

## Asset class-based diversification

### Diversification: what it is and isn't

Diversification across asset classes is one of the most fundamental principles of investment portfolio construction. The reason for investing in a number of different types of assets is that they perform differently at different stages of the economic cycle or in the face of different types of shocks affecting the economy over time. BetaShares chief economist David Bassanese said when done properly, diversification across asset classes results in “extra return without taking on extra risk”.

Most discussions about asset class-based diversification focus on its ability to improve returns for a given level of risk. The Schwab Center for Financial Research, however, said it is less clearly understood that another advantage of diversification is the potential to grow wealth (Davidow & Peterson n.d. p.5):

*An appropriately allocated portfolio helps smooth out the ups and downs of the markets so investors can enjoy the positive compounding of returns over time.*

Because well diversified portfolios will not fall as much in the face of a given type of market shock, they are better able to hold their value over time. A portfolio that loses 25% of its value due to lower economic growth or a sharp rise in interest rates, for instance, must grow by 33% to reverse the loss. A portfolio that has fallen by 10% must only grow by 11% to fully recover (Davidow & Peterson n.d.).

Bassanese points out that asset allocation is not the same as asset class-based diversification. “Pure diversification means getting a better return for the same level of risk,” he said. This contrasts with just adding bonds to an equity portfolio to reduce its volatility, as doing so would also reduce long-run returns because bonds tend to return less over time than equities. Table 1 illustrates the power of asset class-based diversification.

**Table 1: More than the sum of its parts**

Risk–return profile of \$100 investment 1970–2013			
Portfolio	End value	Average annual return	Risk (p.a.)
S&P 500 (equities) index	\$7,771	10.4%	17.6%
S&P GSCI (commodities) index	\$4,829	9.2%	24.3%
50% S&P 500 and 50% S&P GSCI	\$9,457	10.9%	14.5%

(<http://ontrack.mykaplan.edu.au/wp-content/uploads/2018/10/Table-1-More-than-the-sum-of-its-parts.jpg>)

Davidow, AB & Peterson, JD n.d., *A Modern Approach to Asset Allocation and Portfolio Construction*.

The diversified portfolio's return is 20% higher than the pure stock portfolio and nearly double the commodity portfolio's return. Additionally, the diversified portfolio's average risk is lower (Davidow & Peterson n.d.):

*While stocks and commodities are both deemed relatively risky investments, combining them helps mitigate the risk of the portfolio. This is due to their relatively low correlation to one another.*

### The birth and evolution of diversification ...

It was in 1952 that economist Harry Markowitz's 'Portfolio Selection' article was published in the Journal of Finance. In it, he demonstrated that building a portfolio of imperfectly correlated assets could result in reduced portfolio risk for a given level of expected return (Bianchi, Drew & Walk 2017).

**Table 2: Correlation matrix between asset classes (2000–2016)**

		Equity				Bond			
		US	Euro	UK	Japan	US	Euro	UK	Japan
Equity	US	100%							
	Euro	78%	100%						
	UK	79%	87%	100%					
	Japan	53%	57%	55%	100%				
Bond	US	-35%	-39%	-32%	-29%	100%			
	Euro	-17%	-16%	-16%	-16%	58%	100%		
	UK	-31%	-37%	-30%	-31%	72%	63%	100%	
	Japan	-17%	-18%	-16%	-33%	37%	31%	36%	100%

(<http://ontrack.mykaplan.edu.au/wp-content/uploads/2018/10/Table-2-Correlation-matrix.jpg>)

Source: Lezmi, et al 2017 'The Quest for Diversification, Why Does It Make Sense to Mix Risk Parity, Carry and Momentum Risk Premia?'

In the same journal 12 years later, Sharpe's Capital Asset Pricing Model (CAPM) described the relationship between risk and expected return. He introduced "beta" as a measure of sensitivity to market risk.

Subsequently, Gary Brinson, Randolph Hood and Gilbert Beebower examined the allocations of 91 pension funds. Among their findings published in the *Financial Analysts Journal* in 1986 was that, on average, asset allocation decisions explained more than 90% of pension fund risk, as measured by the volatility of returns over time.

In 2000, Roger Ibbotson and Paul Kaplan argued that asset allocation policy actually explained 100% of the typical individual investor's return. That is because the average return of investors who do not beat the market is offset by the average return of investors that outperform the market (Davidow & Peterson n.d.).

### ... and perhaps the death of diversification

The extremely negative impact that the GFC of 2007–2009 had on investment portfolios caused many people to question the value of asset class-based diversification.

One reality is that correlations between asset classes — such as international and Australian equities — depend on the nature of the shocks affecting the economy. Negative economic shocks that affect the whole global economy, such as the GFC, can cause both global and domestic equities to fall. Many times, it has been observed that diversification disappears when it is most needed. However, diversification never promised to ensure gains or prevent losses.

#### Table 3: Diversification helped limit losses and capture gains through the GFC and recovery

	Jan 2008 through the market bottom, Feb 2009	Five years from the bottom: Mar 2009 to Feb 2014	2008 to five years from bottom: Jan 2008 to Feb 2014
<b>All cash portfolio</b>	1.6%	0.3%	2.0%
<b>Diversified portfolio</b>	-35.0%	99.7%	29.9%
<b>All stock portfolio</b>	-49.7%	162.3%	31.8%

Hypothetical value of assets held in accounts of US\$100,000 in an all-cash portfolio, a diversified growth portfolio of 49% US stocks, 21% international stocks, 25% bonds and 5% short-term investments and an all-stock portfolio of 70% US stocks and 30% international stocks.

Stocks are represented by the S&P 500 and MSCI EAFE indices. Bonds are represented by the Barclays US Intermediate Government Treasury Bond index and short-term investments are represented by US 30-day Treasury bills.

(<http://ontrack.mykaplan.edu.au/wp-content/uploads/2018/10/Table-3-Diversification.jpg>)

Source: Fidelity n.d. *The Guide to Diversification*

Nevertheless, some believe that the various asset classes are becoming increasingly correlated, therefore making it more difficult to build a truly diversified portfolio.

## Example

According to Huntsley (n.d.):

International markets have long been the staple for diversification, however there has been a marked increase in correlation between the global equity markets. This is most easily seen among the European markets after the formation of the European Union. In addition, emerging markets are also becoming more closely correlated with US and UK markets. Perhaps even more troubling is the increase in what was originally unseen correlation between the fixed income and equities markets, traditionally the mainstay of asset class diversification.

PIMCO Australia also says long-term trends such as globalisation are driving correlations higher. (PIMCO Australia n.d.)

Davidow and Peterson (n.d.) agree:

*We believe that correlations have been rising due to greater inter-connectivity between global markets. Multinational corporations have proliferated to such an extent that what happens in Europe and Asia impacts the US markets and vice versa. Many Fortune 500 companies in the US depend on emerging markets for growth; and many overseas corporations depend on demand from American consumers. In addition, access to more information via the internet is fuelling the inter-connectivity.*

**Table 4: Equity correlations have been rising**

	1995–2000				2001–2007				2008–2013				
US large company stocks 1	Red				Red				Red				
US small company stocks 2	Yellow	Red			Orange	Red			Red	Red			
Int. large-company stocks 3	Yellow	Yellow	Red		Orange	Orange	Red		Red	Orange	Red		
Emerging markets stocks 4	Yellow	Yellow	Yellow	Red	Orange	Orange	Orange	Red	Orange	Orange	Red	Red	
	1	2	3	4	1	2	3	4	1	2	3	4	
	Low correlation ←-----→ high correlation												
	Yellow	0.3–0.7 moderate				Orange	0.7–0.9 mod. high				Red	0.9–1.00 high	
	Greatest diversification ←-----→ Little diversification												

<http://ontrack.mykaplan.edu.au/wp-content/uploads/2018/10/Table-4-equity-correlations.jpg>

Source: Davidow & Peterson n.d. *A Modern Approach to Asset Allocation and Portfolio Construction*.

Bassanese agreed that correlations between equity markets have certainly increased. He believed this is due to markets becoming more globalised and more integrated.

Others have variously pointed the finger at hedge funds, passive investing and exchange-traded funds (ETFs).

“At the margin, passive investing may be contributing, but I am sceptical because a lot of active investors are index-huggers,” Bassanese said.

“Hedge funds have been around a long time. Quantitative trading has also been around many years. And to the extent there is more momentum-driven trading, that eventually breaks down. So over time, I am not sure if the asset correlations are affected but perhaps within [the] equities [asset class, correlations have been affected].”

Another school of thought is that more asset classes are needed to construct a diversified portfolio than in the past (Lezmi et al 2017):

*For a long time, a universe of large cap stocks and sovereign bonds was sufficient. In the recent years, this has not been the case, not necessarily because the diversification has been reduced but because yields are so low. This is why investment universes have increased and now include corporate bonds, high-yield bonds, commodities, real assets and even currencies.*

### Correlations were never constant

One criticism of Markowitz’s original theory was that it assumes asset class return, return volatility and the correlation in returns are relatively fixed, whereas they can change greatly over time as economic conditions change.

## Example

Bassanese noted that at times there is a positive correlation between equities and bonds, namely both go up or down at the same time. Usually, however, correlation between the asset classes is negative, such that if bond prices rise, stocks prices fall and vice versa. It all depends on the stage of the economic cycle and whether the shocks affecting the economy are demand-driven or supply-driven.

“When there are mainly demand shocks, causing inflation and interest rates to rise in line with economic growth and corporate earnings, bonds will do poorly and equities well when the economy is strong. The opposite applies when the economy weakens. That is, the more usual negative correlation [applies],” he said.

“However there have been periods when the correlation was positive. In the mid-1990s, for example, when there was a structural decline in inflation and interest rates in the US, both bonds and equities performed well. The correlation was also positive — but in a negative way — in the 1970s when the oil shock resulted in stagflation. In that environment neither bond investors nor equity investors had great outcomes.”

## Case study

### Alternative approaches to portfolio diversification

During the GFC, almost every long-only asset class — with the notable exceptions of very high-quality government bonds and cash — lost value. As a consequence, some large institutional investors have shifted from asset class-based diversification to factor-based asset allocation. Two fund managers combined forces to show that most well-known factors have near zero correlation.

They used data from 1973 to 2010 to compare a portfolio of five US domestic and international asset classes with a portfolio of four dynamic styles. The factors included value, momentum and carry. The fourth was a trend style of going long or short 60 liquid assets based on past-year returns. Their findings? There were higher returns and lower volatility from the factor-based asset allocation (Ilmanen & Kizer 2012).

PIMCO Australia (n.d.) is an advocate of the risk factor approach. It defines risk factors as the underlying risk exposures that drive the return of an asset class. It breaks a stock's risk into general equity market risk and company-specific risk. Likewise, a bond's risk is a function of credit or issuer-specific risk and interest-rate risk:

*By understanding the underlying risk factors within various asset classes, investors can ultimately choose which asset class allows them to most efficiently obtain exposure to that particular risk factor.*

It offers the example of a US investor wanting to add currency risk to the investment portfolio. The investor could directly buy another currency. Alternatively, if valuations seem more attractive, they could buy foreign equities or bonds. “Over time that flexibility can help add significant value to a portfolio” (PIMCO Australia n.d.).

Yet another approach is risk-parity. This, Bassanese explained, relies on the negative correlation between equities and bonds being maintained. The basic principle is leveraging a bond investment so that its return is more similar to equity returns. While adding leverage to a bond exposure increases the volatility of returns from bonds alone, overall portfolio volatility might not increase as much, if at all, due to the assumed negative correlation between bond and equity returns.

“While all very good in theory, there aren't a lot of leveraged bond products out there. It hasn't been widely practised because it is difficult and relies on the negative correlation holding up,” he said.

During the stagflation of the 1970s when the correlation between bonds and equities was positive, such that both asset classes performed poorly, the risk parity approach would have been particularly disastrous.

## Is asset class-based diversification still relevant?

Definitely, but it needs to be updated to reflect that markets today are different from when Markowitz wrote his Nobel-Prize-winning paper.

First, there is fact that correlations are increasing, at least between the various equity markets that used to be a staple of diversification. Instead of looking for uncorrelated investments, the focus should shift to slight reductions in correlation. Investments with correlations of 0.5 will provide greater diversification benefits than those with 0.7 correlations.

Today's world of globalisation, and therefore greater connectivity of economies and of financial markets, means traditional asset classes are subject to more common shocks than in the past. There is also greater understanding that traditional asset allocation has been unduly weighted to equity risk.

Moreover, while bonds were traditionally valued for their steady income streams, their attraction has dimmed somewhat with interest rates near all-time lows. And as a corollary, if the risk-free rate (the 10-year government bond yield) is low, then expected returns from equities will adjust lower.

In response to all these changes, one approach is to look at less traditional asset classes such as commodities to construct a diversified portfolio that enhances returns for an investor's given risk appetite (Davidow & Peterson n.d.).

## Consider

### Using cash to reduce volatility and add diversification

A common recommendation for investment portfolios has been 60% stocks and 40% bonds. Using a ship as an analogy for an investment portfolio, between 1928 and 2014, stocks provided about 71% of the return, or 'speed' of the ship, while the bonds acted as 'ballast' to stabilise the keel.

Bonds have enjoyed a prolonged bull run, but with the Federal Reserve now on the path to normalising interest rates, and several other central banks set to follow, is it really wise to have a 40% allocation to bonds over the next few years?

Could cash be the new ballast for equity portfolios? Cash is the least correlated of all assets. One study found that cash can act as an equity portfolio stabiliser similar to bonds. However, because cash is so stable, less of it is required to achieve the same outcome as a bigger allocation of bonds in a mixed portfolio.

Further, unlike bonds, cash can be used to fund short-term expenditures so that the investor does not have to sell long-term investments at a loss. Cash can also be used to buy undervalued assets as they arise.

Of course, cash provides very little return, but neither do bonds at the moment. And with interest rates set to rise, returns from bonds could well be negative for a period. (Mindful Investing n.d.).

That said, Bassanese believed that traditional asset class-based diversification remains a valid approach, given it is relatively easy to understand and implement compared with newer "more academic" alternatives. Also important is the role that asset class diversification can play in enabling investors to calibrate their portfolios to their desired risk–return settings. Adding bonds, for instance, can dampen downside risk at the expense of some longer-run return.

However, the limitations of diversification also need to be recognised. Diversification per se cannot protect investors from portfolio losses during major equity market meltdowns. According to Bassanese, that is why getting overall asset allocation right — the overall exposure to equities of any flavour — remains the most important consideration.

In this context, ETFs are useful in two ways. They are an easy way to get exposure to a variety of asset classes beyond just Australian shares, so offsetting the concentration of the Australian equity market in resource and bank stocks.

ETFs are also particularly valuable for retail investors who cannot easily access bonds or international equities. Prior to ETFs, investors tended to rely on unlisted (typically active and expensive) international equity and bond managed funds, many of which failed to beat passive investment benchmarks in any case, Bassanese explained. Additionally, individual bonds are typically sold in very large minimum parcel sizes, and access to direct international shares requires an international share trading account.

### How many asset classes is enough?

Bassanese noted that the standard diversified portfolio contains five to six asset classes, says Bassanese. Equities (domestic and international) and bonds (domestic and international) typically make up four of the classes, supplemented by cash and perhaps commodities.

"You can go into finer asset class distinctions but the diversification benefits diminish beyond five to six core groups because return correlations within equity and/or bond subgroups tend to be higher. Emerging markets equities, for example, don't tend to add much extra diversification benefit as their returns are more volatile than developed equity markets and returns from both tend to be highly correlated," he said.

However, one study that examined correlations from 2002 to 2013 found more than 50 instances of assets being negatively correlated (as indicated by the green shading Table 5) (Davidow & Peterson n.d.).

#### Table 5: Expanded asset classes provide diversification opportunities (2002–2013)



Bassanese added that another reason for an annual check is momentum.

“You tend to see the positive asset return momentum over the 12-month period, but after a year the momentum effect turns negative,” he said.

An alternative approach is to review from a tolerance perspective. If the equity allocation has risen from 50% to 60%, for instance, that may be beyond an investor’s risk tolerance and, therefore, trigger cutting the allocation back to 50%.

## Conclusion

The world has changed considerably since Markowitz first expounded the concept of portfolio diversification. Markets have too. They are more interconnected than ever before, and information flows more quickly. Arguably, they are more efficient. New styles of trading and investing have emerged, as have new asset classes like infrastructure and private equity. Alternatives to asset class-based diversification have been developed, but debate continues over the superior approach.

Technology is playing a role with the rise of robo-advisers and algorithm-driven trading. In the future, artificial intelligence may also have an impact.

What has not changed is investors trying to outperform the market while managing risk. The search for alpha remains. And for now, asset class-based portfolio diversification continues to be a popular approach.

“To paraphrase what Winston Churchill said of democracy; improving risk-adjusted returns through asset class diversification isn’t perfect, but it’s better than the alternatives,” Bassanese said.

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