The Inflation Vortex

Growth versus inflation – what path lies ahead?

A period of uncertainty has followed the global financial crisis, with forecasters differing in their predictions of how inflation will respond. The Royal Bank of Scotland's Inflation Vortex is one tool that has been deployed to better understand the different inflation scenarios

The global financial crisis that began in 2008 has generated an extremely unstable environment, particularly for inflation. While the range of inflation outcomes was relatively predictable in the years before the crisis, uncertainty in inflation forecasting has increased dramatically. Inflation trends in advanced economies have been volatile with no clear direction and sentiments have shifted quickly. The headline news switched from "Fears of a 1970s-style stagflation are back in the air" in 2008[1], to "Developed economies could get trapped in a limbo land of zero inflation" in 2010[2], and then "Inflationary pressures are building around the world" in 2011[3].

There are good reasons to believe in a deflationary environment: various measures show slack and spare capacity in the economy yet, simultaneously, quantitative easing has raised the spectre of fiscal debt monetisation, blurring the lines between fiscal and monetary policy, encouraging fears of inflation or even hyperinflation. Assessing the inflation risk and its possible implications on different asset classes is clearly a complex task.

Possible impact of inflation on asset prices

Analysis of historical trends has demonstrated that deflation depresses asset prices, and that a profitable investment strategy was to invest in equities while the economy was recovering from recession – like in 2009. However, such advice is overly simplistic and fails when long-lasting deflation depresses all nominal values. On the other hand, if inflation heads significantly higher, history shows the outlook for equities will deteriorate substantially: over the first years inflation broke above 5% since 1872, the median return of the S&P 500 dropped to minus 12.7%. Stagflation represents the worst environment for equities investments, as they suffer both from inflation and low growth.

Average spreads show investment-grade bonds do well (in terms of lower yields) in periods of deflation. Corporate bonds perform badly, in general, in an inflation environment.

Inferences drawn from historical observations are that no single asset class performs consistently well across both inflationary and deflationary scenarios. Hence, there are two key aspects to investing in an uncertain inflation environment – timing and an intelligent framework to evaluate it (see table A).

1. Equities and bonds in relation to growth and inflation

Equities and credit in relation to growth and inflation

	Goods DEFLATION	Goods inflation between 0% and 5%	INFLATION more than 5%
Per capita growth negative	Neutral equities; Buy AAA	BIG BUY equities; Buy AAA	SELL equities; BIG SELL BAA then AAA
Per capita growth negative	Neutral equities; Buy BAA	BUY equities; Small buy BAA	Neutral equities; BIG SELL AAA then BAA

Source: RBS

The Inflation Vortex

The Inflation Vortex is a framework developed by the Royal Bank of Scotland (RBS) in 2009 to help our clients better understand the dynamics in either a deflationary or an inflationary environment, and to form investment/hedging strategies for such scenarios. It assesses inflation risks in the context of economic growth and their impact on asset performance. This is a unique concept in the market.

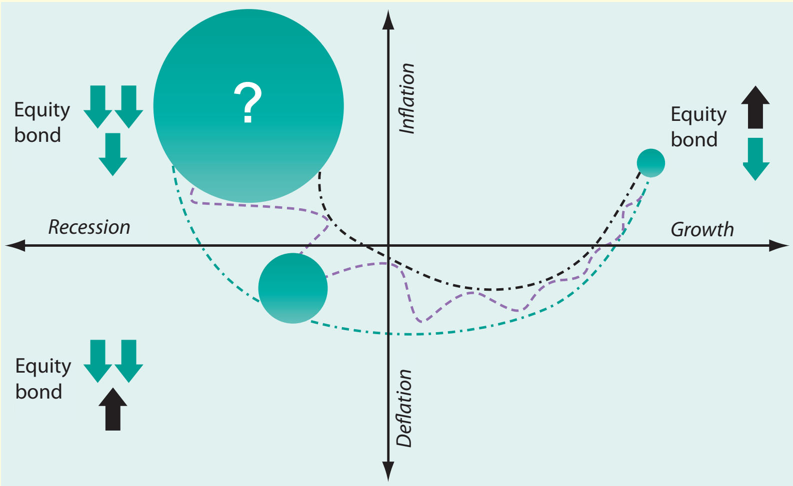
The framework investigates how different asset classes perform under each scenario, based on historical observations. Using the dimension of the circle to define the size of portfolio loss, the Inflation Vortex outlines the potential outcomes of the performance of a balanced portfolio in different scenarios (see figure 1).

In post-war times, the scenario has typically been 75% mild economic growth with moderate inflation (upper-right quarter of the Inflation Vortex), enjoying a booming asset market. This is now much less likely. The financial crisis in 2008 brought with it severe stress in the economy, and deflation and negative economic growth have been observed since then with volatile asset performance. The current market is extremely unstable and, in our opinion, extreme scenarios such prolonged periods of deflation or hyperinflation cannot be excluded. We believe that inflation risks could be highly skewed – either facing deflation caused by the crisis legacy of record spare capacity or landing in a high inflationary environment caused by central bank quantitative easing. The risk of being sucked into a vortex is high.

Where we are in the vortex at any given time has a huge impact not only on the performance of asset classes but also on the assumptions of asset allocation for a balanced portfolio. Modern portfolio theory, or the effect of portfolio diversification, works best when there is negative correlation between asset classes. This has been the general observation between equity and bonds in the past 25 years. In a stagflation scenario, such as in the US in the 1970s (upper-left quarter of the Inflation Vortex), this negative correlation between equity and bonds could break down and turn positive, reducing the

[1] *Stephen Roach, FT.com, June 12, 2008.*
[2] *Gavyn Davies, FT.com, August 19, 2010.*
[3] *David Oakley and Michael Mackenzie, FT.com, January 10, 2011.*

2. The Inflation Vortex



Source: RBS

desired effect of portfolio diversification and landing in the worst-case scenario from the perspective of portfolio performance. It is the purpose of the Inflation Vortex to objectively assess the potential outcomes in different scenarios, both in terms of asset performance and from a portfolio standpoint.

Strategies in an uncertain inflation environment

While inflation in advanced economies was bound within a 0% to 5% range during the last 20 years, we have perhaps now entered into a period where this can no longer be guaranteed. Tensions in the Middle East have led to much higher energy prices, and food prices have followed, adding to the toxic inflation mix. Inflation pressures have been on the rise in emerging markets, driven by strong regional growth and rising commodities. Moreover, we face a structural shift from China, which has moved from being a net exporter of deflation to exporting more inflation to the rest of the world. With the heightened uncertainty regarding inflation, medium- to long-term asset allocation strategies should consider adopting a diversified portfolio with more 'inflation-friendly' investments.

Inflation is the most natural asset class for investment and protection purposes. Not surprisingly then, the inflation derivatives market has witnessed rapid growth and development in the last few years, though expert advice is still required to better understand the liquidity and tradability to achieve a more efficient investment or hedging strategy. Also, the lack of a common market sentiment on the future course of inflation has led to heightened volatility, making payoff innovations and execution capability critical. These are exactly the challenges that market leaders such as RBS have recognised and endeavoured to help clients face, especially during times of illiquidity and market crises.

For example, since inflation volatility has become highly expensive, typical inflation participation structures have become unattractive due to the expensive inflation floors embedded in them. RBS has responded by innovatively providing cost-efficient inflation protection via payoffs such as memory floored inflation notes and high-inflation bonus notes. RBS has also leveraged the high volatility to create yield enhancement structures such as inflation range accruals that have proved popular globally, at a time of low global yields. Another example of how RBS helped investors hedge against rising inflation in the UK is our invention of the zero-cost limited price index (LPI) collar, which takes advantage of the structurally cheap LPI market.

Along with payoff innovation, RBS has also worked extensively on market analytics and developed a Bloomberg tool – the Inflation Implied Probability Charts. The forward-looking Probability Charts show the real-time, market-implied probability distribution of the year-on-year inflation in three major currencies within certain bands, up to 10 years. This screen is the first of its kind, aiming to help investors fine-tune their inflation option strategies and see where best to take advantage of market volatility.

Other asset classes could also be used to take advantage of or hedge against inflation. Historically, 10-year interest rates are highly correlated with inflation. A structure combining 10-year rates with a minimum coupon payoff could provide protection in both an inflationary and a deflationary environment. Better liquidity in the interest rates derivatives market could help investors achieve a more cost-efficient investment or hedging solution. Commodities tend to perform strongly during periods of high inflation, but very poorly during periods of deflation. Directional exposure to investments in commodities could rapidly become adverse in different inflation scenarios and, hence, should be actively managed. The performance of real estate tends to be in line with inflation, although its capital-intensive nature and the illiquidity of its derivatives market are some of the issues that will have to be addressed.

In conclusion

The global economic crisis has left us with a highly uncertain environment with regard to inflation. A prudent investment strategy would benefit from an understanding of the historical framework of asset class performance under different inflationary scenarios. Various strategies could be employed to protect against inflation, either via the fast-emerging inflation derivatives market or using other asset classes. Finally, relative illiquidity and high hedging costs in the inflation market underscore the importance of working with an experienced, market-leading dealer to achieve an efficient investing or hedging solution.

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