

# An In-Depth Look At Optimal Rebalancing Strategies

Webinar | Kitces.com

## Michael E. Kitces

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## Portfolio Rebalancing

- Conventional view on rebalancing:



Cliff Asness, AQR Investments

*Make sure you rebalance your portfolio.*

*Rebalancing is one of the few free lunches out there.*

*You're generally selling things that have gone up the most and buying things that have gone down the most.*

Asness, *Bursting the (Latest) Bubble*, WSJ, 1/14/2004

## Portfolio Rebalancing

- Concerns about rebalancing?



Jason Hsu, Research Affiliates

*When you buy risk assets during economic distress, there is a significant probability that, in the interim, your portfolio may suffer a greater decline than if you didn't rebalance.*

*In the short run, your probability of being fired as a fiduciary, of being blamed by clients you advise, and, most importantly, of marital strife, becomes moderately higher when you rebalance.*

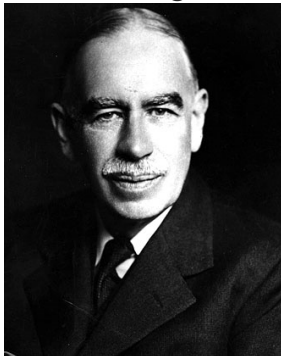
Hsu, *Why We Don't Rebalance*,  
Research Affiliates, July 2012

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## Portfolio Rebalancing

- The timing of rebalancing?



John Maynard Keynes

*"The market can remain irrational longer than you can remain solvent."*

*[Or employed]*

*[Or happily married]*

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## Portfolio Rebalancing

- An In-Depth Look At Rebalancing
  - What is rebalancing?
    - Does it enhance returns?
    - Does it increase risk? Does it reduce risk?
  - Does it matter what you rebalance between?
  - How often *should* you Rebalance?
    - What are the “best practices” for rebalancing?
  - What is rebalancing really worth at the end of the day?
    - What are the potential benefits?
    - What are the risks to consider?

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## Portfolio Rebalancing

- What Is Rebalancing?
  - Setting the portfolio back to its original asset allocation, after market returns distort the original allocation



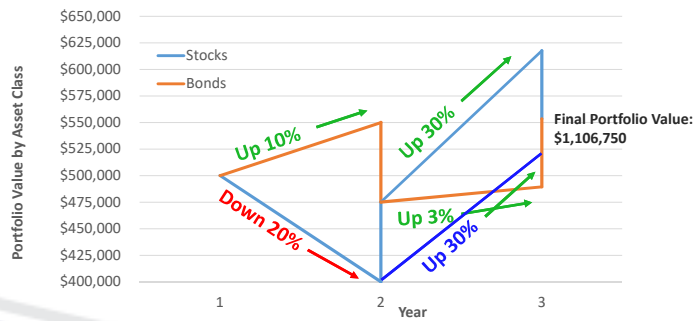
- Otherwise your portfolio risk exposure changes!

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## Portfolio Rebalancing

- What Is Rebalancing?
  - Returns may be enhanced by selling what was up, and buying what was down!

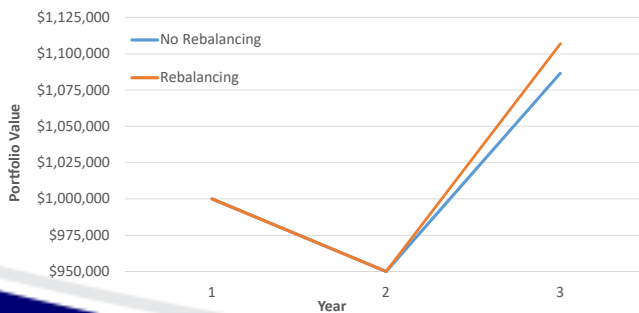


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## Portfolio Rebalancing

- What Is Rebalancing?
  - Returns may be enhanced by selling what was up, and buying what was down!



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## Portfolio Rebalancing

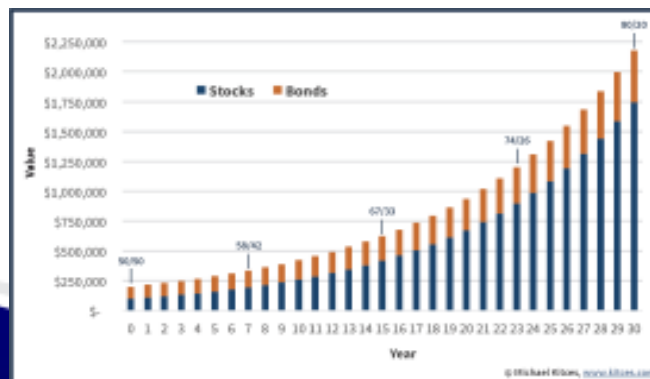
- Fundamental benefit of rebalancing
  - Create sell-high-buy-low opportunities (return enhancement)
    - Buy stocks when they're down, using bonds that were up

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## Portfolio Rebalancing

- Why Stock/Bond Rebalancing matters
  - Stocks also have better returns in the long run...
    - Causes the portfolio to overweight stocks over time!

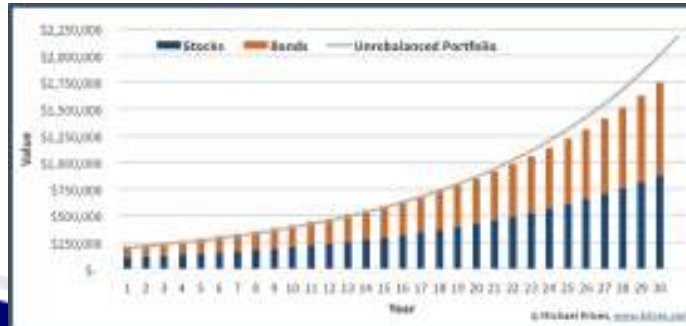


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## Portfolio Rebalancing

- The “problem” with stock/bond rebalancing
  - Return drift causes stocks to become overweight...
  - But rebalancing just reduces exposure to the higher returns!



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## Portfolio Rebalancing

- Real-world stock/bond rebalancing
  - In practice stocks don't always go straight up
    - They may temporarily decline and recover later
    - On average is it good more than it's bad? Rarely.



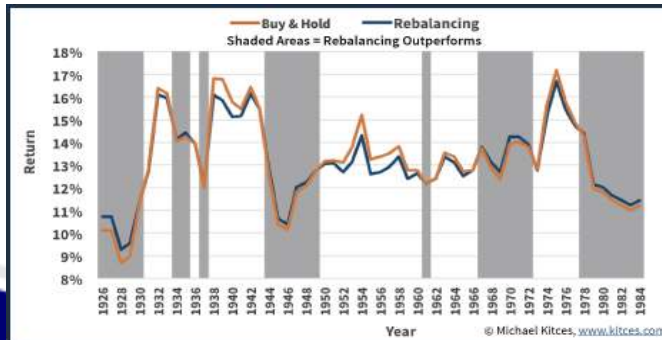
Note: Based on Rolling 30-Year Returns, with a 50/50 Stock/Bond Portfolio

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## Portfolio Rebalancing

- Rebalancing between *similar-return asset classes*
  - Less return drag, and more opportunities for enhancement?
  - Still not necessarily much better, but at least 'less bad'!?



Note: Based on Rolling 30-Year Returns, 50/50 Large Cap/Small Cap.

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## Portfolio Rebalancing

- Impact of Rebalancing:  
Depends on WHAT You're Rebalancing!?
- Similar- or different-return asset classes?

	IMPACT ON EXPECTED RETURNS	IMPACT ON RISK MANAGEMENT
Investments with Similar Returns	↑	→
Investments with Different Returns	↓	↑

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## Portfolio Rebalancing

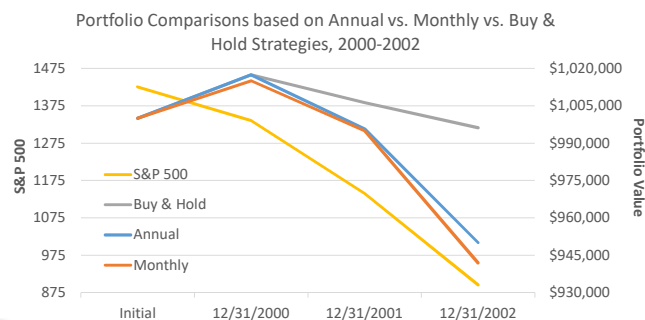
- Optimal Rebalancing Frequency
  - How often SHOULD you rebalance?
    - Often enough to capture buy-low sell-high opportunities
    - Often enough to limit becoming too overweight to equities
  - But you can rebalance *too* frequently...

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## Portfolio Rebalancing

- Frequent Rebalancing And Momentum
  - Monthly vs Annual Rebalancing in a Bear Market



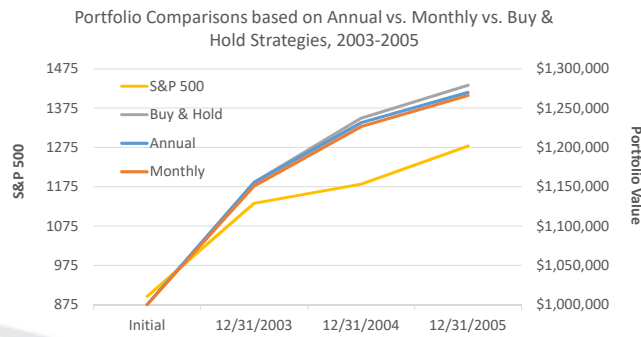
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## Portfolio Rebalancing

- Frequent Rebalancing And Momentum
  - Monthly vs Annual Rebalancing in a Bull Market



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## Portfolio Rebalancing

- Momentum and Optimal Rebalancing Frequency
  - And watch out for transaction costs, too!

	Never	Annually	Quarterly	Monthly
<b>Avg. Equity Allocation</b>	84.1%	60.5%	60.2%	60.1%
<b>Annual Turnover</b>	0%	1.7%	2.2%	2.7%
<b>No. Rebalancing Events</b>	0	83	335	1,008
<b>Avg. Annualized Return</b>	9.1%	8.6%	8.6%	8.5%
<b>Volatility</b>	14.4%	11.9%	12.2%	12.1%

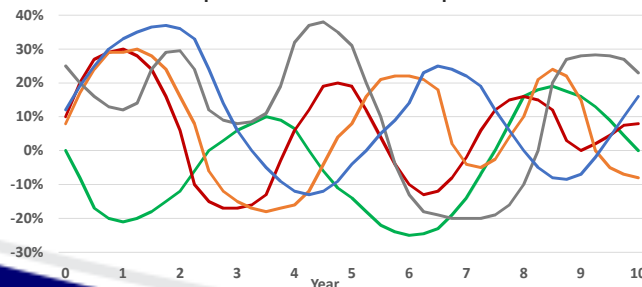
Source: Jaconetti, C. M., Kinniry Jr., F. M., & Zilbering, Y. (2010). *Best practices for portfolio rebalancing*. Vanguard. Figure 6: Comparing portfolio rebalancing results for 'time-only' strategy: Various frequencies, 1926 - 2009 (p. 8).

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## Portfolio Rebalancing

- Momentum and Optimal Rebalancing Frequency
  - Often enough to capture the extremes
  - Not so often you cut off the momentum along the way
  - But is that even possible with multiple asset classes?

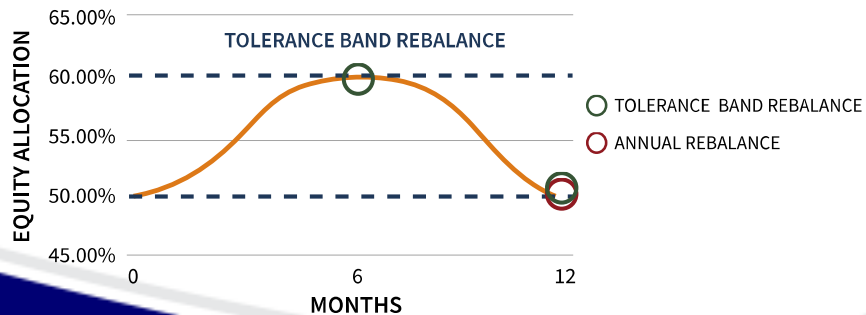


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## Portfolio Rebalancing

- Tolerance Band Rebalancing
  - If we're trying to rebalance at the extremes, don't do it based on the times, do it based on the extremes

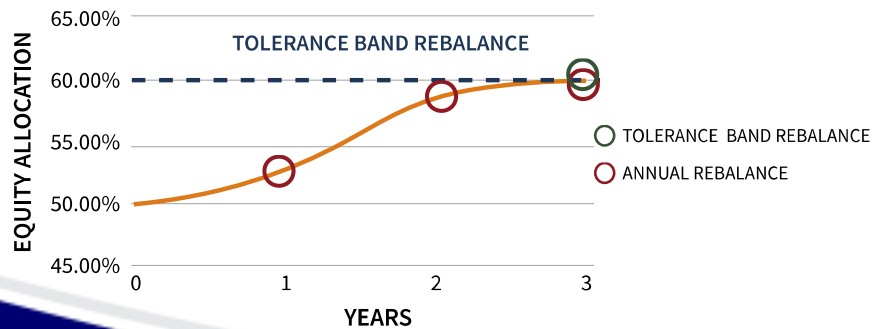


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## Portfolio Rebalancing

- Tolerance Band Rebalancing
  - Can trigger rebalancing more *or less* frequently!

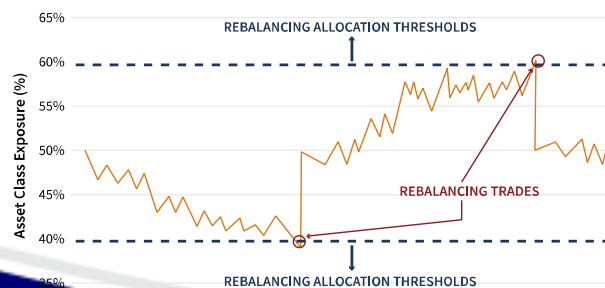


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## Portfolio Rebalancing

- Tolerance Band Rebalancing
  - Presumes that asset classes will only outperform or underperform each other by “so much” before snapping back
  - Sample tolerance band could be +/- 20% of target weighting

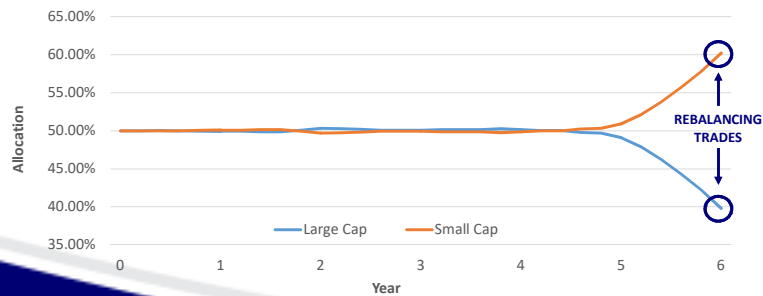


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## Portfolio Rebalancing

- Tolerance Band Rebalancing
  - If investments trend together, rebalancing trade frequency (and transaction costs) are just reduced
    - So it's really all about *relative* returns

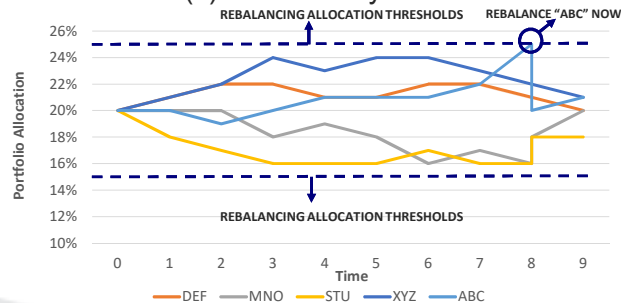


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## Portfolio Rebalancing

- Tolerance Band Rebalancing
  - In a multi-asset-class portfolio, rebalancing only triggers for the investment(s) that actually cross the thresholds



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## Portfolio Rebalancing

- Finding the Optimal Tolerance Bands
  - Absolute thresholds
    - Become impossible to trigger for small investments and with uneven weightings
    - If the portfolio is 90/10, then going +/- 10% will “never” trigger a bond trade, might have to be smaller
    - If the portfolio is 50/10/10/5/5/5/5 then a smaller threshold will trigger ‘constant’ rebalancing on the core!

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## Portfolio Rebalancing

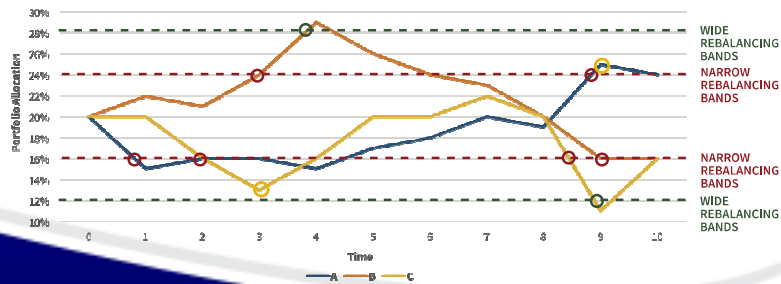
- Finding the Optimal Tolerance Bands
  - Relative thresholds becomes necessary
    - 20% of original target
      - 50% allocation is at +/- 10%
      - 5% allocation is at +/- 1%
    - Still has to beat *everything else* by ~20% to actually trigger this (even just for a 1% change)

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## Portfolio Rebalancing

- Finding the Optimal (Relative) Tolerance Bands
  - Still has a similar challenge to manage momentum
    - Narrow tolerance bands trigger 'extra' trades and sell winners early or over-invest losers still falling
    - But wide tolerance bands never trigger at all!



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## Portfolio Rebalancing

- Finding the Optimal Tolerance Bands
  - What appears to work in multi-asset-class portfolios?

Averages of Rebalance Return Benefits; 15 Rolling Periods with 12 Monthly Starts							
Look Intervals in Market Days							
Rebalance Bands	250	125	60	20	10	5	1
0%	0.13%	0.07%	0.08%	-0.02%	-0.16%	-0.40%	-2.44%
5%	0.13%	0.09%	0.11%	0.10%	0.10%	0.11%	0.09%
10%	0.15%	0.13%	0.18%	0.16%	0.19%	0.18%	0.16%
15%	0.15%	0.19%	0.30%	0.26%	0.25%	0.23%	0.22%
20%	0.16%	0.22%	0.25%	0.33%	0.38%	0.39%	0.38%
25%	0.14%	0.21%	0.21%	0.22%	0.27%	0.30%	0.35%
100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Source: Daryanani, G. (2008). Opportunistic Rebalancing: A New Paradigm for Wealth Managers. Panel A of Table 3. *Journal of Financial Planning*.

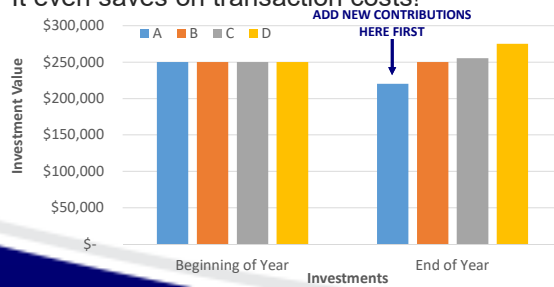
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## Portfolio Rebalancing

- Rebalancing Strategies For Savers

- For savers, simply add to the investment that is performing the worst!
- You're systematically buying low!
- It even saves on transaction costs!



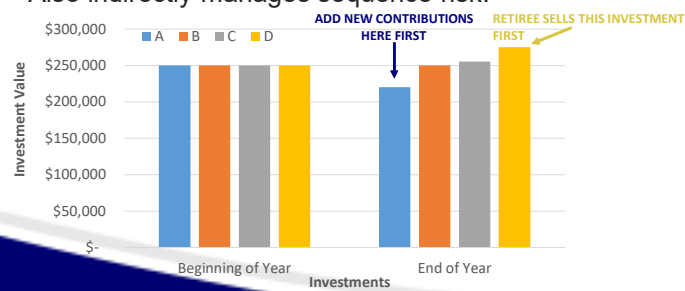
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## Portfolio Rebalancing

- Rebalancing Strategies For Retirees

- Works in reverse of savers – sell whatever is overweight
- You're systematically selling high!
- Again saves on transaction costs!
- Also indirectly manages sequence risk!



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## Portfolio Rebalancing

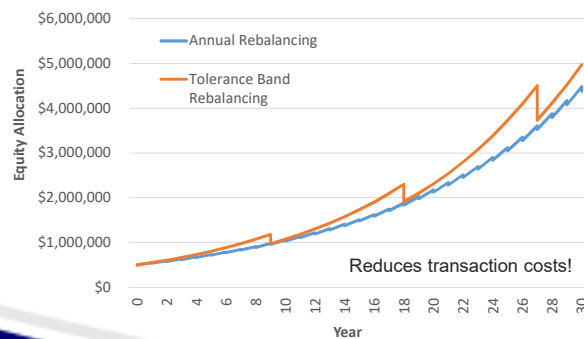
- Using Dividends & Interest For Rebalancing?
  - Better than just auto-reinvesting into the original?
    - But will depend on your transaction costs for reinvest (vs buying something new?)
  - May want to accumulate until cash is at a critical mass?
    - Large enough to manage transaction cost, low enough to avoid cash drag?
    - Unless you have NTF investment options?

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## Portfolio Rebalancing

- Tolerance Vs Time Interval Rebalancing
  - More favorable when markets are up on average



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## Portfolio Rebalancing

- Economic Benefits of Rebalancing

- Returns generally 0.50% *lower* from time-based rebalancing
  - Though *risk-adjusted* returns were improved

	Never	Annually	Quarterly	Monthly
Average Annualized Return	9.1%	8.6%	8.6%	8.5%
Volatility	14.4%	11.9%	12.2%	12.1%

- Daryanani found slight return enhancement from tolerance bands
  - Long-term value of ~0.40%/year
  - Greater value in times of volatility?

Averages of Rebalance Return Benefits; 15 Rolling Periods with 12 Monthly Starts							
Look Intervals in Market Days							
Rebalance Bands	250	125	60	20	10	5	1
0%	0.13%	0.07%	0.08%	-0.02%	-0.16%	-0.40%	-2.44%
10%	0.15%	0.13%	0.18%	0.16%	0.19%	0.18%	0.16%
20%	0.16%	0.22%	0.25%	0.33%	0.38%	0.39%	0.38%
25%	0.14%	0.21%	0.21%	0.22%	0.27%	0.30%	0.35%

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## Portfolio Rebalancing

- Economic Benefits of Rebalancing

- Value depends on what you rebalance amongst?

	Expected Returns	Volatility	Correlations
Good for Rebalancing	Similar	High	Low
Bad for Rebalancing	Different	Low	High

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## Portfolio Rebalancing

- “Cutting Edge” Rebalancing Theory
  - Different tolerance bands for different investments?
  - Asymmetric tolerance bands?
    - Since markets rise up longer/further than they decline...
  - Ideal frequency to “check” rebalancing opportunities?
    - Check monthly? Weekly? Daily?
    - Software to automate checking?

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## Portfolio Rebalancing

- Summary of Rebalancing
  - More about risk management than return enhancement
    - Across stocks/bonds, return improvement is *modest at best*
  - Time-based rebalancing is somewhat inefficient
    - Excess frequency and transaction costs in momentum markets
    - And can miss short-term opportunities in volatility
    - Improves risk-adjusted returns “in spite of” itself?
  - Tolerance-band strategies appear more favorable
    - Can target ~20% bands
    - Check often, trade when necessary
    - Target existing inflows/outflows to further minimize transaction costs

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Questions?

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