Rebalancing: staying the course with your target Asset Allocation

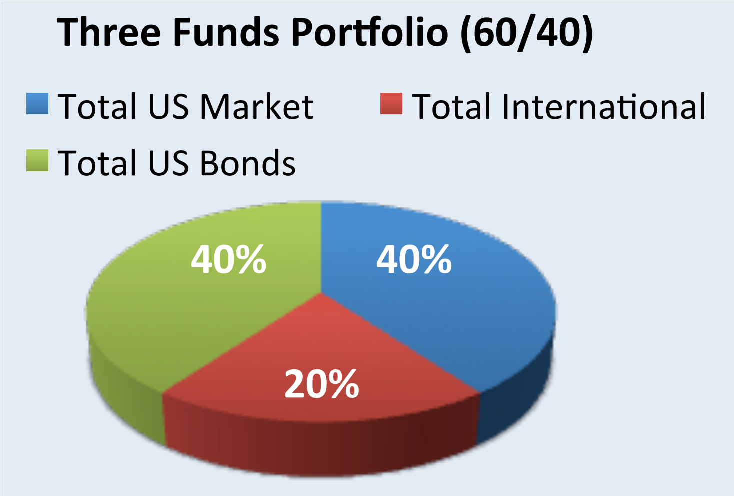
Bogleheads - March 12th, 2022

https://bit.ly/3sIcsJz

Target Asset Allocation (AA)
Stay The Course

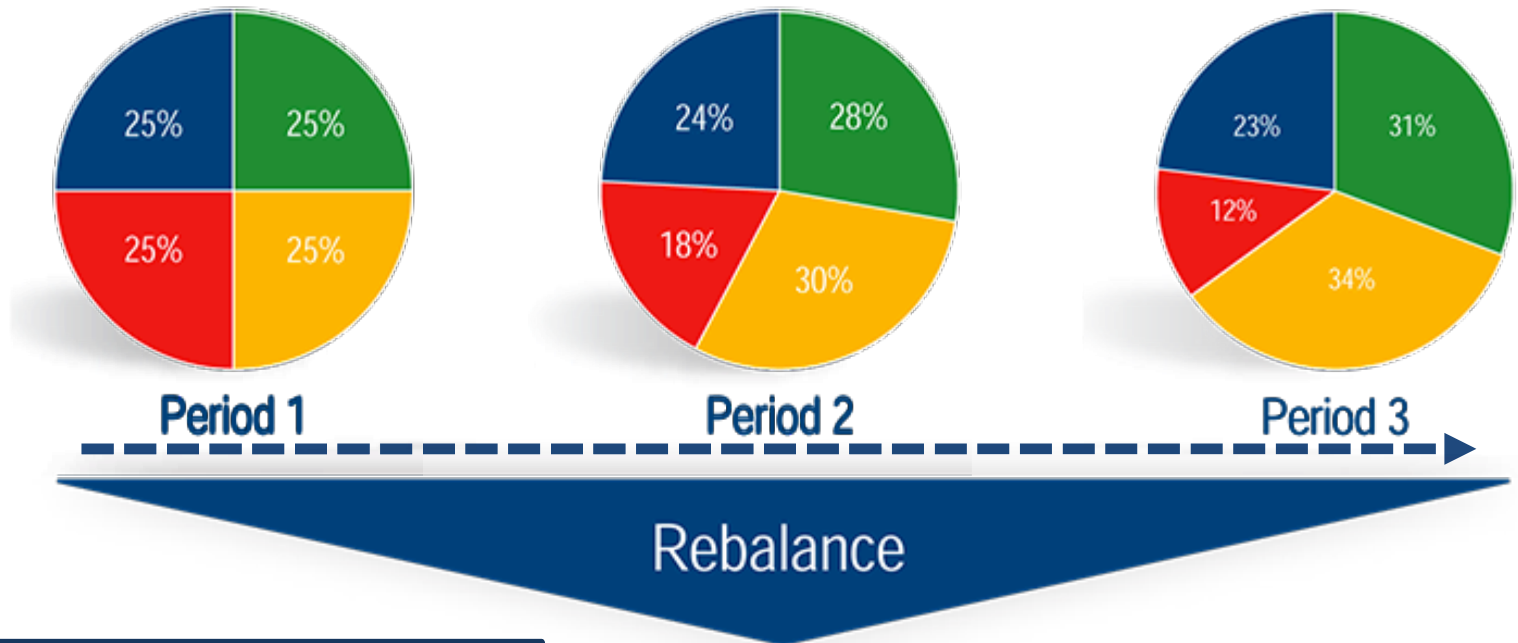
- It is not necessary to own many funds to achieve effective diversification, just own a few broadly diversified index funds.
- Once you have set long-term investment goals and pondered about corresponding risks, **establish an asset allocation target** to meet them.
- Once assets are invested accordingly, it is essential to stick with your plan by maintaining a long-term perspective (e.g. decades).

Asset Allocation (AA) is both the process of dividing an investment portfolio among different ***asset categories****, and the resulting division.*
- Bogleheads wiki page.



"Asset Categories" is the SEC terminology.
Most authors speak of "**Asset Class**" instead.

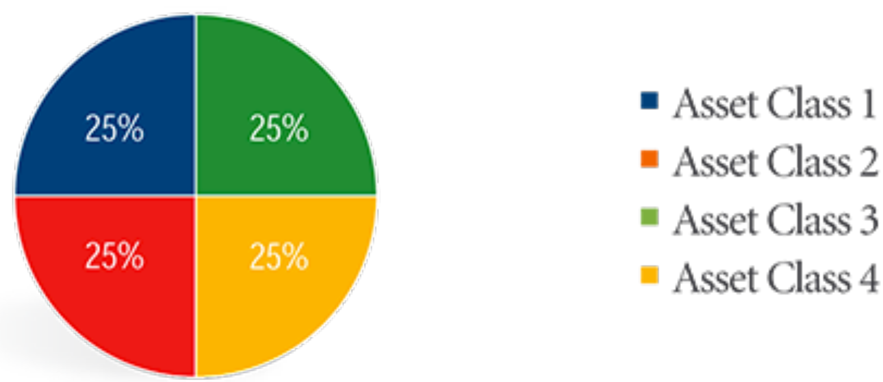
Rebalancing your Portfolio over Time



As the markets move, your carefully crafted Asset Allocation will shift.

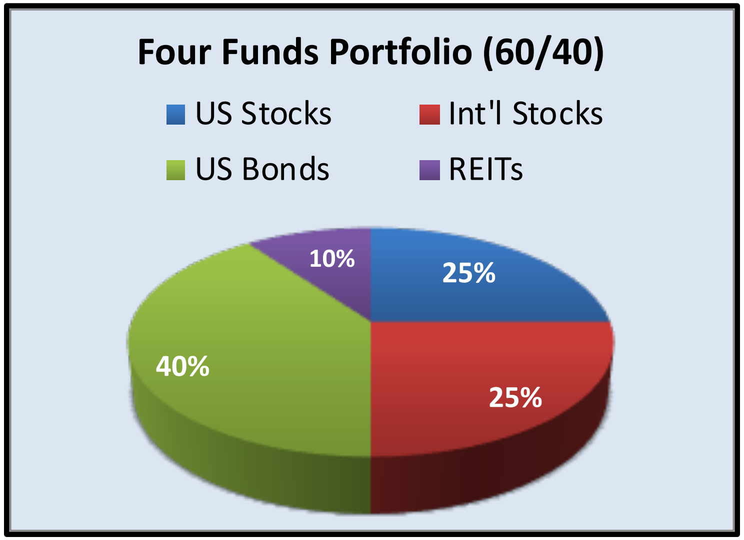
Rebalancing is the act of adjusting your portfolio assets back to the asset allocation you have chosen.

In other words, this is about <u>staying the course</u>, in a disciplined manner.



Let’s take a concrete example

- Let’s assume a $1M initial portfolio. The plan calls for a fixed target asset allocation, using four asset classes:



- Let’s assume three types of investment accounts:
  - Taxable (brokerage) account: holding Exchange-Traded Funds (ETFs)
  - Tax-sheltered traditional IRA / 401k: holding Mutual Funds (MFs)
  - Tax-free Roth IRA: holding Mutual Funds (MFs)

$1M invested, tracked by a spreadsheet

	A	B	C	D	E	F	G	H	I
1									
2						US Stocks	Int'l Stocks	REITs	US Bonds
3				Target AA:		25%	25%	10%	40%
4				Current AA:		25%	25%	10%	40%
5									
6			Total Portfolio:	$1,000,000		$250,000	$250,000	$100,000	$400,000
7				Delta w/ AA:		$0	$0	$0	$0
8									
9		**Taxable account (ETFs)**							
10		VTI	Total Market (US)	$100,000		$100,000			
11		VXUS	Total Int'l	$150,000			$150,000		
12									
13		**Traditional IRA / 401k (MFs)**							
14		VFIAX	S&P 500 (US)	$150,000		$150,000			
15		VBTLX	Total Bonds	$400,000					$400,000
16									
17		**Roth-IRA (MFs)**							
18		VGSLX	REITs	$100,000				$100,000	
19		VTIAX	Total Int'l	$100,000			$100,000		

Portfolio total $$
=SUM(D10:D19)

Current % bonds:
=I6/$D6

Total per asset class:
=SUM(I10:I19)

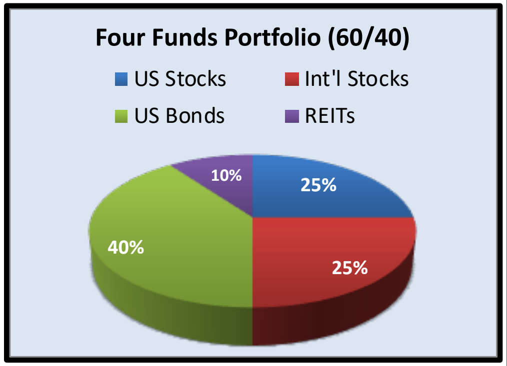
Bonds in asset column:
=$D15

Three types of investment accounts: taxable, IRA, Roth

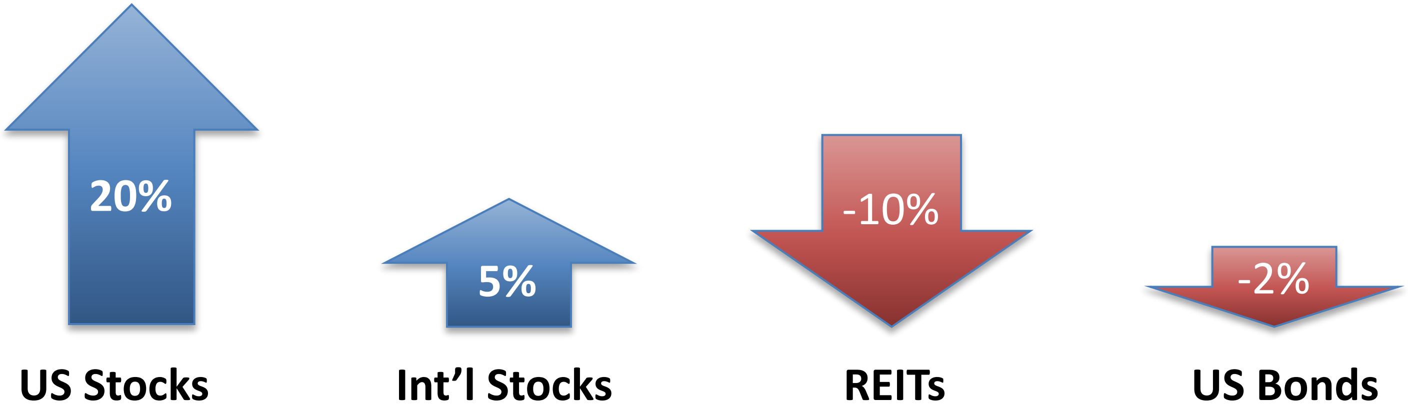
Enter your <u>current</u> positions for each fund

Simple table to tally amounts per asset class

Time goes by, markets move…



- Let’s assume that over the course of one year, markets moved like that:



- Quite clearly, our <u>current</u> asset allocation got a bit out of whack… Let’s see what happened.

One year later… Things changed!

Portfolio total $$
=SUM(D10:D19)

Current % US stocks: *=F6/$D6*

Current % bonds: *=I6/$D6*

Delta to AA in $$: *=I6 - ($D6*I3)*

	A	B	C	D	E	F	G	H	I
1									
2						**US Stocks**	**Int'l Stocks**	**REITs**	**US Bonds**
3				Target AA:		25%	25%	10%	40%
4				Current AA:		**29%**	**25%**	**9%**	**38%**
5									
6			Total Portfolio:	**$1,044,500**		**$300,000**	**$262,500**	**$90,000**	**$392,000**
7				Delta w/ AA:		$38,875	$1,375	($14,450)	($25,800)
8									
9		**Taxable account (ETFs)**							
10		VTI	Total Market (US)	$120,000		$120,000			
11		VXUS	Total Int'l	$157,500			$157,500		
12									
13		**Traditional IRA / 401k (MFs)**							
14		VFIAX	S&P 500 (US)	$180,000		$180,000			
15		VBTLX	Total Bonds	$392,000					$392,000
16									
17		**Roth-IRA (MFs)**							
18		VGSLX	REITs	$90,000				$90,000	
19		VTIAX	Total Int'l	$105,000			$105,000		

Update your current positions for each fund

Suggested action: $30k exchange in traditional IRA

After moving $30k within the trad. IRA

			US Stocks	Int'l Stocks	REITs	US Bonds
		Target AA:	25%	25%	10%	40%
		Current AA:	**26%**	**25%**	**9%**	**40%**
	Total Portfolio:	**$1,044,500**	**$270,000**	**$262,500**	**$90,000**	**$422,000**
		Delta w/ AA:	$8,875	$1,375	($14,450)	$4,200
Taxable account (ETFs)						
VTI	Total Market (US)	$120,000	$120,000			
VXUS	Total Int'l	$157,500		$157,500		
Traditional IRA / 401k (MFs)						
VFIAX	S&P 500 (US)	$150,000	$150,000			
VBTLX	Total Bonds	$422,000				$422,000
Roth-IRA (MFs)						
VGSLX	REITs	$90,000			$90,000	
VTIAX	Total Int'l	$105,000		$105,000		

Portfolio total $$ *UNCHANGED*

Current AA: close enough?

Update your current positions for each fund

Rebalancing action completed: $30k exchange in trad. IRA

REITs: would need to sell US stocks + bonds and buy $14k in trad. IRA

After buying $14k REITs in the trad. IRA

Portfolio total $$ *UNCHANGED*

Current AA: good to go!

	A	B	C	D	E	F	G	H	I
1									
2						US Stocks	Int'l Stocks	REITs	US Bonds
3				Target AA:		25%	25%	10%	40%
4				Current AA:		25%	25%	10%	40%
5									
6			Total Portfolio:	$1,044,500		$261,000	$262,500	$104,000	$417,000
7				Delta w/ AA:		($125)	$1,375	($450)	($800)
8									
9		Taxable account (ETFs)							
10		VTI	Total Market (US)	$120,000		$120,000			
11		VXUS	Total Int'l	$157,500			$157,500		
12									
13		Traditional IRA / 401k (MFs)							
14		VFIAX	S&P 500 (US)	$141,000		$141,000			
15		VBTLX	Total Bonds	$417,000					$417,000
16		VGSLX	REITs	$14,000				$14,000	
17									
18		Roth-IRA (MFs)							
19		VGSLX	REITs	$90,000				$90,000	
20		VTIAX	Total Int'l	$105,000			$105,000		

Update your current positions for each fund

Rebalancing action completed: $14k exchange in trad. IRA

A few rules of thumb

- Assess your AA (current vs. target) across your entire portfolio
- No need to be obsessively precise, close enough will be good enough; markets will move the day after anyway…
- Better act within tax-sheltered accounts:
  - avoid selling moves in taxable account, beware of capital gains and taxes…
  - … unless you have some positions in the red (or some loss carry-over), then go for it!
- Mutual Funds exchanges in tax-sheltered are VERY convenient – end of day
- Sell/Buy ETFs in taxable should be done quickly (so that prices don't change much in-between transactions). Think twice before acting.
- For complex AAs, rebalancing can become a bit of a game of Tetris… One more reason for keeping one's AA simple.
- **All-In-One funds (Target-Retirement, LifeStrategy) rebalance for you!**

When to rebalance?

- The topic of endless discussions and studies…
- Primary ways of doing it:
  - **When adding or withdrawing money (aka 'soft rebalancing')**
  - **Regularly (e.g. annually: early Jan, anniversary, whatever)**
  - Trigger-based (bands): absolute, relative, adaptive, cumulative drift
  - One-way rebalancing (never sell bonds to buy stocks; bad idea unless you've reached an emotional rock-bottom)
  - **DO NOT WING IT BASED ON EMOTIONS AND/OR MARKET TIMING**
- In practice, barring a big bull or bear market, soft rebalancing is often good enough. Just run an annual check. That's it, done!
- More on trigger methods later in the presentation.

Soft rebalancing with cash flows

- Accumulators save money on a regular basis
  - Assess your current AA vs. Target BEFORE contributing
  - Simply add $$ to an asset class which is below target (e.g. the lowest)…
  - … or let your 401k account automatically contribute according to your target AA
- Retirees withdraw money on a regular basis
  - Assess your current AA vs. Target BEFORE withdrawing
  - Simply withdraw $$ from an asset class which is above target (e.g. the highest)
  - IF you want to sell something else in taxable, then do a corresponding rebalancing move in tax-sheltered
- Such moves give a perception of 'Sell High, Buy Low'
  - It feels good even though it is (mostly) illusory
- Re-assess at the end of the year (or trigger-based), but you might not need to adjust much, barring big market movements.

Soft Rebalancing: sell high, buy low

	A	B	C	D	E	F	G	H	I
1									
2						**US Stocks**	**Int'l Stocks**	**REITs**	**US Bonds**
3				Target AA:		25%	25%	10%	40%
4				Current AA:		**29%**	**25%**	**9%**	**38%**
5									
6			Total Portfolio:	**$1,044,500**		**$300,000**	**$262,500**	**$90,000**	**$392,000**
7				Delta w/ AA:		$38,875	$1,375	($14,450)	($25,800)
8									
9		**Taxable account (ETFs)**							
10		VTI	Total Market (US)	$120,000		$120,000			
11		VXUS	Total Int'l	$157,500			$157,500		
12									
13		**Traditional IRA / 401k (MFs)**							
14		VFIAX	S&P 500 (US)	$180,000		$180,000			
15		VBTLX	Total Bonds	$392,000					$392,000
16									
17		**Roth-IRA (MFs)**							
18		VGSLX	REITs	$90,000				$90,000	
19		VTIAX	Total Int'l	$105,000			$105,000		

Update your current positions for each fund

Retiree:
SELL US STOCKS

Accumulator:
BUY BONDS

Soft Rebalancing: selling VIA taxable

	A	B	C	D	E	F	G	H	I
1									
2						US Stocks	Int'l Stocks	REITs	US Bonds
3				Target AA:		25%	25%	10%	40%
4				Current AA:		21%	25%	10%	44%
5									
6			Total Portfolio:	$952,500		$200,000	$237,500	$95,000	$420,000
7				Delta with AA:		($38,125)	($625)	($250)	$39,000
8									
9		**Taxable account (ETFs)**							
10		VTI	Total Market (US)	$80,000		$80,000			
11		VXUS	Total Int'l	$142,500			$142,500		
12									
13		**Traditional IRA / 401k (MFs)**							
14		VFIAX	S&P 500 (US)	$120,000		$120,000			
15		VBTLX	Total Bonds	$420,000					$420,000
16									
17		**Roth-IRA (MFs)**							
18		VGSLX	REITs	$95,000				$95,000	
19		VTIAX	Total Int'l	$95,000			$95,000		

Early retiree (< 59 ½):

- Need to withdraw $$
- US stocks dropped
- How to sell bonds in IRA?

1. Sell US stocks in taxable (say $20k)

2. Exchange bonds for stocks in tax-sheltered

Trigger methods – rebalancing bands

- Common criticism of annual (or periodic) rebalancing: a fixed rebalancing date is arbitrary and doesn't account for those 'special moments' in time where markets go haywire.
  - A disciplined investor may not want to wait a year to come back to his/her target AA.
  - If the stock market drops 30%, a cold blooded investor might wish to use 'dry powder' (e.g. bonds or cash) to buy more stocks while they are (perceived as) 'cheap'.
- Trigger-based (bands) methods – threshold per asset class:
  - Absolute 5%: if target is 40%, rebalance when getting to 35% or 45%
    - Cumulative drift: sum up above-target deltas; compare to threshold (better for complex AA)
  - Relative 20%: if target is 40%, rebalance when getting to 32% or 48% (20% of 40% = 8%)
  - 5/25 rule: absolute 5% if asset class is >20% of portfolio; relative 25% otherwise
    - A bit of a hack… and 25% threshold is poorly calibrated (I would suggest 5/20 or even 5/15).
- One could use similar criteria during an annual (or periodic) assessment to decide to rebalance or not. Or… monitor your portfolio every week or month.

Trigger methods in a spreadsheet

Cumulative drift:
=SUMIF(F6:I6, ">0")

Absolute change:
=I4-I3

Relative change:
=I4/I3-1

	A	B	C	D	E	F	G	H	I
1									
2						**US Stocks**	**Int'l Stocks**	**REITs**	**US Bonds**
3				Target AA:		25.0%	25.0%	10.0%	40.0%
4				Current AA:		**28.7%**	**25.1%**	**8.6%**	**37.5%**
5									
6			Total drift: 3.9%	Abs. Change		**3.7%**	**0.1%**	**-1.4%**	**-2.5%**
7				Rel. Change		**14.9%**	**0.5%**	**-13.8%**	**-6.2%**
8									
9			**Total Portfolio:**	**$1,044,500**		**$300,000**	**$262,500**	**$90,000**	**$392,000**
10				Delta w/ AA:		$38,875	$1,375	($14,450)	($25,800)
11									
12		**Taxable account (ETFs)**							
13		VTI	Total Market (US)	$120,000		$120,000			
14		VXUS	Total Int'l	$157,500			$157,500		
15									
16		**Traditional IRA / 401k (MFs)**							
17		VFIAX	S&P 500 (US)	$180,000		$180,000			
18		VBTLX	Total Bonds	$392,000					$392,000
19									
20		**Roth-IRA (MFs)**							
21		VGSLX	REITs	$90,000				$90,000	
22		VTIAX	Total Int'l	$105,000			$105,000		

Suggestions for improvements: use conditional formatting to visualize when bands are reached; add a scheduled script to a Google Sheet to send a “time to rebalance” e-mail.

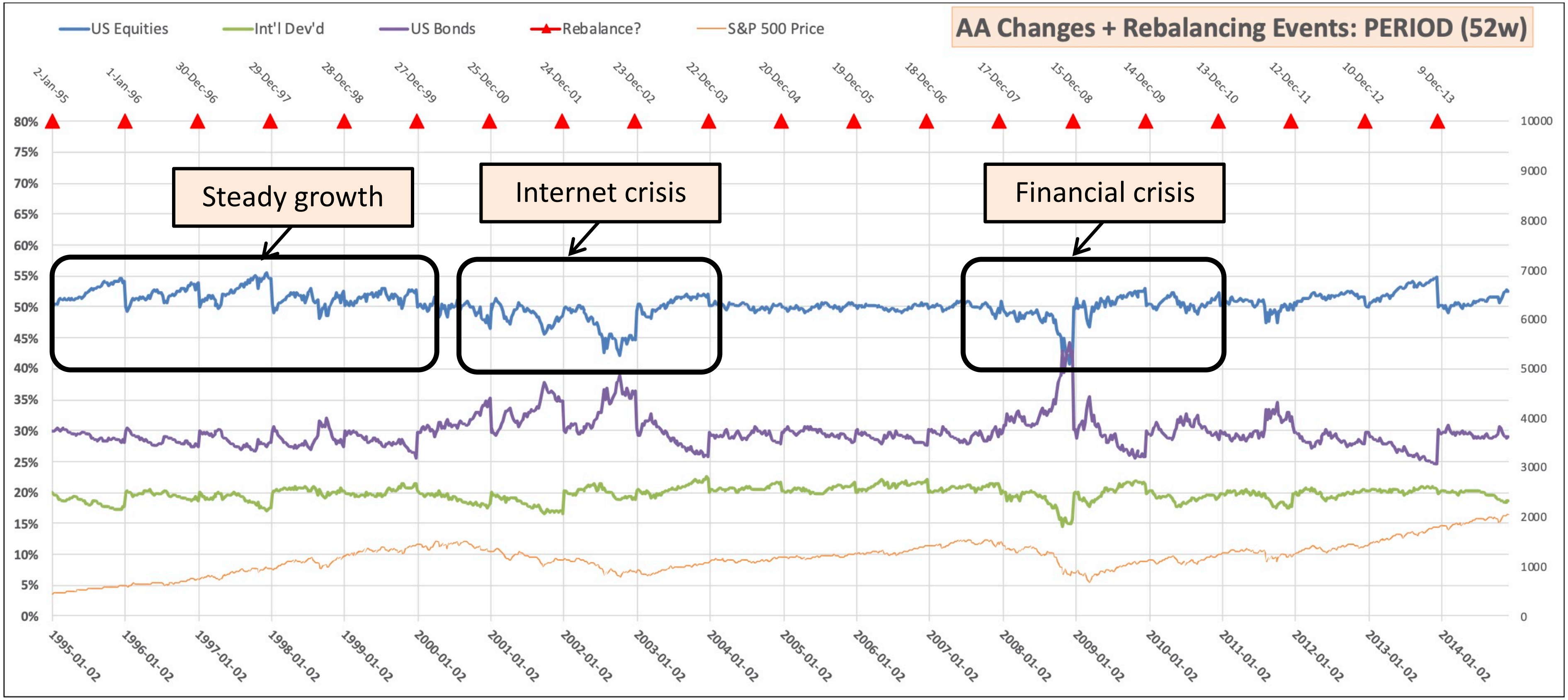
A much more detailed study

(Bogleheads blog article: The Elusive Rebalancing Bonus)

- A (large!) spreadsheet was used to model various rebalancing methods, backtesting long investment cycles (e.g. 20 years).
- A dataset of weekly returns (starting from 1980) was used.
- This study is made of three parts:
  - Part 1 focused on describing the most typical rebalancing methods and illustrating them by example.
  - Part 2 documented a more systematic analysis, using the simple annual rebalancing method as a baseline to explore and quantify the concept of "rebalancing bonus".
  - Part 3 explored a few miscellaneous topics (e.g. frequent rebalancing, one-way rebalancing, less conventional asset allocations).
- **The following slides will show a few illustrative graphs, then jump to the overarching conclusions of the study.**

Rebalancing over time: periodic

(Bogleheads blog article: The Elusive Rebalancing Bonus)

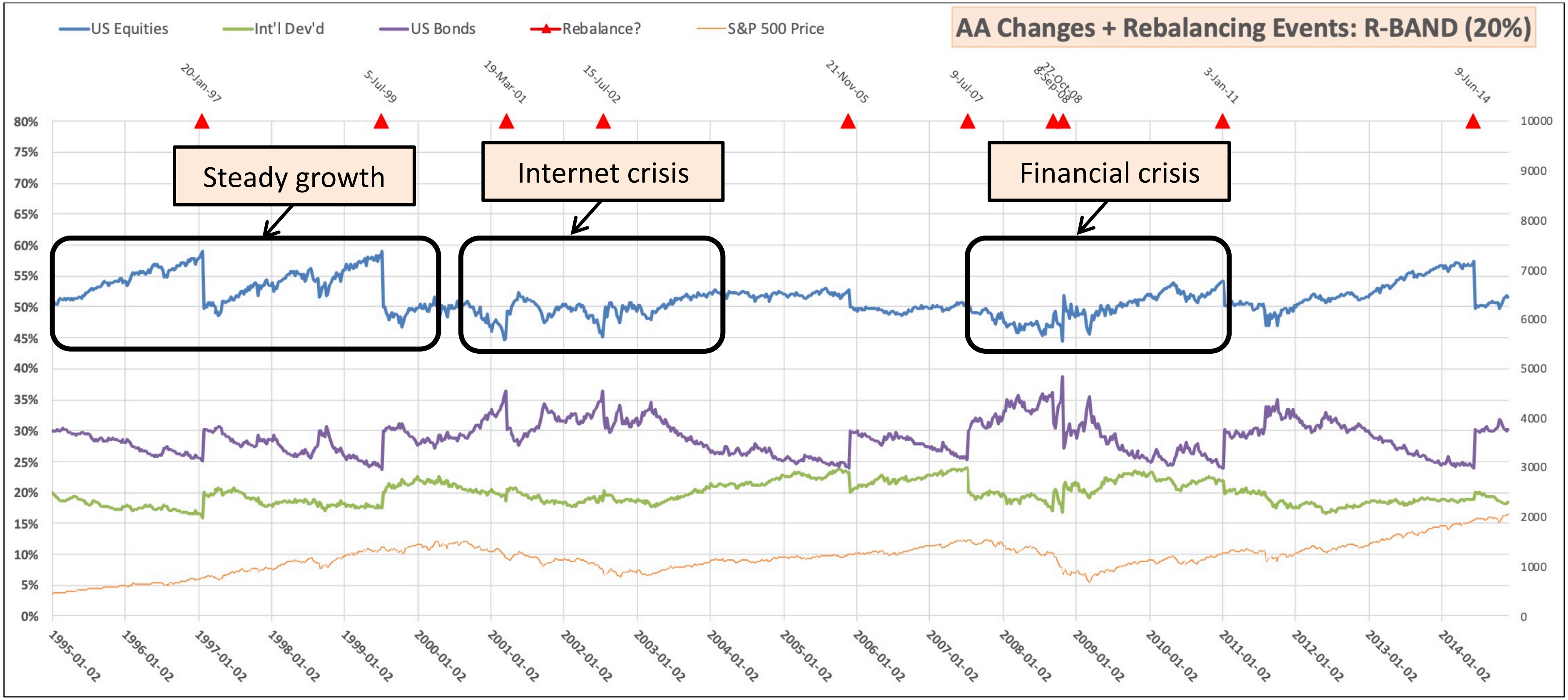


For this graph, the target AA is 50% US Stocks, 30% US Bonds, 20% Int’l Stocks.

Annual rebalancing is approximated to 52 weeks (to match a weekly historical data set!).

Rebalancing over time: relative band (1)

(Bogleheads blog article: The Elusive Rebalancing Bonus)

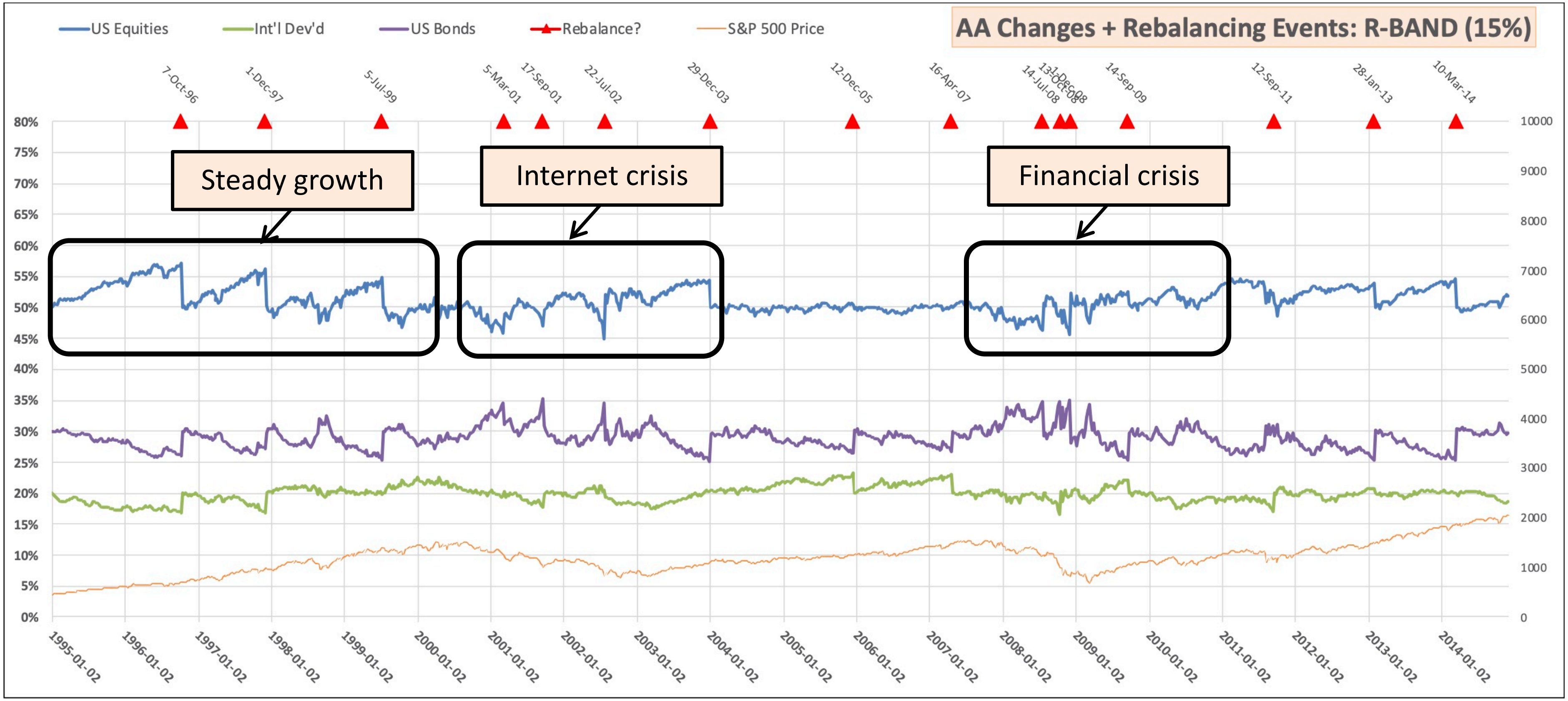


For this graph, the target AA is 50% US Stocks, 30% US Bonds, 20% Int'l Stocks.

Portfolio is assessed weekly, only rebalancing if a **20%** relative band is reached.

Rebalancing over time: relative band (2)

(Bogleheads [blog article]: The Elusive Rebalancing Bonus)



For this graph, the target AA is 50% US Stocks, 30% US Bonds, 20% Int'l Stocks.

Portfolio is assessed weekly, only rebalancing if a **15%** relative band is reached.

Summary of the study

(Bogleheads blog article: The Elusive Rebalancing Bonus)

- **Rebalancing is a very useful discipline to stay the course**, to stick to one's investment plan
  - But any perception of 'selling high, buying low' is mostly one's intuition (behavioral biases included) playing games with one's brain.
  - In other words, market timing doesn't work, even when rebalancing.
- The exact form of rebalancing may not matter much
  - There is not a lot of significant rebalancing bonus to be gained by using more sophisticated methods (e.g. rebalancing triggers/bands).
  - Most of the (tiny/random) bonus is a side-effect of the current asset allocation drifting (typically towards more stocks).
  - People using a simple annual rebalancing method have little reason to change what they are doing. Keep it simple!

Bottomline: pick whatever (sensible) rebalancing method you're comfortable with, stick with it and things will work out

Behavioral Considerations

- Choosing a rebalancing method which fits well one's skills and psychology is important
  - Keep it very simple if you value simplicity (e.g. annual rebalancing)
  - Use trigger methods if you can't stand waiting on the side doing nothing
  - Use a bond floor if this helps you with deep crises, e.g. X years of $$ expenses
- The author uses triggers, not to chase an elusive rebalancing 'bonus', but for behavioral reasons, notably in a time of crisis:
  - A rebalancing trigger feels like an opportunity, a positive sentiment.
  - It gives something to do, an action to take (easy to say 'stay the course', but most of us itch to do something); better do something which is NOT damaging.
  - It is a mechanical process, which should come with no hesitation, no regret, no hidden 'market timing' attempt.
- **If you cannot stand all this rebalancing math, use an All-In-One fund!**

Appendix & Links

- This presentation (Powerpoint, animated)
  - short link: https://bit.ly/3slcsJz
- The rebalancing spreadsheet (Excel)
- The “Elusive Rebalancing Bonus” blog article
- Bogleheads rebalancing wiki page
- SEC Beginners' Guide to Asset Allocation, Diversification, and Rebalancing