Inflation Series Part 3: Structural inflation

Introduction

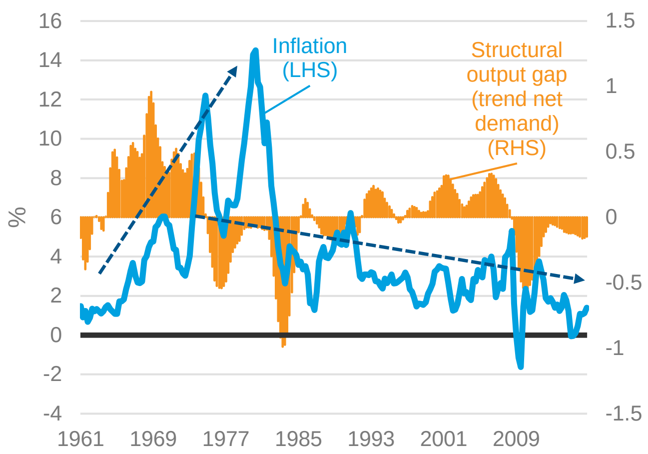
The previous instalment, Part 2, of our series on assessing inflation showed that analysing inflation on the basis of whether it is structurally or cyclically driven offers what we perceive to be greater guidance to investors. Here in Part 3, we will focus on structural inflation. We will also propose indicators[1] of structural inflation that we believe to be particularly effective.

What is structural inflation?

Structural inflation tends to sustain for more than a business cycle and has significant spill-over to the wider economy. So the drivers of structural inflation also tend to be persistent in nature and in their impact. There are three broad sources of structural inflation – demand, supply and factors that fundamentally affect the demand-supply balance, that is, the way that demand interacts with supply.

Recall in Part 1 that net demand (demand less supply) signals inflation fairly well. We can also fit that into a structural-cyclical framework by extracting the long term trends to get the structural net demand indicators of inflation. Chart 3a shows the structural version of the net demand indicator, the output gap, first shown in Part 1. It signals the rising structural inflation trend from the late 1960s reasonably well. It was also able to signal the onset, around the early 1980s, of the more moderate downward structural trend.

Chart 3a. Trend in net demand and structural inflation



Source: Thomson Reuters, Macquarie, June 2017

However, we do believe it is helpful to track the gross constituents of these net indicators as well. For example, policy moves might depend on whether net demand changes come from the supply side or the demand side. Supply side factors might require legislative changes as a response whereas demand side factors could be addressed with fiscal and/or monetary policies. The following sections will discuss these factors in detail.

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1 The final selection of indicators was decided after extensive testing. While not shown here, the work undertaken is available upon request.

Structural drivers of inflation: demand factors

Demand factors relate mainly to consumer spending (remember inflation has to do with consumer goods and services). Therefore long term trends in factors that drive consumer spending will signal that longer term structural movements are taking place. Consumer theory readily points to one such structural factor: permanent disposable income. Consumption will rise more sustainably if income increases are perceived to be permanent. Chart 3b shows this indicator signals long term inflation fairly well.

Chart 3b. Permanent income growth and structural inflation

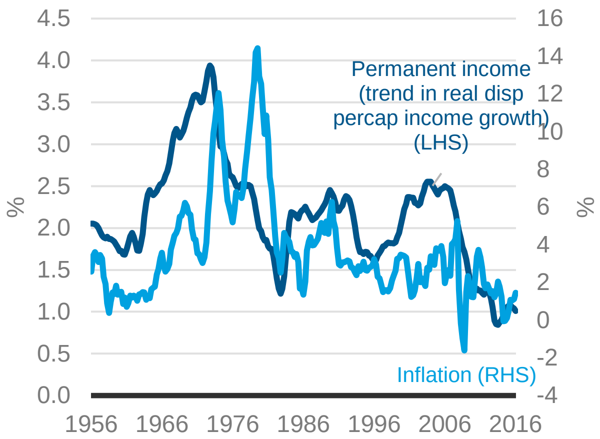
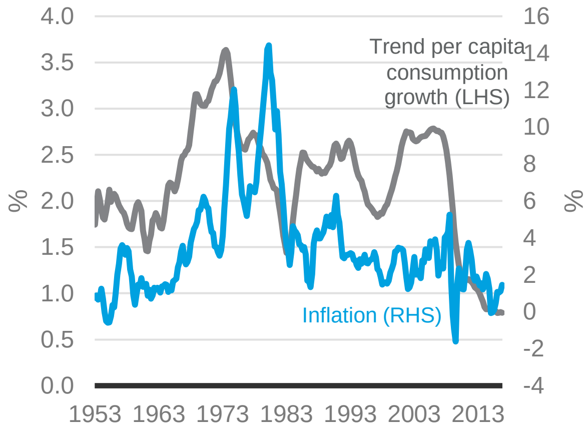


Chart 3c. Trend in per capita consumption growth and structural inflation



Source: Thomson Reuters, Macquarie, June 2017

Long term consumer behaviour can also vary for non-income reasons. So looking at the trend in personal consumption per capita can also help in ascertaining any structural movements aside from that due to income trends. Chart 3c shows this indicator to be a fairly effective signal of long term inflation as well.

Another structural influence on inflation that merits attention is population trends, especially demographics[2]. They are also, arguably, the longest term influences on spending intentions. These very long term factors tend to be less closely monitored due to being very slow moving, and hence the relationship with inflation is not as explicitly observed. However, they can be useful in establishing the long term bounds to where inflation can go. A particularly interesting indicator is the old age dependency ratio[3] – academic research has found that the higher the ratio, the more that structural inflation will rise[4].

Structural drivers of inflation: supply side

A diminishing of the long term capacity to produce goods and services would signal a structural increase in inflation. Production capacity is measured by the following key inputs: the stock of fixed capital, labour and material inputs that facilitate the process. Production is also influenced by how these inputs are utilised in generating output. And this is measured by overall productivity - if the trend is rising, structural inflation should be decreasing.

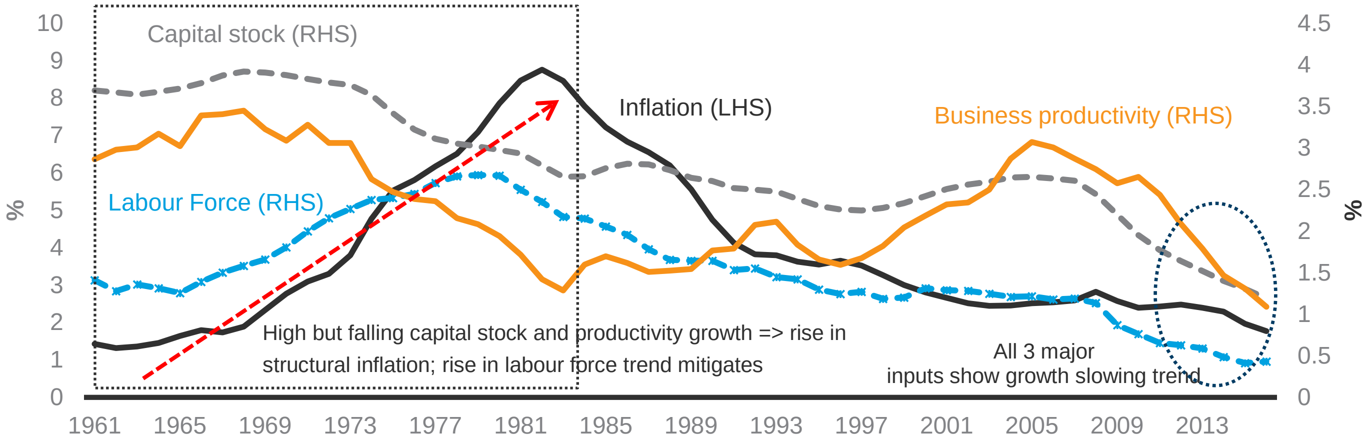
To illustrate, Chart 3d shows that high but declining capital stock and productivity growth drove a steady rise in structural inflation starting from the late 1960s; at the same time, the labour force was able to mitigate this structural increase thanks to the steady rise in female participation rates. Out of interest, the most recent trends posted by all three factors, labour force, capital stock and productivity, are in a downward direction, all signalling potential future structural inflation

2 'Demographics, The abnormal generation', Dean Stewart 2013, 'Demographic impacts today, Immediate economic impacts of demographic shifts', Dean Stewart 2015.

3 Defined as the trend in population aged 65+ relative to the labour force trend.

4 "Can demography affect inflation and monetary policy?", Bank of International Settlements (BIS) Working Paper 485 by Juselius, M. and Takáts, E., February 2015

Chart 3d. Key inputs into productive capacity and structural inflation



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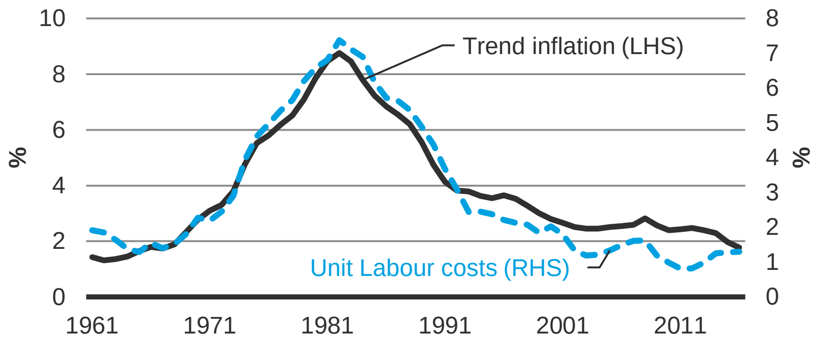
Inflation is also linked to wage growth. Structurally, it is long term wage growth adjusted for productivity - called unit labour cost (ULC) - that matters. Chart 3e shows that a rising ULC trend leads to rising structural inflation. So this could be an alternative to a stand-alone productivity or wage trend indicator.

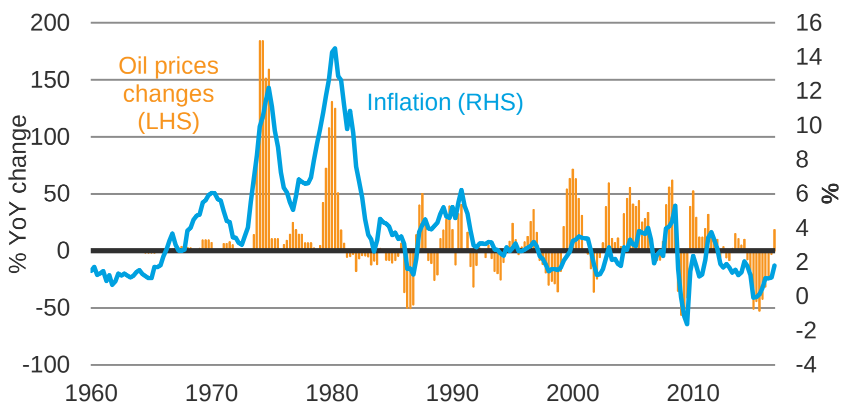
Chart 3e. Unit labour costs trend and structural inflation



Source: Thomson Reuters, Macquarie, June 2017

A particularly critical input is energy (which we proxy by oil prices). Major central bank research has shown that **sudden large moves**, not gradual changes, in prices due to supply shortage shocks, can trigger rising structural inflation trends. This is shown in Chart 3f. The key point to consider here is that the price moves are unexpected and large, reflecting a structural shift in supply unrelated to normal demand-supply behaviour. The causes could be environmental e.g. a massive earthquake in oil producing regions that disrupts extraction and distribution or geopolitical e.g. the 1973 Middle East conflict hindered access to oil and altered the fundamental balance between buyers and sellers to the extent that future business decisions began including energy conservation, thereby raising structural inflation globally. Such events have resulted in a significant period of adjustment which is how inflation is structurally affected.

Chart 3f. Supply side shock growth and structural inflation



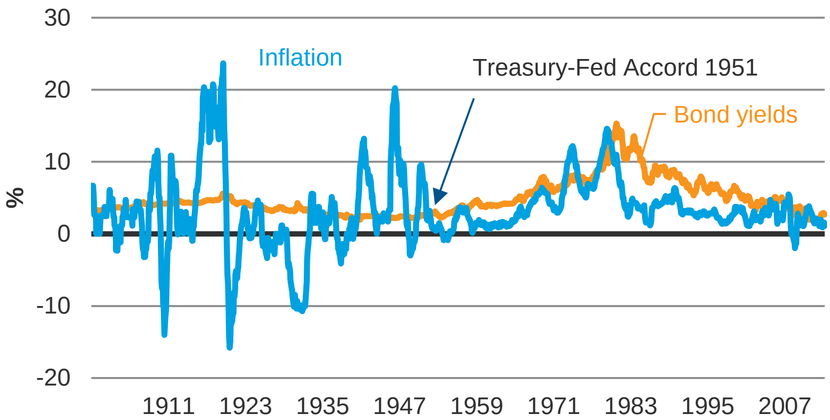
Source: Thomson Reuters, Macquarie, June 2017

Structural drivers of inflation: factors affecting the demand-supply balance

The last factor in our analysis is one that involves the relationship between demand and supply, i.e. how both forces interact. Legal and regulatory changes that impact the economy will be a key influence. These changes, while not frequent, tend to persist and are not easily reversed. Other factors include geopolitical events that shift political and economic arrangements.

Here is an example to help explain this point: in 1951, the US Treasury-Federal Reserve (Fed) Accord 'freed' the Fed from fixing long term bond yields in compliance to the Treasury. Prior to that, long term yields were stable but inflation changed significantly i.e. there were clear inflation-deflation phases. After the Accord became effective, long term inflation stabilised but bond yield moves were less stable (see Chart 3g). Other similar examples are monetary regime changes such as moving between fixed or floating exchange rate regimes, or changes to long term policy frameworks e.g. inflation targeting policy from 1989/90 onwards[5].

Chart 3g. Major regulatory changes and structural inflation



Source: Thomson Reuters, Macquarie, June 2017

Geopolitical events tend to be one-off episodes that fundamentally change the demand-supply balance. A good example was the 1973 Middle East conflict mentioned above. While this event can be considered a supply side change, it also affected how demand and supply forces interact.

Final thoughts and conclusion

Table 3.1 Suggested list of structural Inflation Indicators

Demand side	Supply side
Permanent Disposable Income growth **Structural consumption per capita growth trend** Old age dependency ratio	**Capital stock accumulated** **Trend Labour Force growth** **Productivity trend** Unit labour cost trend **Significant and sudden oil price change**
Net Demand	**Factors affecting Demand-Supply balance**
Trend in the output gap	Regulatory changes Major policy framework change Geopolitical risk

We conclude by summarising in Table 3.1 above our preferred structural indicators of inflation (in bold), which we found to have signalled structural inflation effectively and in a timely manner. In practice we could combine all the above indicators into a composite structural inflation indicator as part of an inflation outlook scorecard. This will be discussed in detail in the final instalment of our series where we put all our signals together and show how to use them in assessing inflation. But first we will complete our discussion of the proposed structural-cyclical framework by exploring the issue of cyclical inflation[5]. This will be the subject of Part 4, the next instalment of our inflation series.

5 Note that this is different from the 'standard' loosening or tightening policies which tend to be cyclical in nature. For a list of countries that practice inflation targeting see http://www.imf.org/external/pubs/ft/fandd/basics/target.htm

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