

Loss aversion, "FoMo", anxiety and mistiming

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This paper aims to demonstrate four common behavioural problems which make the journey of investing particularly challenging for many investors. An understanding of each of these can help address some of the barriers which prevent investors from staying the course and meeting their retirement goals.

A DEFINITIONAL OVERVIEW

Loss aversion

The work of psychologists Kahneman and Tversky demonstrated that losses are felt far more acutely than gains. Indeed, their work has shown that this is in the order of two times.¹ Markets do not go up in a straight line, and over short-to-medium time frames, losses are very common. As a result, with investors feeling a greater impact from losses psychologically, it can often feel like "one step forward and two steps back".

Fear of missing out (or, as it is now fashionably abbreviated, "FoMo")

The author's key conjecture (based on conversations with hundreds of financial advisers and many investment researchers) is that in a similar way to loss aversion, relative underperformance is also felt more acutely than relative outperformance. With funds generally being compared to a benchmark, some investors treat this opportunity cost as a "loss". It may be that this phenomenon is more relevant to professionals who have a greater tendency to compare managers over a range of timeframes. This is an area that certainly merits additional research. When one examines the data on fund flows to particular managers, there is a significant body of evidence pointing to this behavioural pattern.²

Anxiety

Given the two observations above, a tendency to check returns more frequently leads to a higher probability of encountering negative outcomes at a particular point in time. On a daily basis, markets are little more than a coin toss, but over the long run – say, 10 years or more – equity markets rarely fall. The same is true for the track record of long-term outperformance by the best fund managers in the industry. Good managers do not always appear at the top of the monthly, quarterly or even annual performance charts, and it is clear

that luck is a key driver in the short-term where individual transient events can have an exaggerated impact on performance outcomes.

Mistiming

Investors have a tendency, in aggregate, to chase assets that have performed well. From experience running a fund management business, inflows tend to follow good performance and vice versa. It is this very tendency that can be exploited in markets by managers with an understanding of investor psychology – knowing that good companies going through a soft patch can be overlooked and can offer outsized rewards to investors.

When these four elements are combined and considered together, it's possible to better understand how investors feel. That can increase a fund manager's or financial adviser's empathy with clients – but it does not solve the problem.

An appropriate solution is to commit to a long-term investment in equities with a manager with an outstanding long-term track record, coupled with a savings plan, check the balance infrequently (if at all) and harvest the rewards after the full investment horizon has borne out. The only reasons to change direction should be if the investor's own goals change, or if the fund manager changes its approach.

A NUMERICAL DEMONSTRATION

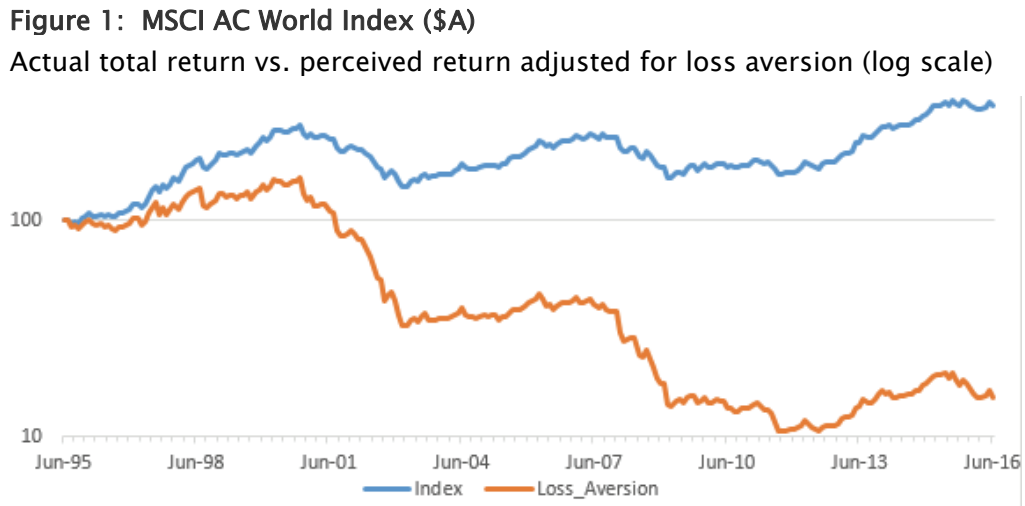
The remainder of this paper offers a numerical demonstration of how the above four concepts are applied, to understand their practical effect on investor behaviour.

Loss aversion

Firstly, the psychological impact of loss aversion can be quantified by taking a data set of monthly returns and adjusting any months with negative returns by doubling the loss in that month, which gives what one may call the "psychological return" or the perceived return, and then compounding that psychological return. For example, an actual monthly return series of +2%, -3%, +4%, -1% and +2% would be adjusted as +2%, -6%, +4%, -2% and +2% to express how the investor feels due to loss aversion.

To run this model against the MSCI All Country World Index, the actual compound total annual returns over the 21 Australian financial years to 30 June 2016 is +6% per annum. However, adjusted for loss aversion (2X) on a monthly basis, it has felt like a horrible -9% per year. Note that the amplifying effect can be extreme under extreme market conditions. For example, during the period when the Tech Bubble went from peak to trough between October 2000 and March 2003, the Index returned -48%, but measured monthly and adjusted for loss aversion, it felt more like -79%. Similarly, the -38% return during the Global

Financial Crisis (GFC) felt as if it had been close to a -68% loss from May 2007 to March 2009. This 21-year period can be charted to visualise the effects of loss aversion on an investor's psychological journey (Figure 1).



Source: Platinum Asset Management

Fear of missing out ("FoMo")

To quantify the effect of FoMo on how investors feel requires another adjustment be applied to a fund's absolute return when its relative performance versus its benchmark index is negative. This adjustment is only made if that fund's absolute return is positive as the loss aversion adjustment is applied in months of negative absolute returns. For example, in a month where a fund's return is +3% while its benchmark achieves +5%, the fund's return is adjusted by subtracting the underperformance (i.e. 2%), thereby giving a "FoMo-adjusted" return of +1%. This means that in a month where the fund underperformed the benchmark by 2%, its +3% absolute return feels more like a mere +1% as a result of the "fear of missing out".

Compounded over the long-term, the aggregate impact of cognitive biases such as loss aversion and FoMo can be significant, and the effect of distortion can cloud an investor's judgment, leading to poor investment decisions. When a fund's returns are adjusted for FoMo in addition to loss aversion, a monthly return series will give a perceived return which is generally far less than the actual return over the same period. Even for funds with excellent long-term track records, investors can feel as if they had lost money by checking performance too often along the way and by reacting (or, rather, over-reacting) to losses in both absolute and relative terms.

The process required to carry out this analysis for any fund is fairly straightforward:

1. Take the monthly return series of the fund and line it up with its benchmark returns.
2. Adjust the fund's actual returns for the impact of loss aversion by doubling the actual monthly return of any month in which the return is negative (e.g. a monthly return of -1% becomes -2%).
3. Adjust the fund's actual returns for the impact of FoMo by subtracting the fund's underperformance vis-à-vis the benchmark from its actual monthly return for any month in which the fund's absolute performance is positive but relative performance is negative. For example, if the fund returned 4% in a particular month while the index returned 8%, the "FoMo-adjusted return" would be $(4\% - (8\% - 4\%)) = 0\%$.
4. For all months where the fund's absolute return is positive and its relative performance is positive or zero (i.e. it either beat or matched the index), no adjustment is applied and the fund's actual return is retained.

One can then compound up the "FoMo-adjusted" returns and compare them with the fund's actual returns. The results can be quite stark. They also demonstrate issues of the order in which losses and underperformance impact investors' psychological journey.

To illustrate the startling impact of these cognitive biases, four simulated models were created to show the different psychological reactions of investors under different market conditions. The models assume a normal market return of 10% per annum for the benchmark with 12% volatility, and a hypothetical fund outperformance of 3% per annum with 10% volatility. The simulations cover a period of 60 months and apply the loss aversion and FoMo adjustments outlined above.

The compound return profiles of the random simulator are shown in Figure 2.

Figure 2: Fear of missing out simulations – compound returns

Simulation	Market b'mark return	Fund return	FoMo-adjusted fund return
#1	15.4%	32.6%	14.6%
#2	9.7%	18.0%	1.6%
#3	6.9%	6.2%	-14.9%
#4	7.0%	4.8%	-18.4%

Source: Platinum Asset Management. The models assume a normal market return of 10% per annum for the benchmark with 12% volatility, and a hypothetical fund outperformance of 3% per annum with 10% volatility. The simulations cover a period of 60 months and apply the loss aversion and FoMo adjustments outlined above.

The following figures give a visual of the results of the simulations.

Figure 3a: Monthly simulation 1

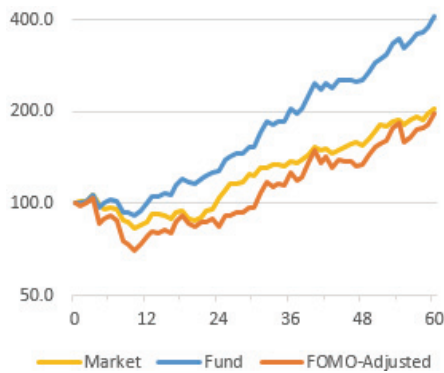


Figure 3b: Monthly simulation 2

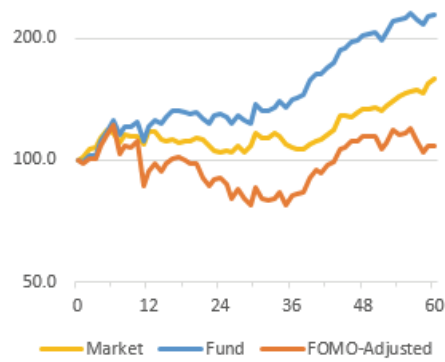


Figure 3c: Monthly simulation 3

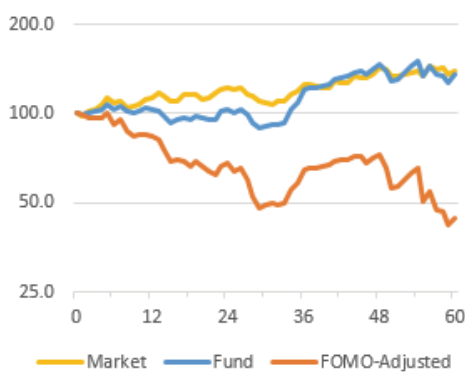
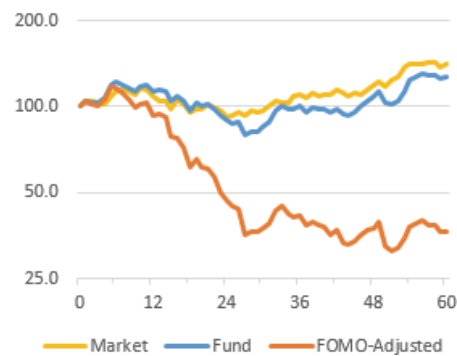


Figure 3d: Monthly simulation 4



Source: Platinum Asset Management

Anxiety

Anxiety from "over-checking" can be considered by re-running the exercise on the psychological impact of following a fund's monthly performance at different frequencies. Figure 4 (overpage) compares the psychological outcomes of applying loss aversion adjustments to the monthly, quarterly and yearly index return series respectively over the 21 Australian financial years to 30 June 2016. The message here is loud and clear – the more often one checks the numbers, the more painful the journey feels.³

By checking returns only once a year the psychological journey for equity investors improves substantially. But as one sees from the multitude of people buried constantly in their smartphones, detachment is not easy in the era of 24x7 connectivity.

Figure 4: The more often you check, the more painful the journey
(30 Jun 1995 to 30 Jun 2016)

	Checking monthly	Checking quarterly	Checking yearly
MSCI AC World Index (A\$) – Actual compounded annual return	5.9%	5.9%	5.9%
Returns adjusted for loss aversion based on frequency of checking	(8.6%)	(3.2%)	0.1%
Annualised psychological impact of loss aversion based on frequency of checking	(14.5%)	(9.1%)	(5.8%)

Source: Platinum Asset Management.

Mistiming

It is important to emphasise that investors chasing returns do themselves no favours. Investment returns are the key driver of fund management business success, if that is to be measured by net inflows, i.e. the balance of subscriptions less redemptions. The problem is that, for managers, the cyclical pattern of performance leads to a cycle in the demand for the manager's services that is counter to the best outcome for clients. Various studies, including those by the research firm DALBAR, have quantified this substantial loss from mistiming. Similar outcomes are found when looking at the author's firm's client data. This is one of the most damning observations on the investment industry's relationship with its clientele.

In tracking flows, a simple algorithm with four parameters has historically been a very good predictor for future flows based on the author's firm's client data. The four parameters are simply the one- and three-year relative and absolute returns, averaged to allow comparison over time. One needs to scale this metric against the specific business scale, market access and other such factors, but the basic methodology has general application.

The result produced by this algorithm highlights three trends:

1. Allocation to an asset class is driven by recent returns;
2. Within an asset class, the managers that have had top performance over that recent – typically, fairly short – period attract business; and,
3. The time frames are shorter than what one would hope, but are not inconsistent with the short holding periods for individual stocks and a "league table" mentality.

The algorithm's cyclical nature suggests that being contrarian has tended to be a lucrative approach. It also implies that to ask a manager about their recent flows, as many advisers

and researchers often do, is in essence a proxy to the question "how has your recent performance been, in absolute and relative terms".

The suggestion made earlier – an "invest and forget / wait for harvest time" approach – is to take the timing decision away by entering into a regular savings plan. By sharing these four observations and demonstrating the simple mathematics behind them for those with interest, it is hoped that clients can help themselves to better outcomes from mutual funds in future.

ENDNOTES

1. Kahneman, D., & Tversky, A. (1979), Prospect Theory: An Analysis of Decision under Risk, *Econometrica*, 47, 263–291.
2. For example, data from Morningstar's fund database over the period from 1997 to March 2016 demonstrate that, in aggregate, 5- and 4-star rated funds, plus new funds (which by their nature have low outflows), consistently garnered more than 100% of the net industry inflow.
3. Nassim Nicholas Taleb made this telling point in his book *Fooled by Randomness*. Assuming an investment with an annual return of 15% with 10% volatility, Taleb shows that the probability of making money increases over longer time periods. The following table is an expanded version of Taleb's example, showing that, conversely, the probability of loss increases with shorter time frames.

Period	Probability of making money	Period	Probability of losing money
Year	93%	Second	49.98%
Quarter	77%	Minute	49.83%
Month	67%	Hour	48.7%
Day	54%	Day	46%
Hour	51.3%	Month	33%
Minute	50.17%	Quarter	23%
Second	50.02%	Year	7%



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