FOR PROFESSIONAL/INSTITUTIONAL INVESTORS ONLY

First State Investments

Colonial First State
Global Asset Management

Multi-Asset Solutions Research Papers

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Why Multi-Asset?

The aim of investing is to achieve financial goals. These financial goals may be a required level of income or desired level of savings at retirement. To meet these goals, investment decisions need to be based on return ambitions, risk appetite, and time horizon. The challenge is that financial markets are dynamic and experience both booms and busts. Most investors cannot rely on 'long-run average market returns' as they don't have an infinite time horizon. To achieve investment success over a specified horizon, asset allocation decisions must be made to address the delicate balance between delivering the return objective whilst not taking excessive market risk.

Multi-asset investing offers the ability to invest across an entire universe of asset classes globally, including equities, fixed income, commodities, and cash. This can provide a high degree of diversification and a better risk-adjusted return than a single asset class option, such as fixed income or equities in isolation. Additionally, a multi-asset approach offers real-time risk insight and the ability to adjust portfolio positions for prevailing market conditions.

What is a multi-asset investment?

The four main asset classes are equities, fixed income (bonds), commodities, and cash. Each asset class provides different investment characteristics which respond differently in any given market environment. Multi-asset investing is the process of allocating asset classes into one portfolio to maximise the probability of meeting investment goals.

What can history teach us?

Portfolio theory started when Markowitz (1952, 1959) came up with his optimisation of a portfolio by breaking it down into two factors: expected return and risk. The assumption, furthered by Tobin (1958), Sharpe (1964), Lintner (1965), and Mossin (1966), was that investors will want to minimise risk for any given level of expected return, but also that it is the *portfolio risk* that matters, and not the risk of each individual security. This means that investors will want to be compensated with higher returns for taking additional risk, or will expect to receive a lower return if they are risk averse.

Over the last one hundred years, there have been large dispersions between returns of various asset classes. Equities have returned more than bonds in the US and the UK, but with much higher volatility. Since 1920, UK equities have returned 6.5% annually *over inflation*. This means that a £100 investment at the start of 1920 would have yielded £42,124 above inflation in today's money.[1] A corresponding investment in UK bonds would have yielded only £970 in real terms.[2]

For most investors, it is the real (inflation adjusted) return that matters, as we want our investments to keep up with inflation and provide a return on top of that. Starting in 1920, the annual real returns and annual volatilities for some large asset classes are shown below:

Asset characteristics: 1920-2016

Asset	Real Return	Volatility
US Equities	7.2	19.6
UK Equities	6.5	22.9
World equities	5.3	18.0
US IG Credit	3.3	6.2
UK Bonds	2.5	12.1
US Bonds	2.5	8.3
Global Gov't Bonds	1.8	8.3
UK Cash	1.2	4.0
US Cash	0.8	3.1
Commodities	-1.0	17.9

Sources: GFD, First State Investments (numbers in %).
Local currency returns, as at 31 December, 2016. Volatility is calculated on nominal returns.

[1] The investment would be worth £1,333,617 today (annual nominal return was 10.4%), which is the same as £42,224 in 1920 money (i.e. adjusted for inflation).

[2] The investment would be worth £33,696 today (annual nominal return was 6.3%), which is the same as £1,070 in 1920 money (i.e. adjusted for inflation).

Looking at it like this, one can be forgiven for thinking, *"why would I buy anything but equities?"* Well the answer is that most people do not hold their investments for multiple decades and, while returns are important, so is the volatility and potential drawdown of portfolios. If we drill into real returns per decade, and sort it by the best returning asset class at the top to the lowest at the bottom, it is clear that equities appear at the top and at the bottom, while fixed income is in the middle.

Yearly real return (%)

1920s*	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s	
15.9	7.6	5.9	16.7	5.1	2.9	15.9	14.8	6.3	11.1	US Equities
14.6	6.6	3.4	16.6	4.5	-0.2	14.1	11.0	5.3	7.1	UK Equities
12.9	6.3	0.5	12.5	4.4	-0.4	11.8	8.8	3.8	5.6	World Equities
8.4	6.0	-0.8	-0.2	1.9	-0.8	7.9	8.4	3.2	3.7	US IG Credit
7.6	2.7	-1.9	-0.4	1.5	-0.9	7.3	5.8	3.1	3.0	UK Bonds
7.1	2.5	-2.2	-0.6	0.2	-1.2	7.0	5.2	1.6	2.5	US Bonds
6.6	1.6	-2.6	-1.2	0.1	-1.5	6.7	4.9	0.2	1.3	Global Gov't Bonds
5.2	1.4	-2.6	-1.6	-0.2	-2.6	4.6	4.1	-1.0	-1.5	UK Cash
4.9	1.4	-4.6	-1.8	-2.0	-3.4	3.8	2.0	-2.2	-2.4	US Cash
-3.4	0.8	-7.9	-3.1	-2.2	-4.3	-6.8	-3.9	-3.4	-3.8	Commodities

* World equities data starts in 1925; Global gov't bonds start in 1922.
Note: To get returns from nominal to real, we have used UK RPI for UK Cash, UK Bonds, and UK Equities; and US CPI for everything else. Local currency returns.

Sources: GFD, First State Investments.

The boxes under the white line are when an asset class experienced negative real returns; one can see the importance of not relying on one return driver. For example, while US equities had real returns of 14.5% a year in the 1950s, the 1970s were marked by high inflation, eroding the value of investments in real terms.

Most investors' timeframe is less than multiple decades, though. If we zoom in on returns since 2000, an equally volatile picture emerges, but with different asset classes on top.

Asset characteristics: 2000-2016

Asset	Real Return	Volatility
US IG Credit	4.6	4.9
US Bonds	3.2	8.3
UK Bonds	3.1	6.9
Global Gov't Bonds	2.3	6.3
US Equities	2.3	17.6
Commodities	2.0	17.0
UK Equities	1.6	16.2
World equities	1.5	19.0
UK Cash	-0.1	2.2
US Cash	-0.5	1.9

Sources: GFD, First State Investments (numbers in %).
Local currency returns, as at 31 December, 2016. Volatility is calculated on nominal returns.

With the Dot-Com Bubble, the financial crisis of 2008, and the ensuing Great Recession, it is no surprise that bonds performed better than equities – but it does reinforce the importance of owning multiple asset classes. Here are the ranked returns of the same asset classes as before, but on an annual basis.

Yearly real return (%)

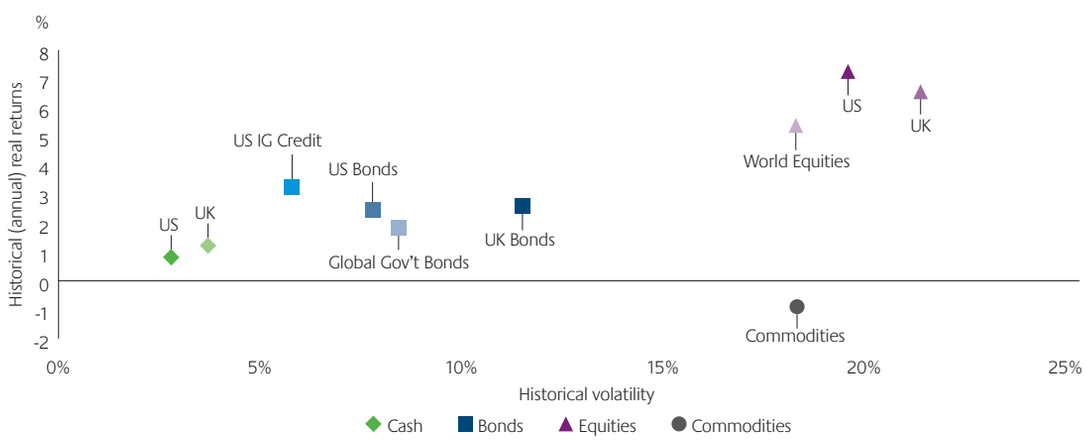
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
US Equities	13.4	9.6	20.2	31.3	11.6	**19.4**	17.7	15.8	20.1	29.9	28.0	13.5	14.5	30.4	12.8	0.6	**13.9**
UK Equities	7.9	4.2	13.3	26.3	**9.0**	18.5	12.9	6.5	16.5	27.3	13.4	11.0	14.0	25.5	12.7	0.5	9.7
World Equities	7.5	2.9	12.7	**17.6**	7.7	6.4	**11.8**	6.2	13.3	**27.1**	10.7	10.6	**8.9**	**17.7**	10.8	0.5	6.7
US IG Credit	7.4	2.0	8.5	12.3	7.4	5.9	10.7	5.3	3.3	23.1	**9.3**	4.9	2.7	-1.4	10.0	**-0.2**	6.6
UK Bonds	2.9	1.7	7.8	7.2	6.6	4.2	3.3	2.9	1.2	5.0	7.1	-0.8	2.1	-2.2	4.7	-0.2	5.1
US Bonds	2.5	1.7	1.1	6.8	3.9	2.5	2.4	1.5	-7.6	-1.8	5.8	-2.8	1.0	-4.2	2.9	-0.7	0.7
Global Gov't Bonds	1.4	-13.2	-0.8	0.9	3.2	1.4	1.6	1.4	-23.8	-2.5	4.6	-4.1	0.1	-4.5	**-0.4**	-0.7	-0.6
UK Cash	**-8.6**	**-13.9**	-21.4	-0.8	1.3	-0.1	0.3	**1.2**	**-30.6**	-2.6	4.3	-7.7	-1.6	-9.8	-0.7	-1.4	-1.7
US Cash	-12.1	-17.6	-23.9	-1.4	1.2	-0.3	-0.3	0.6	-37.1	-6.9	-1.3	**-7.9**	-2.6	-9.9	-1.2	-1.4	-1.8
Commodities	-15.8	-17.8	**-24.9**	-1.9	-1.8	-9.6	-4.4	0.4	-40.4	-12.1	-4.0	-13.1	-3.2	-10.2	-12.6	-15.8	-2.2

Sources: GFD, First State Investments.
Note: To get returns from nominal to real, we have used UK RPI for UK Cash, UK Bonds, and UK Equities; and US CPI for everything else. Local currency returns.

We have highlighted UK equities; there are many good years, but the volatility of returns is high. It is clear that no single asset class consistently outperforms year after year and that return dispersions are large: thus diversification is the key to narrowing the return distribution.

Looking at historical long-term risk-return characteristics of various asset classes, they do fit loosely where we would expect according to theory; the higher the volatility, the higher the historical return (with the exception of commodities).[3]

Historical risk-return characteristics: 1920-2016



Note: Real returns (i.e. adjusted for inflation) on the y-axis; historical volatility on the x-axis (i.e. not adjusted). Local currency returns.

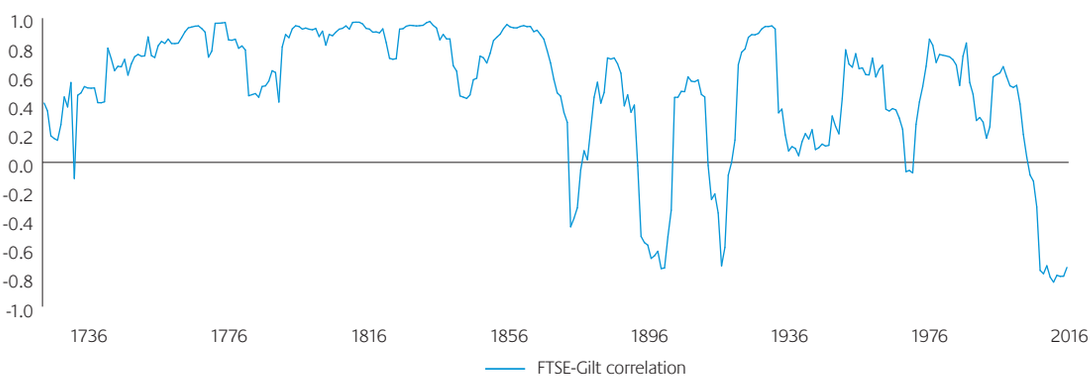
Source: GFD, First State Investments.

[3] We have shown real returns here, but the picture is the same with nominal returns.

Assumptions and correlations matter

To build portfolios in the Markowitz sense, a lot of assumptions are needed. The most important ones are for expected returns, volatilities, and the covariance between assets; whether they will hold – or how they will be different.[4] Markowitz (1952, 1959) asset allocation theory assumes returns, volatilities and correlations are stable; this is not how the real world works. Correlations are dynamic and change over time. This is illustrated in the chart below which depicts the correlation between equities and bonds, which has ranged from 0.98 to -0.83 on a rolling decade basis for the UK. Throughout most of history, UK bonds and equities were positively correlated, meaning that they moved up or down together. The last twenty years, in that regard, is actually an anomaly, as bonds and equities have been negatively correlated (when equities go down, bonds go up.) This made it somewhat easier to be diversified, as a 60% equity and 40% bond portfolio performed well on a risk-adjusted basis. If correlations change, a static portfolio is vulnerable.

10-year rolling correlation, yearly returns

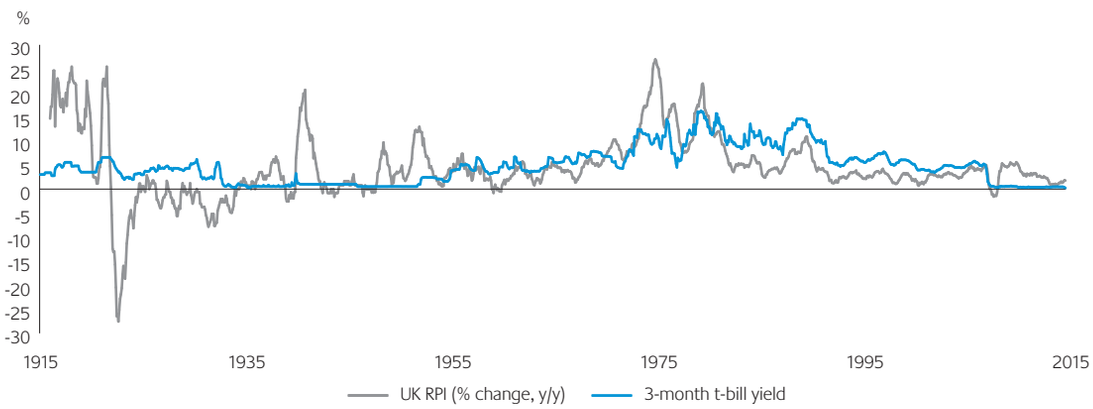


Sources: GFD, First State Investments.

Most theory is, in fact, time sensitive – it often works during a specific time period, which creates the need to be dynamic as the economic climate changes. To deliver a return over inflation, it is important to know what assets protect against rising inflation. Fama and Schwert (1977) broke inflation into *expected* and *unexpected* inflation. They found that expected inflation can be hedged by buying T-bills and bonds, while unexpected inflation is harder to protect against with liquid assets (inflation-linked bonds are now available, but they have their own risks). Fama and Schwert looked at 1953-71 for the US. Replicating their data for the UK, we see that since World War II there has been a relationship between the year-on-year change in the Retail Price Index and the yield on UK T-bills, but that before WWII there was no relationship, and it has weakened after the Financial Crisis. Relying on the fact that 'it has been thusly for fifty years' is a dangerous thing, as we saw with house prices in the US in the 2000s. Fama and Schwert's results held only for a particular time, which is not uncommon; investors need to be flexible in their asset allocation as a consequence.

[4] For a look at how we deal with these issues, see Multi-Asset Solutions (2013).

UK inflation and cash returns



Sources: GFD, First State Investments.

Survivorship bias is dangerous: Russia, 1917

Most financial analysis has taken the US as a starting point, because that is where the great majority of capital and universities are situated. The question becomes: is the US representative of the investible landscape today, and will it be going forward? Probably not. US asset markets have been the best performer – both in nominal, real, and risk-adjusted returns – over the last hundred years. Using them as a base case means a heavy concentration of survivorship bias in your portfolio.

To make our point, we turn back in time. The following chart shows equity market returns in Russia from 1865 to 1917. Their stock market had had a good run for fifty years until it was closed in 1914 as World War I started. The Bolsheviks took power after the abdication of Emperor Nicholas II and re-opened the stock market, which experienced a brief rally before *dropping to zero* as every equity holder was expropriated. If you had had your money in Russian equities in 1917, you would have lost *everything*.[5] Complete disaster is not usually part of the distributions – but they should be. Making sure that your portfolio is truly diversified – and not just assuming that the past will represent the future – is paramount, as there is the risk that the equity markets that have done well are just the last man standing.

Equity returns in the 52 years before the Russian Revolution

Sources: GFD, First State Investments. Local currency returns.

[5] The same was the case in Shanghai in 1949 after the communist takeover; all stocks were expropriated and became worthless.

How to build portfolios?

Finally, how do we estimate expected returns? Fixed income instruments have yield-to-maturities, but for equities it becomes more complicated. A large part of financial theory (and financial products developed) is built on the fact that equities and bonds are good offsets; or in Markowitz' terms that the covariance between the two is low (or negative, during periods of turmoil). The last thirty years has seen an amazing bond rally, as yields have come down; but what if that changes? Forward looking estimates need to take this into account, for both returns and correlations.

For volatility, the longer the history, the better – historical data needs to have been through all kinds of economic scenarios. Investors who did not have the Great Depression in their dataset have, for example, been at an enormous disadvantage for the last ten years. The biggest risk for investors is that they do not meet their investment objective, but it is important to have a risk management framework that takes a wide range of factors into account.[6]

It is important to take all of the above into account to build truly flexible, dynamic and well-diversified portfolios – without hidden risks.

First State Multi-Asset Solutions

Our multi-asset investing approach is designed to provide risk/return benefits that are not typically achievable by investing in a single asset class. We build multi-asset portfolios with a risk/return profile to meet individual investment needs such as a real return (return above inflation), with a focus on preserving capital, and generating growth over the long-term.

The First State Multi-Asset Solutions team has the capability to provide sophisticated, customised and practicable asset allocation solutions that take into account underlying client liabilities, investment goals, risk perception and tolerance.

The **First State Diversified Growth Fund** is defined by the following characteristics:

Flexible and dynamic: A flexible investment process, which can dynamically allocate to market beta and alpha opportunities. Our process has the flexibility to scale-up the risk allocation to alpha positions if market returns are not providing sufficient risk/return opportunities, or scale down the alpha positions if risk is deemed excessive.[7]

We strive to understand and narrow the distribution of investment outcomes. The Fund's ultimate goal is to consistently deliver returns of at least 4% higher than the UK Retail Price Index (RPI), over rolling five year periods. We seek to balance the trade-off between upside potential (meeting our investment objectives) and downside risk (what can stop us from meeting these objectives), which we believe can generate consistent results.

[6] Including, but not limited to, regime shifts, stress testing, VaR and volatility, economic factor analysis, and shifts in correlations, market betas, and Fama-French factors.

[7] In Multi-Asset Solutions (2014) we show how our Dynamic Asset Allocation process works.

Discretionary portfolio construction, not 'fund wrapping': We invest in the most efficient investment instruments, physical or derivative, based on the desired risk/return exposures. This can include First State Investment's funds where appropriate.

Qualitative investment ideas, quantitatively verified, and qualitatively implemented: Our investment process utilises our qualitative insights and investment ideas, and verifies them through quantitative techniques. Given the breadth and scope of the investable universe there is a need for quantitative rigor, which plays an important role in counteracting cognitive biases.

References

Multi-Asset Solutions (2013), Strategic Asset Allocation, *Colonial First State Multi-Asset Research Papers*, no. 6.

Fama, E. F. and Schwert, G. W. (1977), Asset Returns and Inflation, *Journal of Financial Economics*, vol 5: pp. 115-146.

Multi-Asset Solutions (2014), Dynamic Asset Allocation, *Colonial First State Global Asset Management Multi-Asset Solutions Research Papers*, no. 7.

Lintner, J. (1965), Security Prices, Risk, and Maximal Gains From Diversification, *The Journal of Finance*, vol. 20 (4): pp. 587-615.

Markowitz, H. (1952), Portfolio Selection, *The Journal of Finance*, vol. 7 (1): pp. 77-91.

Markowitz, H. (1959), *Portfolio Selection: Efficient Diversification of Investments*, New York: John Wiley & Sons.

Mossin, J. (1966), Equilibrium in a capital asset market, *Econometrica*, vol 34 (4), pp. 768-783.

Sharpe, W. F. (1964), Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk, *Journal of Finance*, vol 19 (3): pp. 425-442.

Tobin, J. (1958), Liquidity Preference as Behavior towards Risk, *Review of Economic Studies*, vol 25 (2): pp. 65-86.

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Our Multi-Asset Solutions team provides a range of services to institutional clients around the world in the fields of portfolio management, asset allocation, asset/liability management, portfolio construction and risk management. This paper is one in a series highlighting certain research topics of interest to our clients. Questions and comments on this paper can be directed to any of the team members.

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