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INSIGHTS FROM CFA SOCIETY SINGAPORE

Considering regret in optimal asset allocation for portfolios

Among different investors, the performance of speculative assets such as cryptocurrencies could potentially evoke different emotional responses



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HOW is risk defined in portfolio optimisation?

Usually with a volatility metric, and often one that places a particular emphasis on downside risk, or losing money.

But that only describes one aspect of risk. It does not capture the entire distribution of outcomes investors could experience.

For example, not owning an asset or investment that subsequently outperforms could trigger an emotional response in an investor – regret, for example – that resembles their reaction to more traditional definitions of risk.

That is why to understand risk for portfolio optimisation purposes, we need to consider regret.

Among different investors, the performance of speculative assets such as cryptocurrencies could potentially evoke different emotional responses.

Since I do not have very favourable return expectations around cryptocurrencies and consider myself relatively rational, if the price of Bitcoin increases to US\$1 million, I would not sweat it.

But another investor with similarly unfavourable Bitcoin return expectations could have a much more adverse response.

Out of fear of missing out on future Bitcoin price increases, investors may even abandon a diversified portfolio in whole or in part to

avoid such pain.

Such divergent reactions to Bitcoin price movements suggest that allocations should vary based on the investor.

Yet if we apply more traditional portfolio optimisation functions, the Bitcoin allocation would be identical – and likely zero – for the other investor and me, assuming relatively unfavourable return expectations.

Considering regret means moving beyond the pure math of variance and other metrics. It means attempting to incorporate the potential emotional response to a given outcome. From tech to real estate to tulips, investors have succumbed to greed and regret in countless bubbles throughout the years.

That is why a small allocation to a “bad asset” could be worthwhile if it reduces the probability that an investor might abandon a prudent portfolio to invest in that bad asset should it start doing well.

I introduce an objective function that explicitly incorporates regret into a portfolio optimisation routine in new research for the *Journal of Portfolio Management*.

More specifically, the function treats regret as a parameter distinct from risk aversion, or downside risk – such as returns below zero per cent or some other target return – by comparing the portfolio’s return against the performance of one or more regret benchmarks, each with a potentially different regret aversion level.

The model requires no assumptions around return distributions for assets, or normality, so it can incorporate lotteries and other assets with very non-normal payoffs.

By running a series of portfolio optimisations using a portfolio of



Risk is traditionally defined as volatility, but that only describes one aspect of risk. Not owning an asset that subsequently outperforms could trigger an emotional response, such as regret, that resembles a reaction to more traditional definitions of risk. PHOTO: REUTERS

individual securities, I find that considering regret can materially influence allocation decisions. Risk levels – defined as downside risk – are likely to increase when regret is taken into account, especially for more risk-averse investors.

Why? Because the assets that inspire the most regret tend to be more speculative in nature. Investors who are more risk tolerant will likely achieve lower returns, with higher downside risk, assuming the risk asset is less efficient.

More risk-averse investors,

however, could generate higher returns, albeit with significantly more downside risk.

Additionally, allocations to the regret asset could increase in tandem with its assumed volatility, which is contrary to traditional portfolio theory.

What are the implications of this research for different investors? For one thing, assets that are only mildly less efficient within a larger portfolio, but potentially more likely to cause regret, could receive higher allocations depending on expected returns and covar-

iances. These findings may also influence how multi-asset funds are structured, particularly around the potential benefits from explicitly providing investors with information around a multi-asset portfolio’s distinct exposures versus a single fund, say a target-date fund.

Of course, just because some clients may experience regret does not mean that financial advisers and asset managers should start allocating to inefficient assets.

Rather, we should provide an approach that helps build portfo-

lios that can explicitly consider regret within the context of a total portfolio, given each investor’s preferences.

People are not utility-maximising robots, or “homo economicus”, and we need to construct portfolios and solutions that reflect this. That way we can help investors achieve better outcomes across a variety of potential risk definitions.

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