# Fundamentals:

## CPI of the beholder

Rapid technological change makes it plausible that inflation around the world is materially overstated (and volume growth understated). That has far-reaching consequences for financial markets: helping to solve both the 'bond yield conundrum' and the 'productivity puzzle', whilst also making sense of ultra-loose monetary policy seven years into the global recovery.

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**Last month's Fundamentals discussed the possibility that global inflation may be over-estimated (and volume growth under-estimated) by around ½%. That conclusion has since been reiterated by Professor Sir Charles Bean's Independent Review of UK Economic Statistics[1].**

This month, LGIM Strategist Chris Jeffery focuses on the potential market implications of that mismeasurement. There are several meaningful conclusions.

- Overestimated inflation helps partially explain the 'bond yield conundrum'. This is unequivocally good news for bond investors as real yields are not as low as they think.
- However, it is unambiguously bad news for commodity investors. Real (i.e. inflation-adjusted) commodity prices are higher than they think, and there is less case for holding commodity as a hedge against declining purchasing power over time.
- For equity investors, the implications are more nuanced. Underestimated growth helps partially explain the 'productivity puzzle'. That structurally implies better real returns for equity investors and a better cyclical backdrop. However, there is also a wildcard: if low inflation tips into deflation, then the ability of central banks

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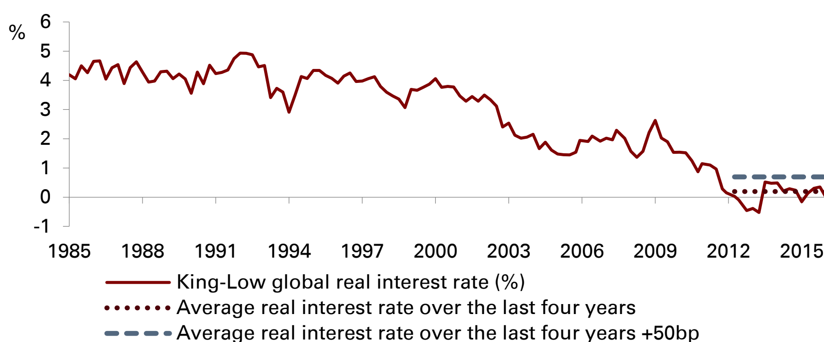
**Figure 1. Global real interest rates**




**Source: King & Low (2014), Bloomberg LP & LGIM**

to provide economic stimulus is compromised without them adopting ever more radical policy.

## GOOD NEWS FOR BOND INVESTORS

### Partially explaining the bond yield conundrum

The bond yield 'conundrum' was first mooted by Alan Greenspan in February 2005. He puzzled over why long-term bond yields remained low despite increases in the short-term interest rates set by the Federal Reserve. In more recent years, the conundrum has been distilled into one simple question: why are interest rates so low?[2]

One (partial) answer to this question could be that inflation is mismeasured. Investors in high quality government bonds are looking for a store of value that will enable them to maintain the purchasing power of wealth. If inflation is lower than reported, then lower nominal bond yields are consistent with achieving that goal.

**Figure 1** shows an estimate of the global real interest rate available on inflation-linked bonds. In the past few years, that has fallen to zero. This implies that investors get no compensation over and above expected inflation for lending to governments over the long term.

The lack of return potential can plausibly be attributed to the impact of excess savings in Asia and quantitative easing in the OECD. But, it can also be (partially) explained by over-reporting of inflation.

This latter interpretation is especially important when thinking about the potential risks inherent in long-dated government bonds. Some market commentators see government bonds as outrageously expensive with one high-profile investor infamously having described them as "resting on a bedrock of nitroglycerine".

However, if inflation is lower than reported, then at least some of this apparent overvaluation disappears. Global real interest rates would still be a long way below the levels enjoyed by previous generations of investors, but they would at least be meaningfully above zero (see the dotted line in **figure 1**).

In that instance, waiting for the once-in-a-generation sell-off in government bonds may be rather like waiting for Godot.

## BAD NEWS FOR COMMODITY INVESTORS

### Real commodity prices are higher than they seem

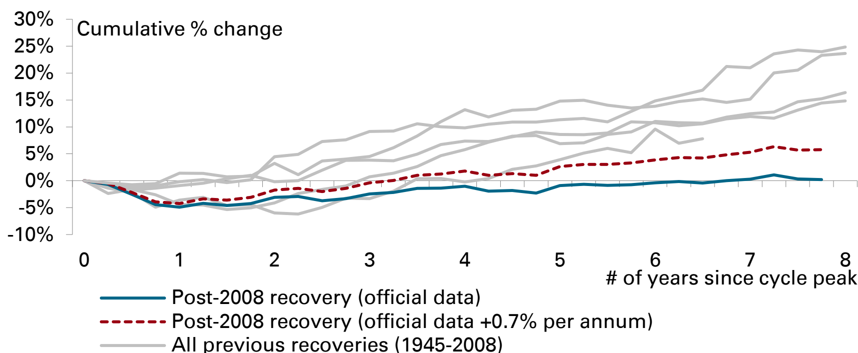
Putting a 'fair value' on commodities is especially difficult. Bond and equity investments can be assessed by discounting future cashflows at an appropriate rate of interest. However, commodities investments have no associated cashflow: a bar of gold, or a barrel of oil, is simply worth what somebody else is willing to pay for it.

One of the most commonly used ways to assess the value (as opposed to the price) of a commodity is to compare inflation-adjusted prices to their long-run average. That provides a gauge of whether the relative price is particularly expensive/cheap.

If inflation has been persistently overestimated then real commodity prices are higher than a simple calculation would suggest. The size of the impact will depend on how persistent that mismeasurement has been. If we assume that inflation has been overestimated by 0.5% for a decade (as suggested in last month's Fundamentals), then real commodity prices are approximately 5% higher than they seem.

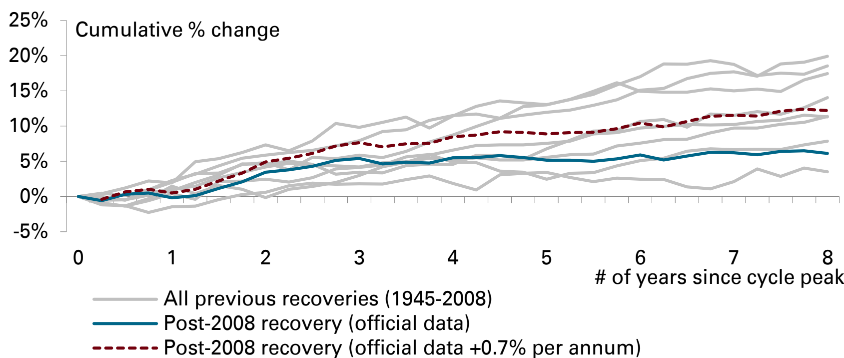
However, the bad news for commodity investors does not stop

**Figure 2. Productivity growth in UK economic cycles**



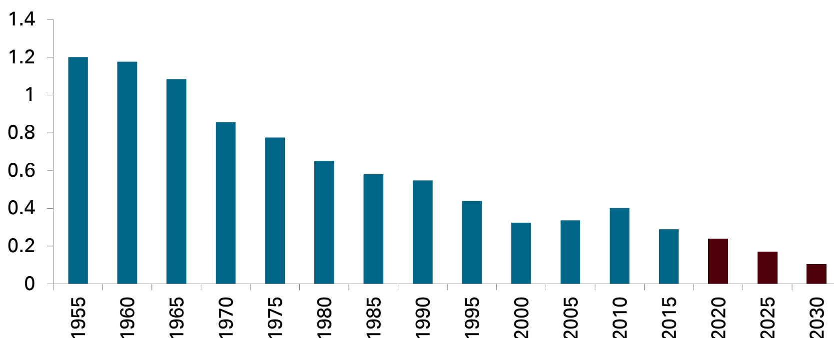

**Source: Bank of England, ONS, LGIM**

**Figure 3. Productivity growth in US economic cycles**




Source: BEA, BLS, NBER, LGIM

**Figure 4. OECD population growth**




Source: UN World Population Prospects 2015

there. The most commonly cited reason for holding commodities within a balanced portfolio is their role as a hedge against inflation. If technological forces are acting as a persistent drag on prices, then the imperative to protect against higher inflation is logically diminished. The potential over-reporting of inflation is therefore a 'double whammy' for commodity investors.

## MIXED IMPLICATIONS FOR EQUITY INVESTORS

### First the good news: explaining the productivity puzzle

If inflation is over-reported, but there is no problem in measuring the total amount of nominal spending, then it must follow that real GDP growth is under-reported. This type of growth mismeasurement can help mitigate (but not solve) the productivity puzzle. That is good news for the sustainability of the equity bull market.

If GDP growth has been 0.7% per annum higher over the last decade (as suggested by Professor Bean), then recent productivity growth has been more 'normal' than is apparent in the official statistics. **Figure 2** shows recent performance relative to all UK recoveries since 1945; **figure 3** shows the same comparison for the USA. In both cases, productivity is defined as output per employee.

In the UK, productivity growth during the current recovery would still have been lacklustre but not quite the disaster suggested by currently available data. In the US, the puzzle of weak recent productivity growth would be solved at the stroke of a statistician's pen.

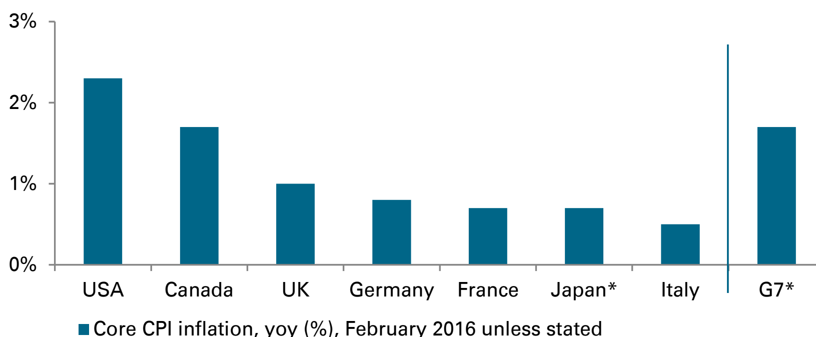
With population growth in the OECD having slowed to nearly zero **(figure 4)**, future growth is increasingly reliant on an expansion in productive capacity. The weakness in (measured) productivity growth is therefore behind some of the more bearish long-term forecasts for the world economy. The most high-profile exponent of this view, Professor Robert Gordon[3] argues for the "death of innovation, the end of growth". That kind of alarmist forecast would be harder to sustain if the data were revised in line with **figures 2 and 3**.

From an equity investor's perspective, the corporate sector's ability to harness productivity growth is increasingly the key to sustainable profit expansion. In the past, the corporate sector (in aggregate) could expand profits by scaling up production to service an ever-growing customer base. In the future, profit expansion will have to increasingly rely on the corporate sector's ability to 'do more with less' via improving productivity.

### Now the wildcard: harder to escape the liquidity trap

The implications for bonds

**Figure 5. Underlying inflation already weak**




Source: Bloomberg L.P., LGIM

investors and commodity investors are fairly clear. For equity investors, the story is also a wildcard.

If inflation were relatively high, then over-reporting by 0.5% per annum would not be concerning and might even be welcomed. But that is not today's backdrop. Instead, underlying inflation is already very weak across most of the developed world (**figure 5**).

Adjusting these data down by 50bp would imply that the euro zone and Japan are closer to the deflationary precipice than we previously realised.

If every contract and every price in the economy were indexed to inflation, then this should not really matter. This is the world of the 'classical dichotomy' in which changes in inflation have no impact on growth. But, this is not the case in the real world where debt is fixed; and it is hard for companies to cut nominal wages.

Both of those should be concerning for equity investors as deflation takes hold. Fixed nominal debt becomes harder to service and roll-over as prices are falling, implying greater default risk. Fixed wages make it harder for firms to cut costs as prices are falling, implying a threat to profitability.

In addition, deflation seriously impairs the functioning of monetary policy as central banks find it hard to cut nominal interest rates meaningfully below zero.

Over the last couple of decades, equity investors have come to enjoy the benefits of a 'central bank put'. Whenever the economy has been hit by a serious downturn, central banks have cut interest rates and purchased assets to stimulate growth.

Those actions are effective only in so far as they bring down real interest rates. In turn, lower real interest rates drive up equity markets by increasing the value today of earnings and dividends accruing in the future. However, as low inflation turns into deflation, and nominal interest rates are stuck close to zero, real interest rates can start rising.

Although experimentation with negative interest rates has begun in recent years, there is a conceptual lower bound at which the benefits of holding banknotes (i.e. avoiding negative interest rates) start to outweigh the costs (i.e. the costs of storage, security and insurance). This is commonly assumed to be around -0.75%.

This is the essence of the 'liquidity trap', when they hit the lower bound on nominal interest rates, central banks are forced into ever bolder and more exotic action to try to drive up inflation expectations. In the words of Professor Paul Krugman, they are required to act in a way that is "credibly irresponsible".

Equity volatility is a concern as investors digest the inherent unpredictability of such central bank experimentation. But ultimately, equity investors should take comfort provided that central bankers remain willing to "boldly go where no policymaker has gone before".

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[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/507081/2904936_Bean_Review_Web_Accessible.pdf

[2] http://www.brookings.edu/blogs/ben-bernanke/posts/2015/03/30-why-interest-rates-so-low

[3] https://www.ted.com/talks/robert_gordon_the_death_of_innovation_the_end_of_growth

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