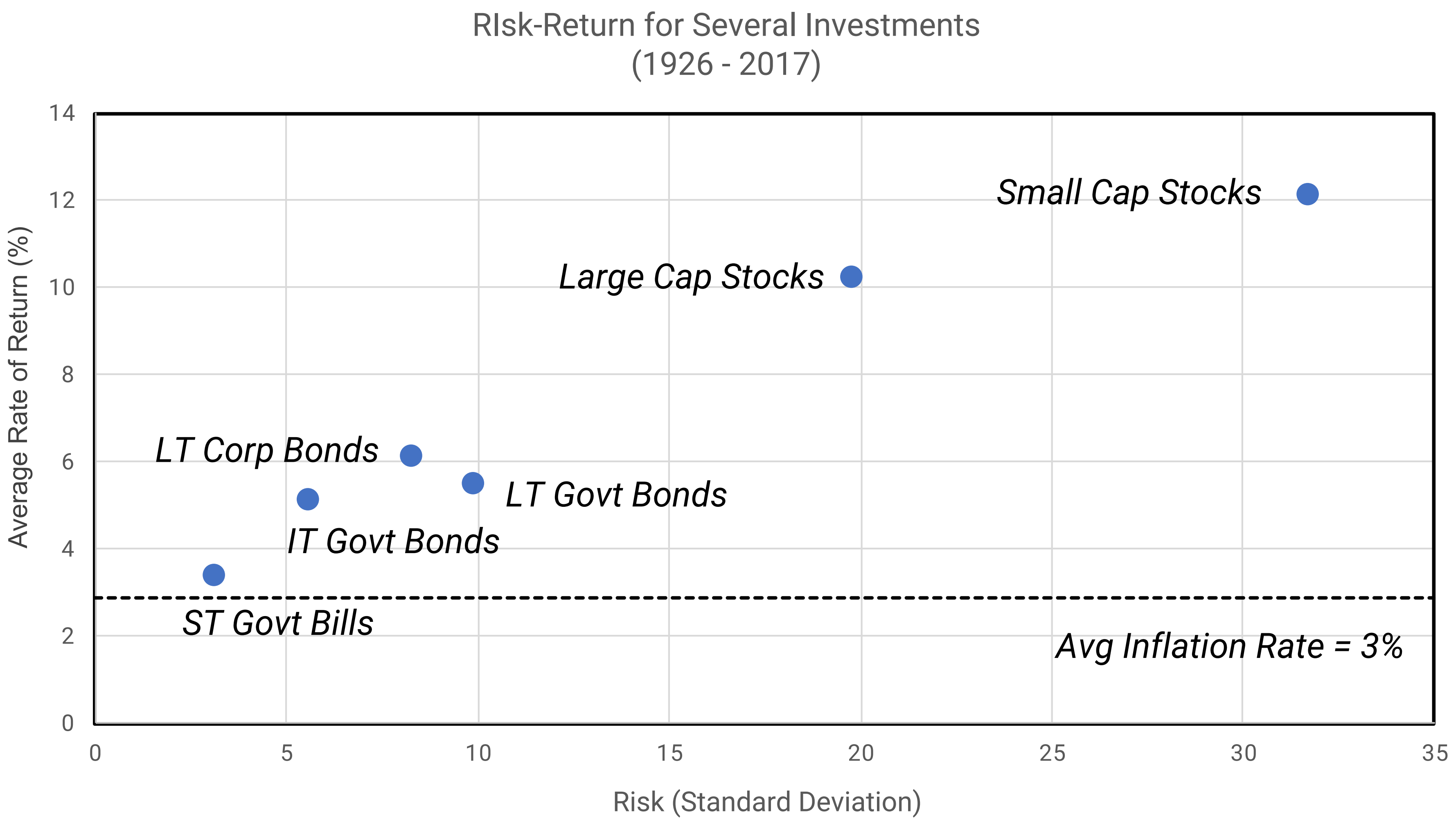
Real Estate Investment Trusts (REITs)

International Bonds

International Stocks

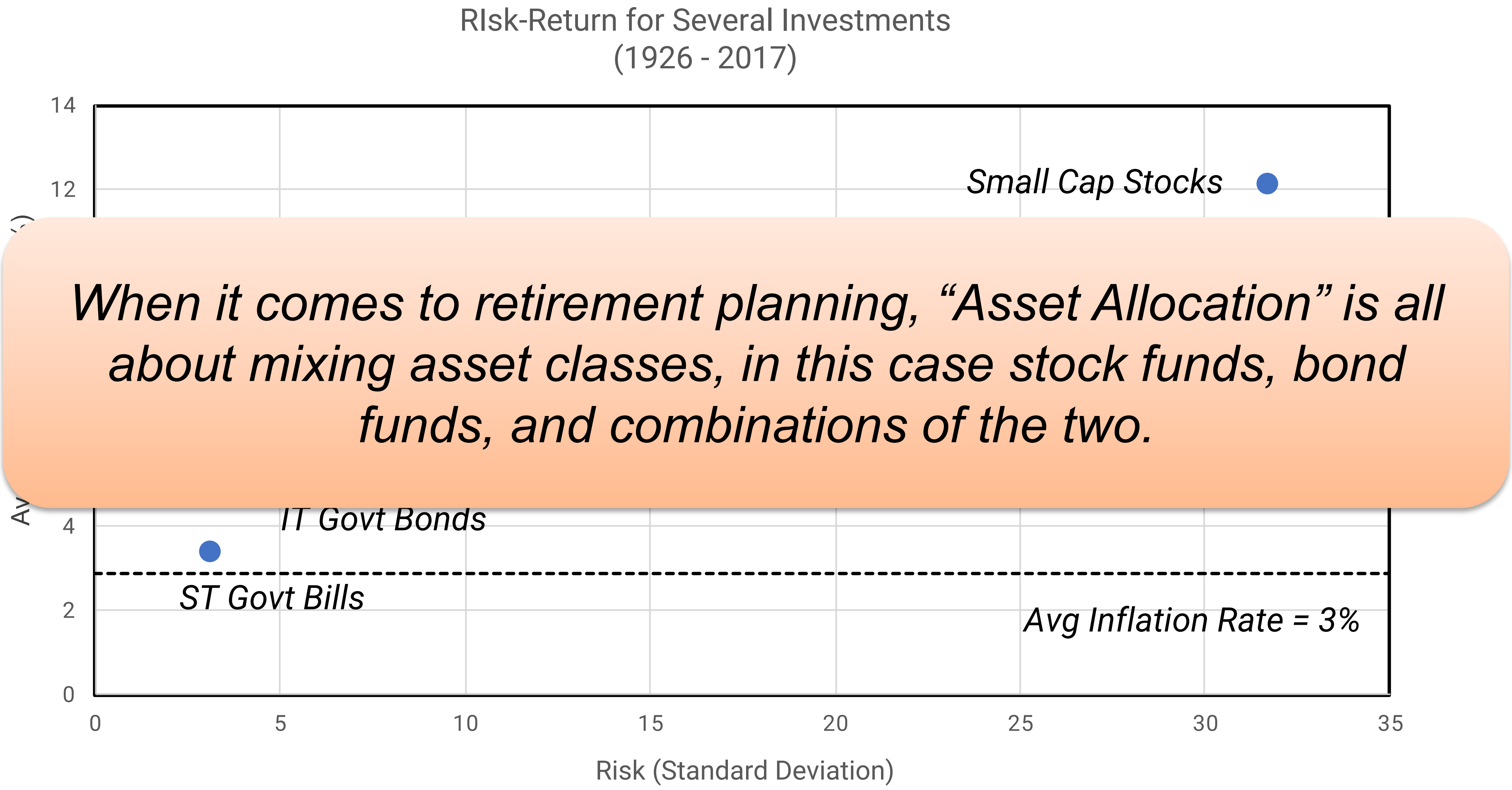
Emerging Markets

Risk – Returns for Different Asset Classes



In general, the lower the risk, the lower the return.

Risk – Returns for Different Asset Classes



When it comes to retirement planning, "Asset Allocation" is all about mixing asset classes, in this case stock funds, bond funds, and combinations of the two.

In general, the lower the risk, the lower the return.

Risk Mitigation: The Portfolio Concept…

What happens if you have two asset classes in your portfolio?

You're contemplating buying a stock fund, a bond fund, or some combination of the two.

The two assets are "uncorrelated", meaning a change in one is independent from a change in the other.

The annual returns for the past 4 years for two funds are:

Year	Stock Fund	Bond Fund
1	30%	10%
2	30%	0%
3	-10%	10%
4	-10%	0%

What is the combination that yields the highest return at the lowest risk?

Risk Mitigation: The Portfolio Concept…

First let's calculate the risks and returns for each asset…

Year	Stock Fund	Bond Fund
1	30%	10%
2	30%	0%
3	-10%	10%
4	-10%	0%

Average Return:	10%	5%
Std. Dev. (SD):	20%	5%

How did we get those figures?

Average: The AVERAGE function in Excel:

Std. Dev. (SD): The STDEV.P function in Excel

Risk Mitigation: The Portfolio Concept…

Owning all of one asset or the other…for the 4 years

So if our portfolio is:

100% Stock Fund: Average Annual Return = 10%, SD = 20%

100% Bond Fund: Average Annual Return = 5.0%, SD = 5%

Let's see what happens when we own the following portfolios:

75% Stock Fund + 25% Bond Fund

50% Stock Fund + 50% Bond Fund

25% Stock Fund + 75% Bond Fund

Risk Mitigation: The Portfolio Concept…

The Concept of Rebalancing…

At the end of each year, we need to "rebalance" our portfolio, in order to maintain the asset allocation of stocks and bonds we want:

At the end of Year 1: Sell stock fund and buy bond funds to maintain the % we want

At the end of Year 2: Sell stock fund and buy bond funds to maintain the % we want

…and so forth...

Why is this critical?

If you don't, the asset class with the higher returns starts to dominate the portfolio, increasing the risk level of the portfolio.

Rebalancing your Portfolio…

What happens when you don't rebalance your portfolio…

Portfolio: 50% Stocks and 50% Bonds

Initial Investment: $100

	Stock			Bond			End of Year	
Year Ending	Starting Value	Annual Return	Ending Value	Starting Value	Annual Return	Ending Value	Portfolio Value	Annual Return
1	$50.00	30%	$65.00	$50.00	10%	$55.00	$120.00	20.0%
2	$65.00	30%	$84.50	$55.00	0%	$55.00	$139.50	16.3%
3	$84.50	-10%	$76.05	$55.00	10%	$60.50	$136.55	-2.1%
4	$76.05	-10%	$68.45	$60.50	0%	$60.50	$128.95	-5.6%
5	$68.45			$60.50				

($120 - $100) / $100 = 0.20

($139.50 - $120) / $120 = 0.163

($136.55 - $139.50) / $136.55 = -0.021

($128.95 - $136.55) . $136.55 = -0.056

	Stock	Bond	End of Year Portfolio
Average:	10.0%	5.0%	7.1%
Std. Dev.:	20.0%	5.0%	11.1%

Portfolio at Beginning of Year 5:	
Stocks:	53%
Bonds:	47%

The stock fund becomes a larger portion of your portfolio…increasing your risk.

Rebalancing your Portfolio…

What happens when you do rebalance your portfolio…

Portfolio: 50% Stocks and 50% Bonds

Initial Investment: $100

	Stock			Bond			End of Year	
Year Ending	Starting Value	Annual Return	Ending Value	Starting Value	Annual Return	Ending Value	Portfolio Value	Annual Return
1	$50.00	30%	$65.00	$50.00	10%	$55.00	$120.00	20.0%
2	$60.00	30%	$78.00	$60.00	0%	$60.00	$138.00	15.0%
3	$69.00	-10%	$62.10	$69.00	10%	$75.90	$138.00	0.0%
4	$69.00	-10%	$62.10	$69.00	0%	$69.00	$131.10	-5.0%
5	$65.55			$65.55				
	Average:	10.0%		Average:	5.0%		Average:	7.5%
	Std. Dev.:	20.0%		Std. Dev.:	5.0%		Std. Dev.:	10.3%

($120 - $100) / $100 = 0.20

($138 - $120) / $120 = 0.15

($138 - $138) / $138 = 0.0

($138.00 - $131.10) / $138.00 = -0.05

Portfolio at Beginning of Year 5:	
Stocks:	50%
Bonds:	50%

Everything stays the same…and your risk level remains constant.

The Impact of Rebalancing your Portfolio…

Keeping your portfolio “balanced” to your target split of investments always allow you maintain your risk tolerance while often optimizing your returns.

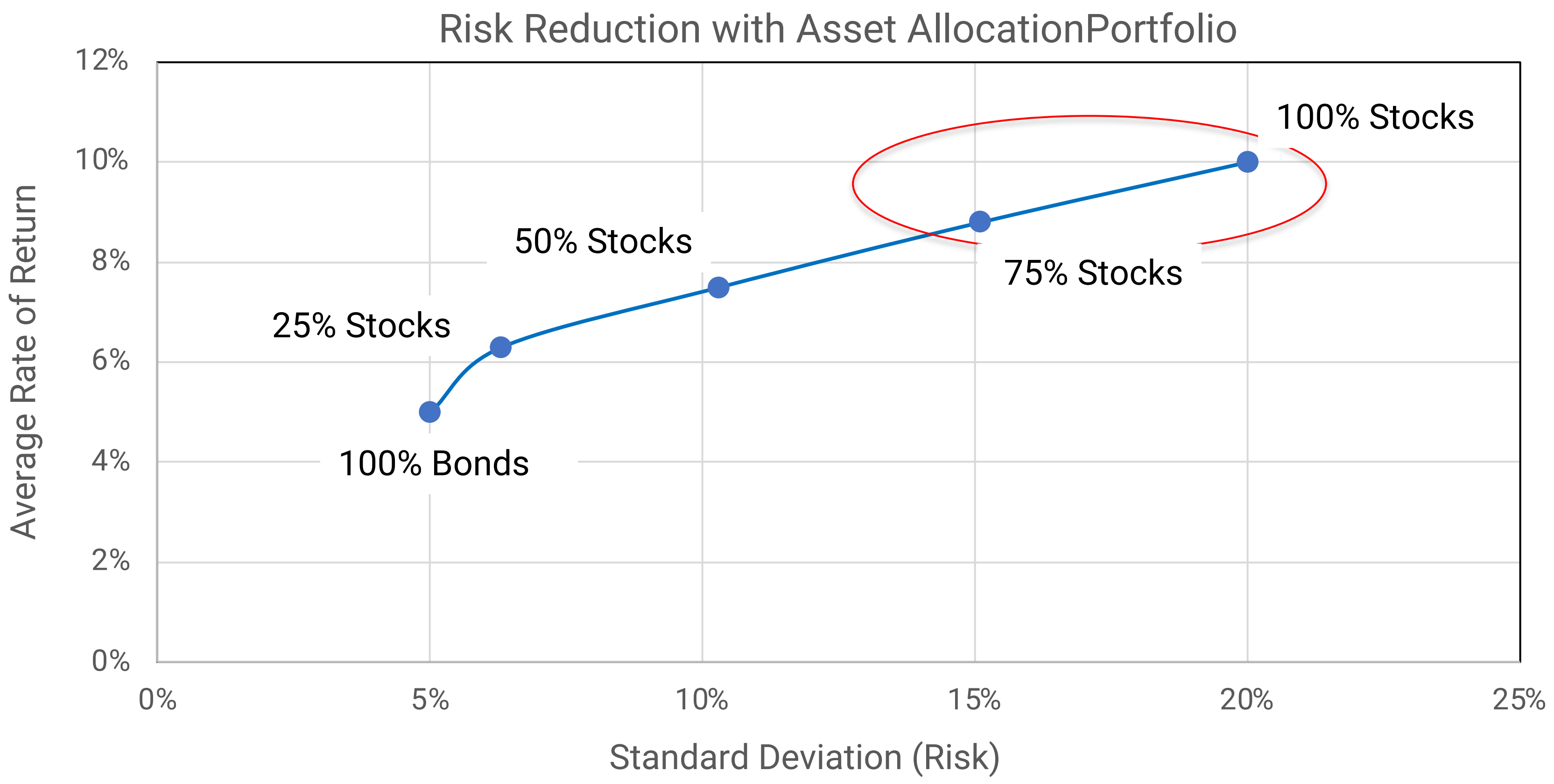
How often should you do this? Many advisors suggest once a year is enough. Any more frequently and you’re spending time and potentially money.

	Rebalancing Annually	No Rebalancing
Average Return:	7.5%	7.1%
Std. Dev.:	10.3%	11.1%

The Rebalanced Portfolio has a higher average return and less volatility than the Unbalanced Portfolio!

Risk Mitigation: The Portfolio Concept…

Asset Allocation: identifying the % of each fund you want



Blending your assets can lead to large reduction in risk without much loss in return!

Main Takeaways…

With investing, “risk” is defined as volatility in price, which is quantitatively calculated as the standard deviation.

The highest risk one can have is to have a portfolio consisting of a single asset (stock, bond or fund).

Statistically, when the assets are uncorrelated, a mix of assets will always reduce the risk, and often with an increase in return.

Asset Allocation is all about selecting the right mix of assets to achieve a target return, while matching your risk tolerance.

Rebalancing your portfolio annually ensures that your desired asset allocation remains where you want it – time to take control of your investments!

Next Time…

Your Retirement Plan Spreadsheet

Credits & References

Slide 1: : Investment planning and reporting concept by Montri, Adobe Stock (126188197.jpeg).

Slide 16: Human Hand Drawing Retirement Plan Growth Concept by Andrey Popov, Adobe Stock (168285586.jpeg).