INVESTMENT TRIVIA

Re-balancing of investment portfolios: A free lunch?

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Part 7:

Does the re-balancing of investment portfolios lead to enhanced returns over time?

The potential benefit of re-balancing:

The re-balancing of an investment portfolio implies that the exposure to “expensive” assets is trimmed down to their strategic allocation benchmarks while the proceeds are then used to acquire more of “cheaper” assets. Basically, it is akin to “selling high, buying low” or selling strong performers and buying more of those assets that lagged in recent periods. The potential benefit rest upon the notion that no asset class will always yield superior returns relatively to other asset classes – some mean reversion of returns within and across asset classes are most likely.

For example, consider the following strategic asset allocations in an investment portfolio: 60% equities, 30% bonds, and 10% cash holdings. Due to strong equity market returns the actual exposure of equities in a portfolio increased to 75% of total assets. A re-balancing of portfolio assets means that 15% of the assets invested in equities holdings will be redeemed and the proceeds will be used to increase the corresponding exposures of bonds and cash holdings back to their strategic benchmarks. It is likely that asset classes that previously lagged in returns, will do relatively much better in the following period.

An additional factor to consider is the changing volatility (“risk”) profile of an investment portfolio that is allowed to drift away from its strategic asset allocations over time. For example, the returns from a portfolio with a 75% equity exposure is much more volatile or unpredictable than a portfolio with 60% exposure to equities.

Key phrases:
“Selling high, buying low”
“Mean-reversion of asset class returns”
“Portfolio drift and changing risk profile”

The potential downside to re-balancing strategies:

- Transactional costs to implement selling and buying of assets
- Capital gains and tax implications when assets are redeemed
- Time and effort required, either by oneself or appointed manager/adviser

Methodology:

- Asset allocation benchmarks for the investment portfolio
  - 60% equities
  - 30% bonds
  - 10% cash

- Re-balancing strategies:

  - *Period-specific*; e.g. annually and biennially (every two years).

  - *Period-specific and asset allocation threshold*; e.g. re-balance portfolio when an asset class deviates more than 5 percentage points and 10 percentage points respectively from its strategic benchmark, but with a further restriction that re-balancing will not take place more than once per annum.

  - In total four re-balancing strategies; *annual*, *biennially*, *5% threshold* and *10% threshold*.

- Compare the *no-rebalanced* portfolio returns with the four re-balanced portfolio returns over different long-term investment periods.

Data:

- Annual asset class returns from 1989 – 2013

YEAR	EQUITY	BONDS	CASH
1989	56%	22%	14%
1990	-5%	16%	15%
1991	31%	14%	14%
1992	-2%	28%	12%
1993	55%	32%	11%
1994	23%	-9%	10%
1995	9%	30%	11%
1996	9%	7%	12%
1997	-5%	29%	17%
1998	-10%	5%	17%
1999	61%	30%	16%
2000	0%	20%	11%
2001	29%	18%	11%
2002	-8%	16%	12%
2003	16%	18%	12%
2004	25%	14%	8%
2005	47%	11%	8%
2006	41%	5%	8%
2007	19%	4%	9%
2008	-23%	17%	12%
2009	32%	-1%	9%
2010	19%	15%	7%
2011	3%	9%	6%
2012	26%	16%	5%
2013	21%	1%	5%
Average return p.a.	19%	15%	11%
Volatility	22%	11%	3%

Results:

Long-term investment periods ended 31 December 2013

- No re-balancing versus re-balanced strategies

Period (years)	No re-balancing	Annually	Biennially	5% Threshold	10% Threshold
25	15.7%	16.0%	15.9%	16.0%	15.8%
24	14.7%	15.0%	15.0%	15.0%	14.8%
23	15.3%	15.6%	15.6%	15.0%	15.4%
22	14.9%	15.2%	15.2%	15.2%	15.0%
21	15.3%	15.5%	15.6%	15.5%	15.7%
20	14.0%	14.3%	14.3%	14.2%	13.9%
19	14.1%	14.4%	14.4%	14.3%	14.5%
18	14.1%	14.3%	14.4%	14.2%	14.3%
17	14.4%	14.7%	14.7%	14.5%	14.6%
16	15.0%	15.1%	15.1%	15.0%	15.2%
15	16.3%	16.4%	16.4%	16.4%	16.3%
14	14.4%	14.5%	14.5%	14.5%	14.6%
13	15.0%	15.1%	15.1%	14.9%	14.9%
12	14.3%	14.4%	14.4%	14.3%	14.6%
11	15.6%	15.6%	15.7%	15.6%	15.7%
10	15.5%	15.6%	15.7%	15.6%	15.6%

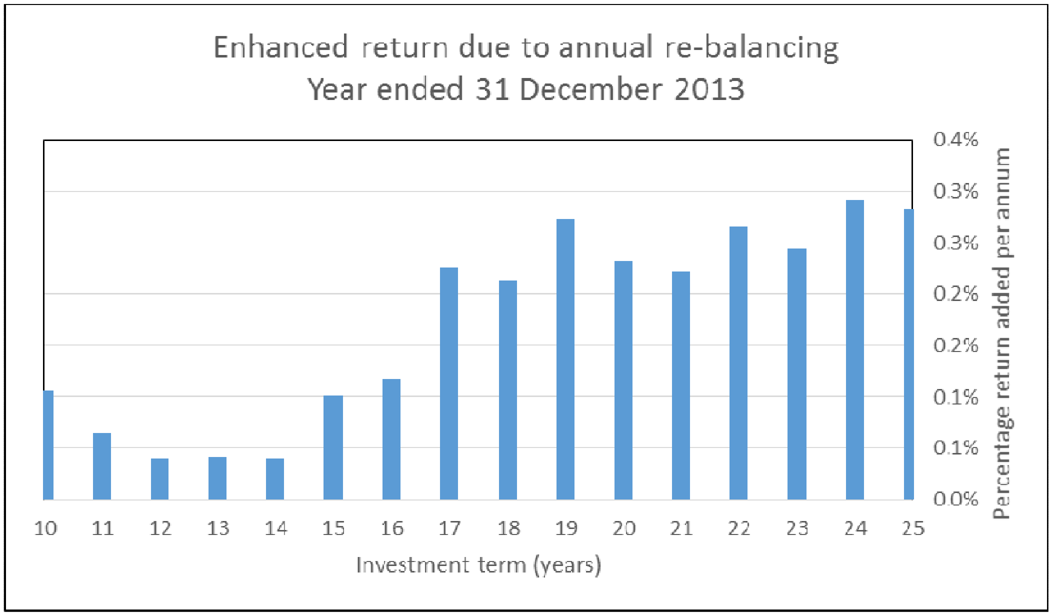
No-rebalancing

- Deviations from benchmarks

Asset class	Equities	Bonds	Cash
Benchmark	60%	30%	10%
Maximum exposure	75%	39%	10%
Minimum exposure	54%	22%	3%

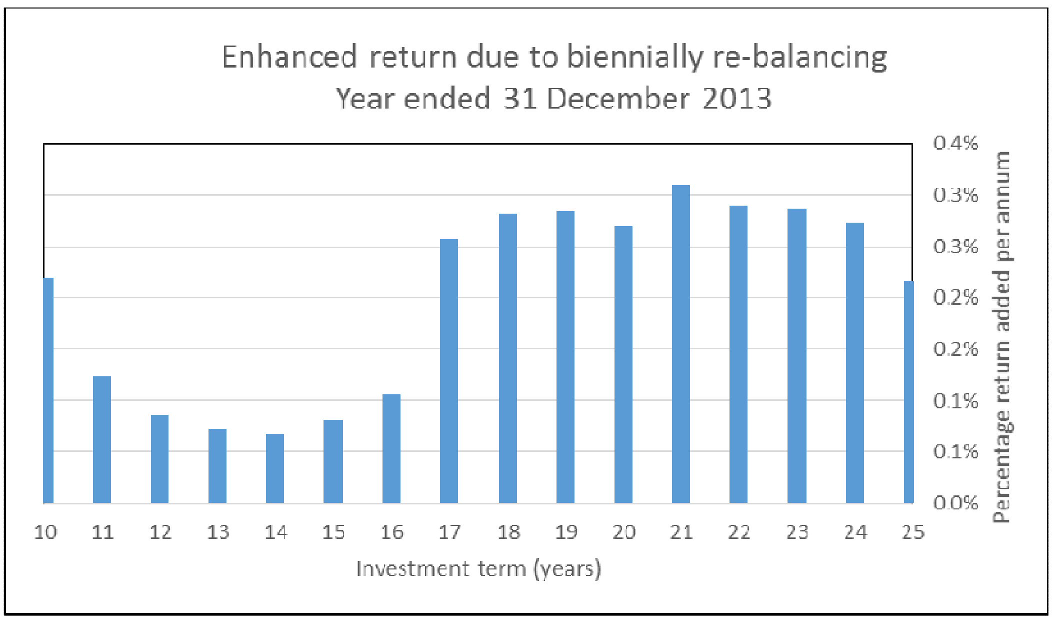
Annual re-balancing

- Re-balanced over 25-year period: 25 times



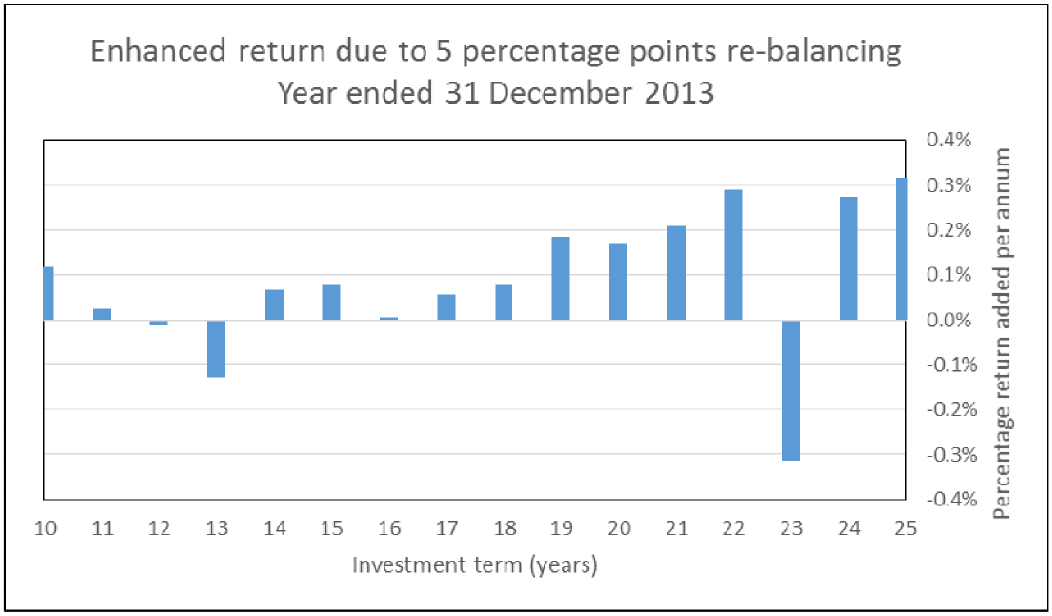
Biennially re-balancing

- Re-balanced over 25-year period: 12 times



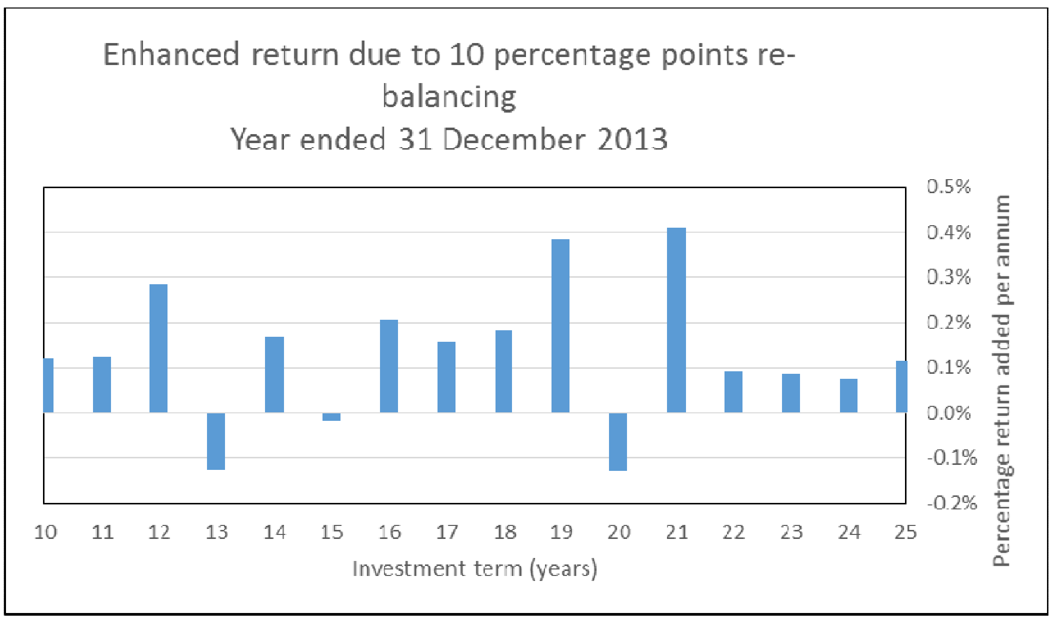
5% Threshold re-balancing

- Re-balanced over 25-year period: 9 times



10% Threshold re-balancing

- Re-balanced over 25-year period: 2 times

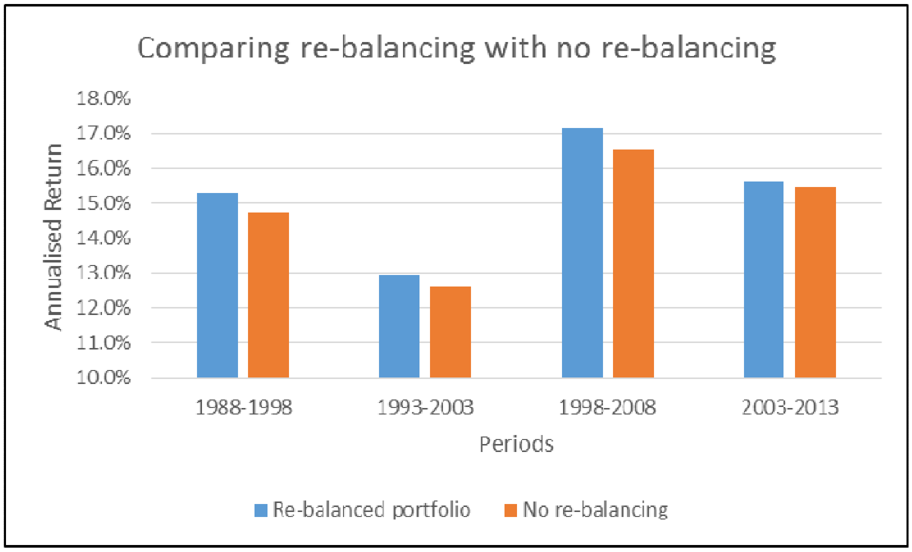


Different time-periods

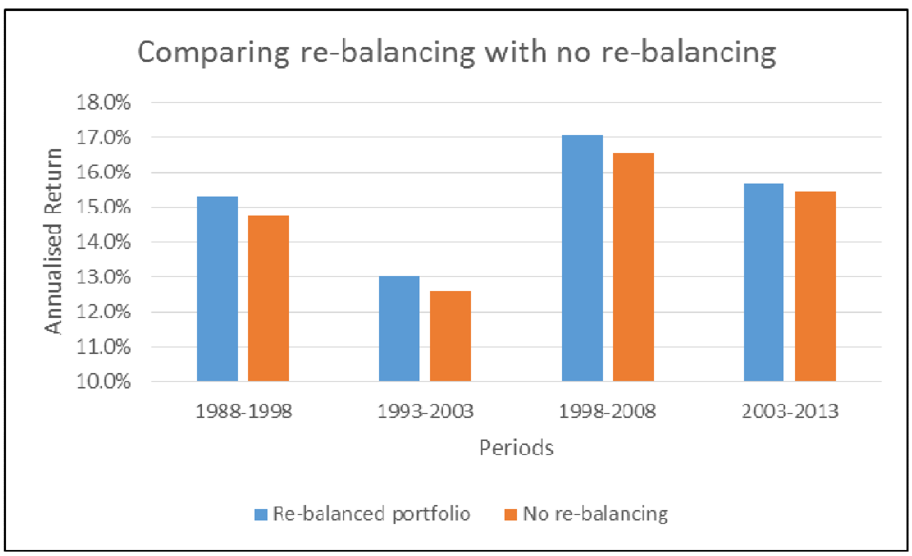
- 10-year periods no-rebalancing versus re-balancing strategies:

Period	No re-balancing	Annually	Biennially	5% Threshold	10% Threshold
1988-1998	14.7%	15.3%	15.3%	15.5%	14.7%
1993-2003	12.6%	13.0%	13.0%	13.0%	12.6%
1998-2008	16.5%	17.1%	17.0%	16.9%	17.1%
2003-2013	15.5%	15.6%	15.7%	15.6%	15.9%

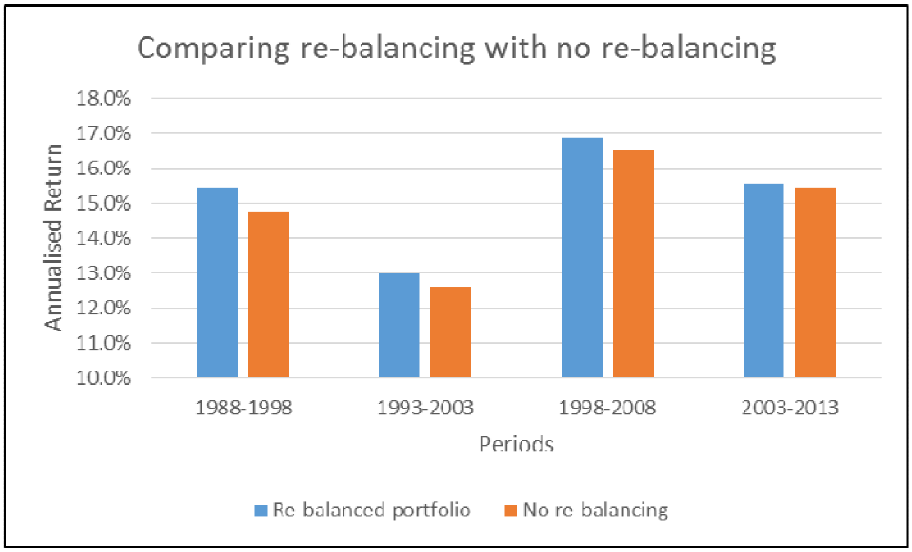
Annual re-balancing



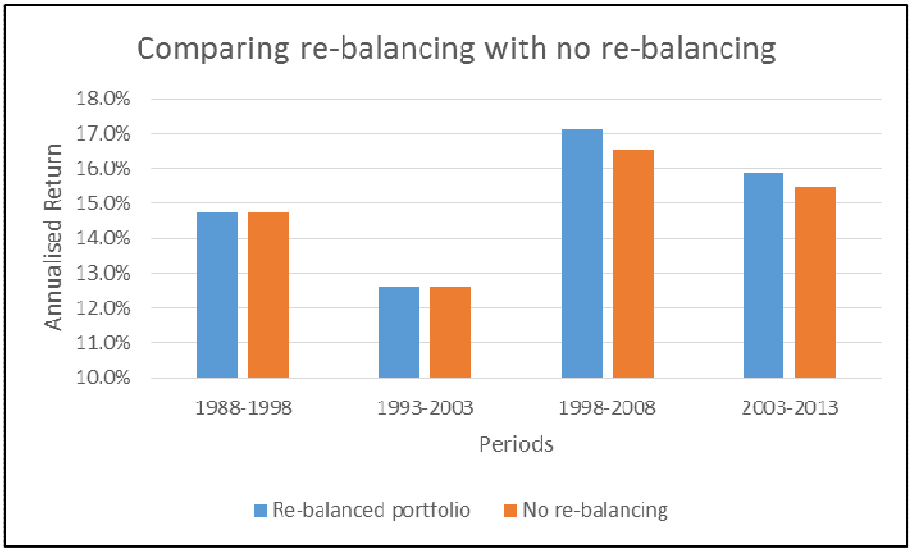
Biennially re-balancing



5% Threshold



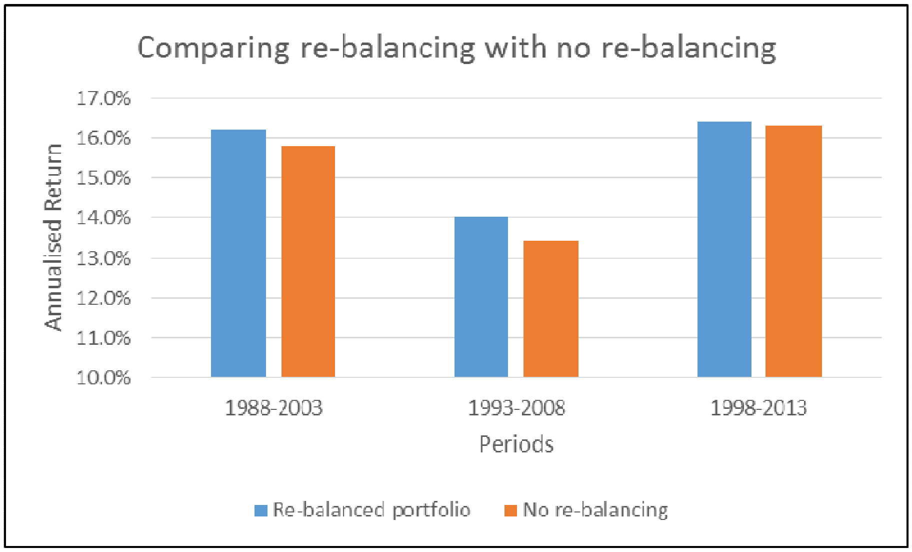
10% Threshold



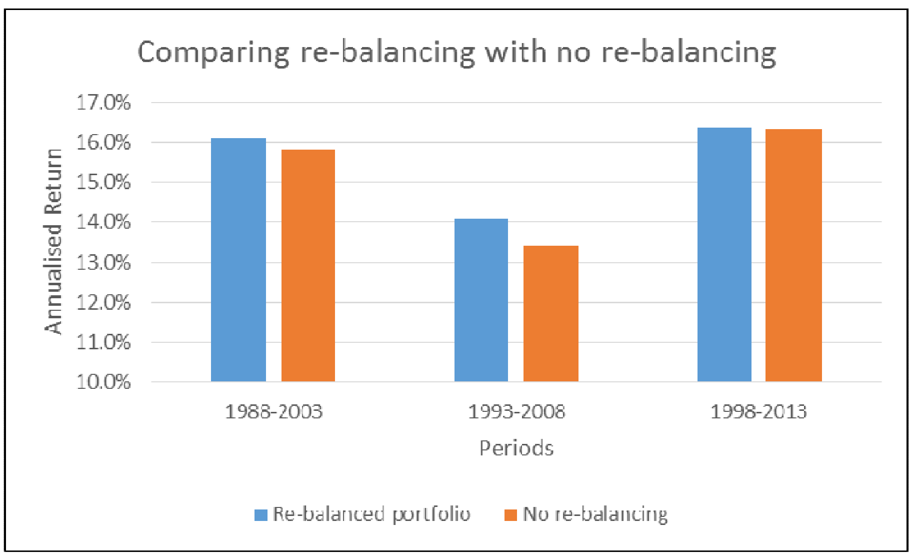
- 15-year periods no-rebalancing versus re-balancing strategies:

Period	No re-balancing	Annually	Biennially	5% Threshold	10% Threshold
1988-2003	15.8%	16.2%	16.1%	16.2%	15.8%
1993-2008	13.4%	14.0%	14.1%	14.0%	13.8%
1998-2013	16.3%	16.4%	16.4%	16.3%	16.6%

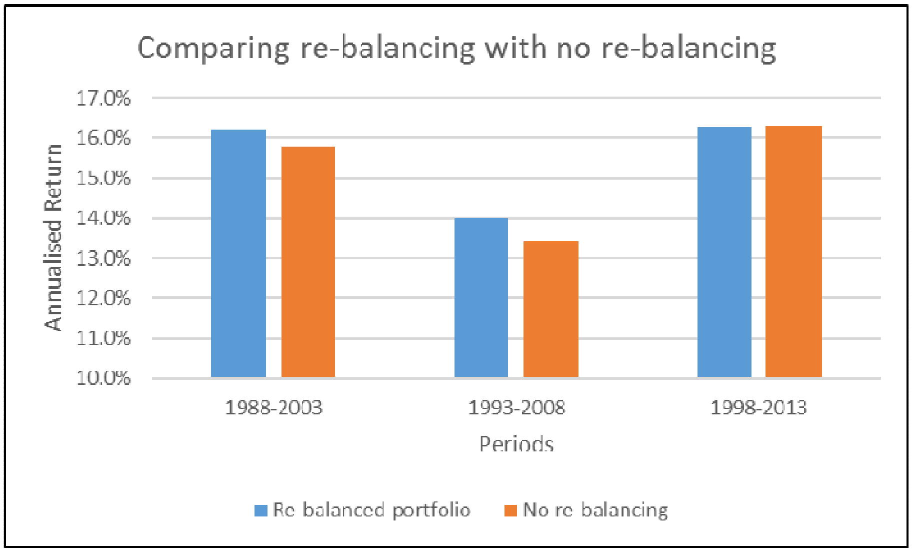
Annual re-balancing



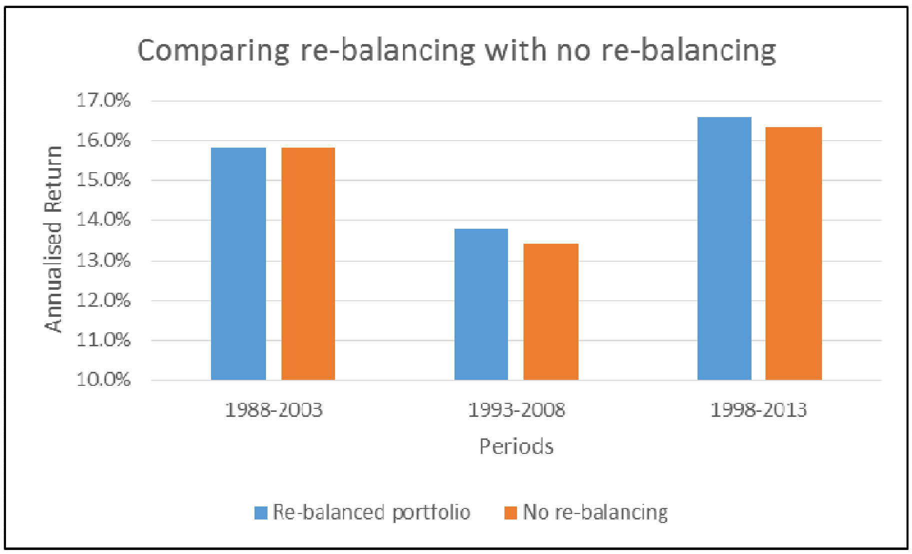
Biennially re-balancing



5% Threshold



10% Threshold



Conclusions:

- In the majority of long-term investment periods and across all re-balancing strategies evaluated, returns were enhanced by an average factor of 0.2% per annum. The margin of outperformance varied between 0.1% and 0.8% per annum.

- The value of R10,000 after *n* years at a standard, no-rebalanced portfolio return of 10% per annum and enhanced returns due to re-balancing of a portfolio:

Return p.a.	20 years	30 years	40 years
10.0%	67,275	174,494	452,593
10.1%	68,509	179,316	469,346
10.2%	69,764	184,267	486,703
10.3%	71,041	189,350	504,685
10.4%	72,340	194,568	523,315
10.5%	73,662	199,926	542,614
10.6%	75,007	205,425	562,607
10.7%	76,375	211,071	583,317
10.8%	77,767	216,867	604,770

- The period-specific re-balancing strategies (annually or biennially) yielded the most consistent outperformance results, however, greater outperformance results were achieved at times with the less frequent threshold re-balancing strategies.

- Thus, it seems that the re-balancing of an investment portfolio offers some free lunch to investors. Re-balancing is probably of all market timing strategies the most efficient strategy to follow. It is not clear which re-balancing strategy will always yield the best outcome, but it is perhaps more important to follow a process with pre-determined rules, e.g. period and allocation thresholds. Note, however, some caveats exists, especially regarding the transaction costs to implement the strategy and possible capital gains tax implications.

- Depending on the specific investment structures used investors may incur transactional costs to re-balance the portfolio while possible capital gains tax implications may arise from the redemptions of asset class investments. The potential gains from re-balancing can be negated by these cost factors.

- Many asset management firms provide multi-asset class solutions, which are actively-managed or passively-managed. These solutions offer investors a viable alternative to circumvent large transactional costs or potential capital gains tax in so far the fund manager is responsible for managing the asset classes within the investment's mandate and strategic asset allocation benchmarks. Currently, the re-balancing activities within such funds do not attract capital gains tax.

Further reading:

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