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Risk and portfolio construction in the aftermath of the GFC

Key points

- The global financial crisis (GFC) highlighted that quantitative measures of the riskiness of assets and the correlations between them are highly unstable.
- There is a role for alternative & more exotic investments in portfolios. But their diversification benefits should not be exaggerated. Quantitative estimates of risk and diversification need to be combined with qualitative assessments and there is no real substitute for government bonds as a defensive asset class.

Introduction

The events of the past 18 months provide many lessons for investors.[1] Many of these relate to risk management and the way investment portfolios are created.

Controlling risk – from the old to the new & back again

Risk is a rather esoteric concept that has different meanings. It may be seen as the risk of a capital loss, or the volatility of an investment, or the risk a portfolio won't generate enough returns to enable an investor to live on in retirement. There is no simple definition but most tend to focus on the volatility of an asset as the best guide to risk.

Traditionally a key approach to managing the risk of an investor's portfolio was to combine a mix of 'defensive assets' where the bulk of the return comes from income – namely cash and government bonds – and 'growth assets', where there is significant potential for higher returns from rising capital values but also more volatility – mainly equities and property. This approach saw investment funds categorised according to their mix of defensive and growth assets. For example, superannuation funds with a mix of 30% defensive assets and 70% growth assets are aimed at investors with a longer time horizon, whereas funds with a mix of 70% defensive assets and 30% growth assets are aimed at investors who may be closer to or in retirement.

However, for a variety of reasons this approach was being called into question and was giving way to a more sophisticated approach which was less constrained by the growth/defensive pigeonholing of assets but rather risk control coming via a more diversified mix of assets. Several considerations drove this:

- A search for higher investment yields as cash and bond yields fell compared to 1970s and 1980s levels;
- The realisation that the growth/defensive categorisation for various asset classes was blurred and becoming more so (eg, property investments have some bond like characteristics, fixed interest was increasingly including private sector debt which was more related to equities);
- The bursting of the IT bubble in 2000 encouraged investors to follow the lead of endowment funds such as those at Harvard and Yale to invest in a wider range of risky assets than just equities and property; and
- Computing power and the growth of sophisticated quantitative techniques for measuring risk allowed and encouraged more sophisticated risk controls than just the pigeonholing of assets into defensive and growth.

The result was a range of developments, including:

- The use of real estate investment trusts or REITs as a partial replacement for government bonds on the grounds they will provide a higher yield based return than bonds but with just a bit more risk;
- The use of funds of hedge funds as a replacement for government bonds on the grounds they will provide a cash or bond plus return with low correlation to equities;
- Private sector debt in fixed interest portfolios; and
- Increased exposure to more exotic investments such as various credit based investments with acronyms such as CDOs, CLOs, emerging market equities and debt, private equity, commodities and infrastructure on the grounds they would provide more diversification.

Comfort was provided for such adjustments via quantitative risk analysis, often based on short periods of data, which showed that such investments were relatively low risk or that they were lowly correlated to equities and hence could reduce the riskiness of an investment portfolio.[2] Risk budgeting (or the allocation between competing investments based on their contribution to a portfolio's target volatility) became a key buzzword. The quantitative measurement of risk in turn gave investors confidence the riskiness of their portfolio was under control.

Enter the global financial crisis

While the global financial crisis was an extreme event, it nevertheless highlighted that there is still a role for the traditional growth/defensive approach to risk control and the difficulties in purely quantitative measures of risk. While developed country share markets have had falls of 50 to 60% from their 2007 highs, many of the so-called diversifiers also had big falls at the same time. In particular,

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[1] These were discussed in more detail in "Lessons learned from the global financial crisis," Oliver's Insights, December 2008.

[2] Correlation refers to the degree to which two assets move in line with each other. For example if the correlation co-efficient between two assets is 1 then they move perfectly together, if it is -1 then they move in opposite directions. By combining assets with low or negative correlations to each other in theory the overall volatility of a portfolio will be reduced.

emerging market shares and commodities lost nearly 60% of their value and private equity funds had losses of 20% or so (depending on if they marked assets values to market).

On the flip side, government bonds had good returns last year (with Australian bonds returning 15% and cash 7.6%), while 'alternatives' for bonds and cash did poorly:

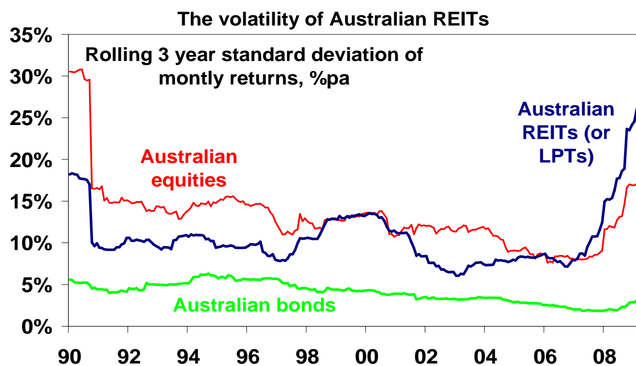
- Supposedly well diversified investments in CDOs, which in turn invested in US sub-prime mortgages, in some cases lost most of their value. A big mistake here seems to have been the reliance on a short period of default history for US mortgages.
- Corporate credit related investments had losses ranging up to 26% for US high yield debt.
- REITs which had long been viewed as a relatively safe investment lost 70 to 80% of their values.
- Funds of hedge funds lost around 20% of their value.

(Unlisted property and infrastructure held up but this may partly reflect the lagged nature of their valuations.)

Lessons in risk management

None of this is to say that investment portfolios shouldn't seek to have a broad range of investments including exotic assets or that quantitative measures of risk have no value. But it does highlight several important lessons when it comes to managing the risk of an investment portfolio.

Firstly, quantitative measures of risk and correlation are inherently unstable. This can be clearly seen in the next chart which shows the volatility of Australian REITs.

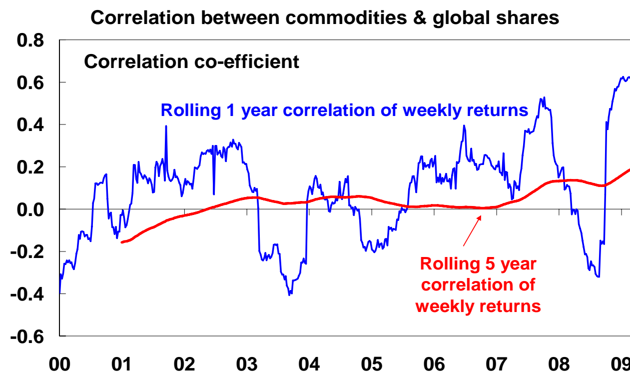


Source: Thomson Financial, AMP Capital Investors

Over the last two years the volatility of Australian REITs has more than doubled. In fact they have become more volatile than shares. Several factors drove this and an increase in their correlation to shares over the last two years, including increased debt levels and their increasing focus on non property management activities.

The next chart provides another example. It shows the correlation co-efficient between the S&P Goldman Sachs Light Energy Commodity Index and global shares as measured by MSCI. Up until 2007 the rolling five year correlation between the two was close to zero which suggests commodities would be a good diversifier in a portfolio with shares. However, as can be seen in the chart, the one year correlation is far more volatile and surged higher during the second half of last year. So an investor using commodities as a diversifier to their share exposure would have found that it didn't work just when they needed it. A similar phenomenon occurred in relation to emerging market equities, credit investments and hedge funds.

Several factors drove the increase in correlation between various assets and shares including the severity of the



Source: Bloomberg, AMP Capital Investors

crisis and the associated economic slump and the impact of liquidity between asset classes. In tough times when you can't sell what you want, you sell what you can and this certainly occurred over the last year spreading the crisis between asset classes. So while correlations between assets may be low in more normal times, the experience of the last two years is a reminder that in tough times it is likely to shoot up – just when you don't want it to.

While, the desire to summarise things in a number – what some call 'physics envy' – is endemic in the investment world, the trouble is that unlike in physics the 'number' is less reliable. As Warren Buffett recently warned; "investors should be sceptical of history-based models… using esoteric terms such as beta, gamma, sigma and the like, these models look impressive. Too often, though, investors forget to examine the assumptions behind the symbols. Our advice: beware of geeks bearing formulas".

Secondly, and inherent in all of this is the reality that risk and correlations between assets are not a given but rather are influenced by the actions of investors themselves. The more investors observed that A-REITs were relatively stable and commodities had low correlations to shares, the more investors jumped on board both asset classes which was one factor that ultimately contributed to their collapse.

Thirdly, flowing from all this it is clear that there is a lot of value in the rather simplistic yet old fashioned approach to risk control – government bonds and cash did provide good diversification last year. Assets such as REITs, hedge funds and credit *are* much higher risk.

Fourthly, risk cannot be divorced from valuation risk – the more an asset's price goes up, the higher the risk of an eventual fall. Unfortunately, historical measures of volatility can't capture this (although there is some evidence that low volatility in an asset class and the complacency it may represent could be a precursor to price falls).

Finally, flowing from all of this is that diversification doesn't necessarily justify a higher exposure to risky assets.

Conclusion

There is a role for alternative & more exotic investments in portfolios, particularly once their medium term return potential is allowed for. But their diversification benefits should not be exaggerated. Quantitative estimates of risk and diversification need to be combined with qualitative assessments and there is no real substitute for government bonds as a portfolio diversifier and defensive asset class.

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