FRONTIER ADVISORS

# The Frontier Line

Thought Leadership and insights from Frontier Advisors

## Portfolio rebalancing: The Hidden Factor Exposure

Issue 108, September 2015

Frontier Advisors has been at the forefront of institutional investment advice in Australia for over two decades and provides advice over more than $250B in assets across the superannuation, charity, public sector and higher education sectors. The fact our advice is fully independent of product, manager or broker conflicts, means our focus is firmly on tailoring optimal solutions and opportunities for our clients.

*The Frontier Line* explores a range of investment issues and ideas to explain and illuminate areas for investors to be aware of and be thinking about. Our specialist and sector research teams constantly review and discover topics to provide new perspectives and enrich understanding of critical risks and opportunities.

Daniel Selioutine is an Associate Consultant at Frontier, having joined the business in September 2010. Daniel has oversight responsibilities for the currency sector and is a member of the Capital Markets and Quantitative Solutions Group teams.

Daniel's previous role was as a quantitative analyst at Antipodean Capital Management, a currency manager specialising in investment, research and overlay products.

Daniel has a Bachelor of Commerce (Hons) and is a CFA Charterholder.

**Frontier Advisors**
Level 16, 222 Exhibition Street
Melbourne, Victoria 3000
Tel +61 3 8648 4300

**www.frontieradvisors.com.au**

**@frontier_adv**

# Portfolio rebalancing: the hidden factor exposure

Conventional wisdom and academic research have long espoused the benefits of regular rebalancing as a way to preserve the risk and return profile of your portfolio through time.

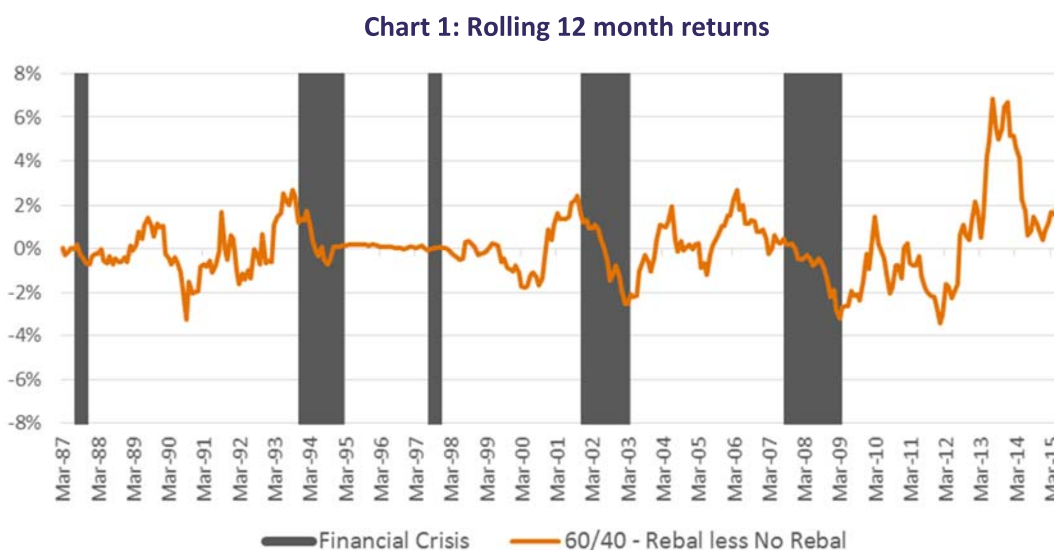
However, implicit in any decision to take profits from recent winners and double up on the recent losers is the unintended and often less understood consequence of creating a short exposure to momentum beta[1] in the portfolio. This consequential beta exposure results directly from the decision to rebalance and is important because it cannot be captured by standard risk systems relying on portfolio holdings data.

In this context, it is easy to see how momentum beta from rebalancing is less obvious to detect and more likely to be overlooked as an unintended risk in the portfolio.

Historically, rebalancing during prolonged periods of equity market stress has had a material negative effect on the portfolio.

Chart 1 shows a regularly rebalanced 60%/40% equity/bond portfolio experiences higher losses relative to the same portfolio with no rebalancing during significant market corrections.

**Chart 1: Rolling 12 month returns**




Source: Bloomberg, Frontier calculations. Returns are based on portfolios of 60% global equities and 40% global bonds . The impact of fees are excluded. The “no rebalancing portfolio” is rebalanced to the 60%/40% equity/bond mix at the start of each equity market downturn to assist with comparability.

[1] Momentum beta is a positive returning risk premia which attempts to capture trends in prices covering a variety of assets, markets and tradeable instruments.


©Frontier Advisors

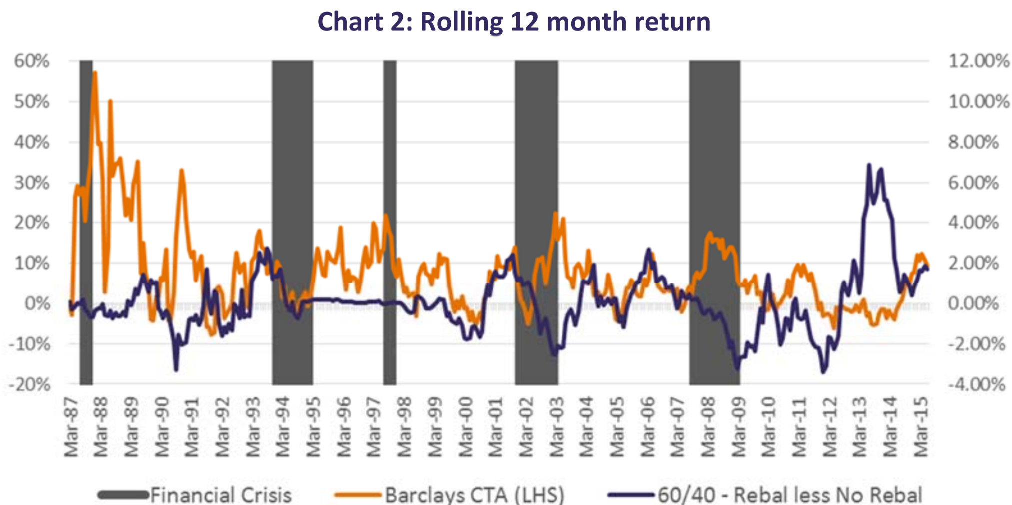
# Portfolio rebalancing: the hidden factor exposure

Chart 2 overlays the same chart with the Barclays CTA Index[2], which proxies the returns to momentum-based strategies. The chart shows a distinct tendency for momentum to outperform when the frequently rebalanced portfolio underperforms. This is because momentum based strategies will seek to trade with the trend (i.e. they will try to short equities as they fall) while funds rebalancing back to some target equity exposure will be trading against it (buying equities as they fall). Historically, this has proven to be a profitable strategy for Commodity Trading Advisors (CTAs) and a relative detractor for automatic rebalancing during major equity market corrections. This effect becomes visible because equity markets are moving rapidly and rebalancing decisions are occurring more frequently; often in the opposite direction to markets.

The result is a rebalanced portfolio whose downside protection characteristics during the course of an equity market correction are compromised versus not rebalancing (see charts 3 & 4 overleaf).

These charts show both the maximum drawdown and the standard deviation of returns are typically higher for the rebalanced portfolio during periods of significant market turmoil. This analysis is before the impact of any transaction costs, which would further weaken the case for pulling the rebalancing trigger early while equities are still correcting.

**Chart 2: Rolling 12 month return**




[2] The Barclays Index represents the aggregate performance of Commodity Trading Advisors, who seek to profit from momentum capture strategies.

# Portfolio rebalancing: the hidden factor exposure

**Chart 3: Maximum drawdown**

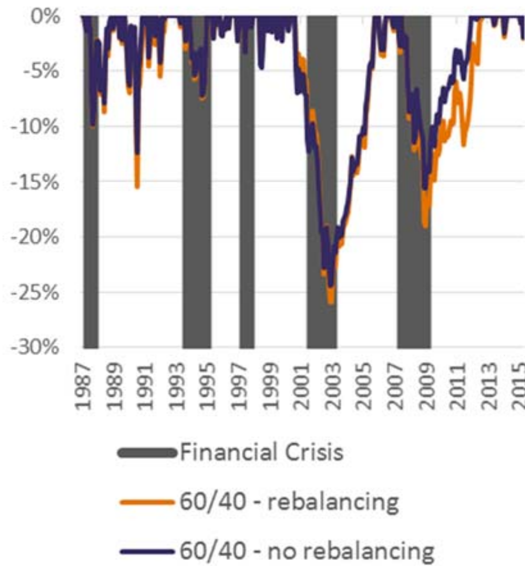
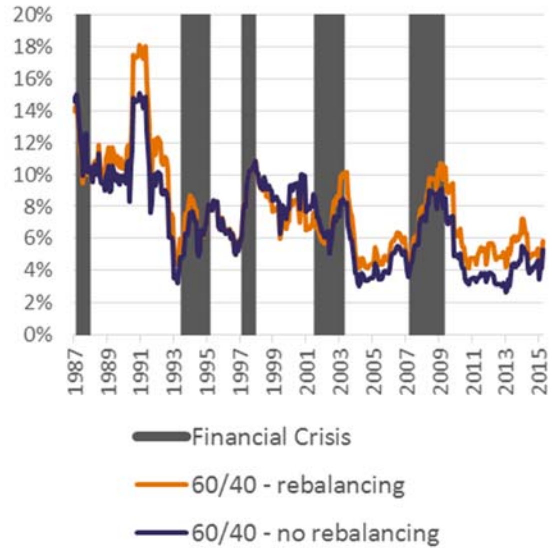
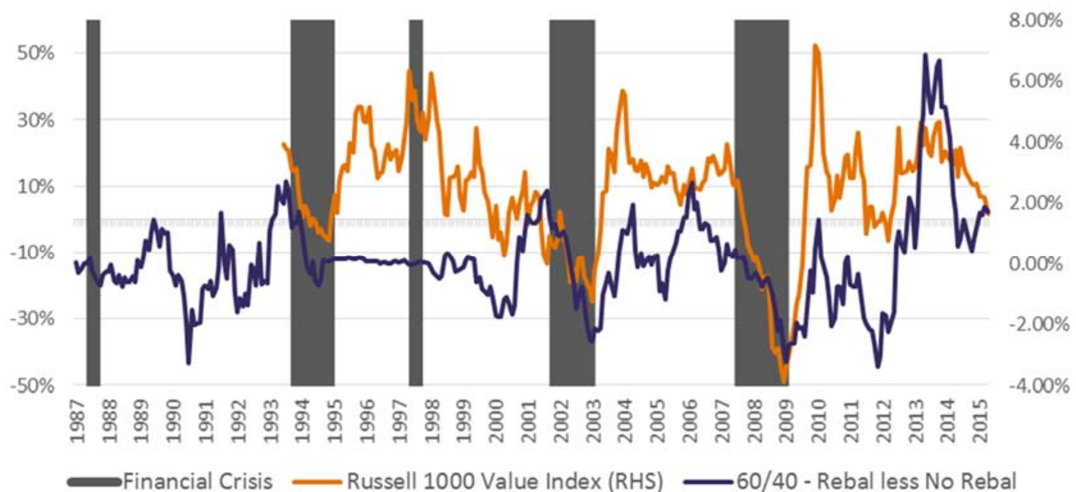



**Chart 4: Rolling 12 month standard deviation**




For their part, automatic rebalancing strategies do exhibit some resemblance to naïve value investing strategies in instances where it leads to buying "cheap" exposures and selling "expensive" exposures. Chart 5 shows the close historical relationship between the Russell 1000 Value Index, which proxies value investing in international equities, with the relative performance of a frequently rebalanced 60%/40% equity/bond portfolio to the same portfolio with no rebalancing. Notably, there are periods where the two series track one another closely, indicating that frequent rebalancing creates something of a value-beta in the portfolio that exists outside of what can be quantified by standard risk systems using portfolio holdings data.

**Chart 5: Rolling 12 month returns**





©Frontier Advisors 

## The path of least regret…

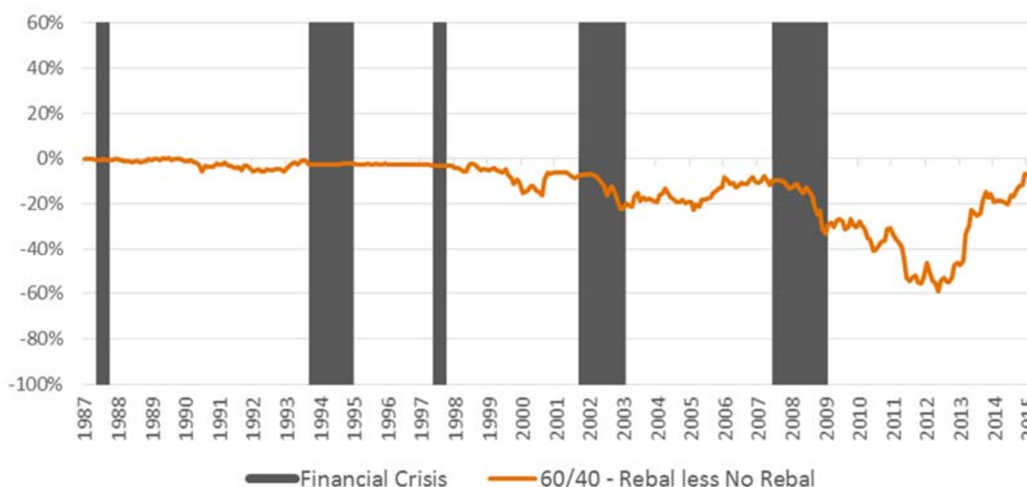
In a theoretical world, the holy grail of any rebalancing strategy would be to predict periods when momentum is likely to outperform and hold off on rebalancing until value-based investing is back in favour.

In practice however, the reality for most funds is very different.

Returns to beta premia like momentum and value are arguably more difficult to predict than asset class returns; reducing the likelihood of investors being able to perfectly time their rebalancing decisions.

In a historical context, it is pleasing to observe the difference in cumulative returns between rebalancing and not rebalancing have evened out in the months following a financial crisis (see chart 6). The global financial crisis was the exception in that it was a protracted crisis in which the cumulative losses associated with regular rebalancing during the height of the crisis took an extended period to recover. The global financial crisis also highlighted the importance of adequately managing liquidity risk; which was an impediment for many funds in their rebalancing effort (we explore this in the following case study).

**Chart 6: Cumulative returns**



## Case Study: rebalancing in a liquidity

The global financial crisis highlighted that systemic market corrections were not merely a rebalancing issue; they also posed serious liquidity risks to investors with exposure to unlisted assets. APRA has since mandated that all Australian superannuation funds need to have adequate processes for managing their illiquids exposure.

The global financial crisis was, in many ways, the "perfect storm" for a number of funds because it coincided with increased member switching, currency hedging losses, capital calls from prior commitments to unlisteds and asset classes that were liquid until they became illiquid.

Chart 7 depicts the impact of the global financial crisis on the liquidity of a 50/30/20 portfolio of equities/bonds/unlisted assets.

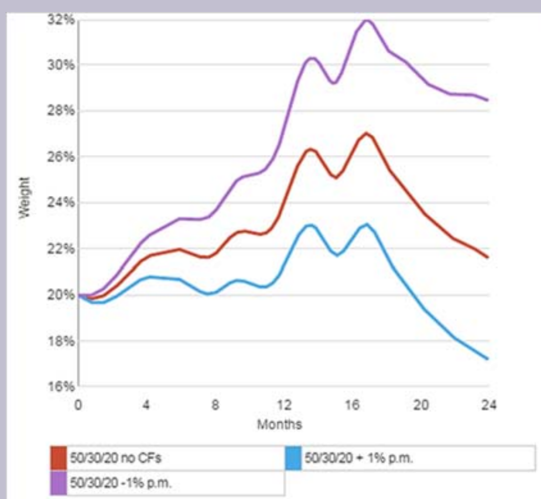
The red line is the path of illiquids (the percentage of illiquid assets over total assets) for a fund with no net cash flows, the blue for a fund with cash inflows of 1% per month and the purple a fund with cash outflows of 1% per month. The analysis is based on output from Prism and assumes the portfolio is not rebalanced.

Chart 8 shows the change in portfolio characteristics as the financial crisis plays out in the months following Lehman's collapse.

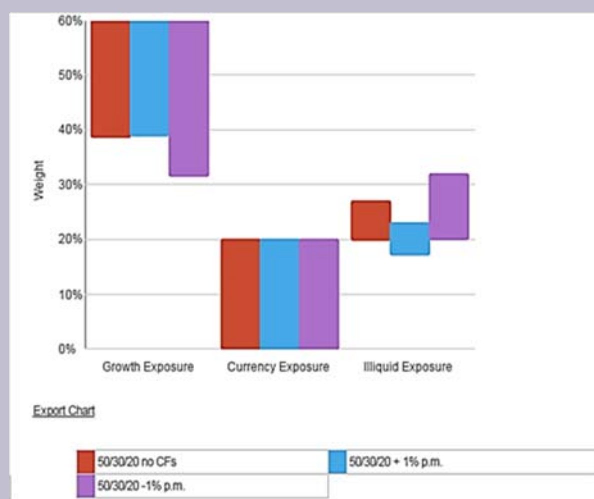
While Chart 8 suggests an intuitively appealing preference for rebalancing back to strategy (namely, to preserve the portfolio's risk and return profile), one must recognise that the portfolio in a market crisis is almost entirely disjoint from long-run strategy. That is to say, the risk and return assumptions used to derive the strategic ideal are far from current asset class characteristics in the height of the financial crisis.

In this context, portfolio characteristics that were relevant pre-crisis (such as the proportion of growth assets) change their meaning; making it important to re-assess the asset allocation in the context of the current environment and its implications for meeting targeted risk and return objectives.

### Chart 7: Illiquid exposure




### Chart 8: Change in portfolio characteristics




Source: Output from Frontier's Prism.


©Frontier Advisors 

## Conclusion

The "path of least regret", or the rebalancing strategy which feels like you've 'lost' the least irrespective of the outcome, is an intuitively appealing framework for thinking about rebalancing decisions.
The concept however will mean different things for different funds.

Funds with the lowest tolerance for active risk, relatively infrequent Investment Committee meetings and smaller internal teams may prefer to continue with their existing approach; noting that performance has historically evened out between the two approaches after a year or two.

Funds with higher tolerance for active risk but without an internal capability to make calls on equity markets may prefer evergreen investments that reduce some of the impact of the drawdown from automatic rebalancing decisions (for instance, gaining long momentum exposure through CTAs and/or tail risk protection strategies may benefit the fund in these conditions).

Finally, funds with a strong capability to make active asset allocation decisions may be comfortable in choosing to hold off on rebalancing until their views about the trajectory of equity markets become more positive. The ultimately irony however may be that the "path of least regret" may be something that is chosen for you – the global financial crisis was one example where the decision to rebalance was taken away from many by an inability to do so.

**About Frontier Advisors:** Frontier Advisors is one of Australia's leading asset consultants. We offer a range of services and solutions to some of the nation's largest institutional investors including superannuation funds, charities, government / sovereign wealth funds and universities. Our services range from asset allocation and portfolio configuration advice, through to fund manager research and rating, investment auditing and assurance, quantitative modelling and analysis and general investment consulting advice. With around $230 billion in funds under advice we have been providing investment advice to clients since 1994. Our advice is fully independent of product, manager, or broker conflicts which means our focus is firmly on tailoring optimal solutions and opportunities for our clients.

Frontier does not warrant the accuracy of any information or projections in this paper and does not undertake to publish any new information that may become available. Investors should seek individual advice prior to taking any action on any issues raised in this paper. While this information is believed to be reliable, no responsibility for errors or omissions is accepted by Frontier or any director or employee of the company.

Frontier Advisors Pty Ltd   ABN 21 074 287 406   AFS Licence No. 241266