Special Report

Inflation: Down, but not out

Highlights

- Markets are obsessing about deflation again. We believe inflation in developed countries will stay low in the next two years, dampened by China's slowdown, low oil prices and ongoing spare capacity. On a five-year view the range of outcomes is wider than markets are currently discounting. We identify six potential inflation scenarios.
- The case for a falling inflation outcome rests on 'secular stagnation' and 'global excess savings' arguments – some of which are temporary, in our view. Ageing populations, high indebtedness and rising income inequality are seen to be deflationary.
- The case for rising inflation rests on rising demand from emerging markets and an increase in wages in response to closing output gaps (driven partly by permanent supply losses). In addition, disinflationary forces should recede with the easing of headwinds such as fiscal tightening and deleveraging.
- We believe the medium-term inflation outcome depends on four factors: (1) investment trends; (2) China's economy and policies; (3) the response of wages to low unemployment; and (4) whether productivity growth recovers. So far these point towards low inflation; but we expect them to improve over the medium term and for inflation to rise back to target.

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Executive summary

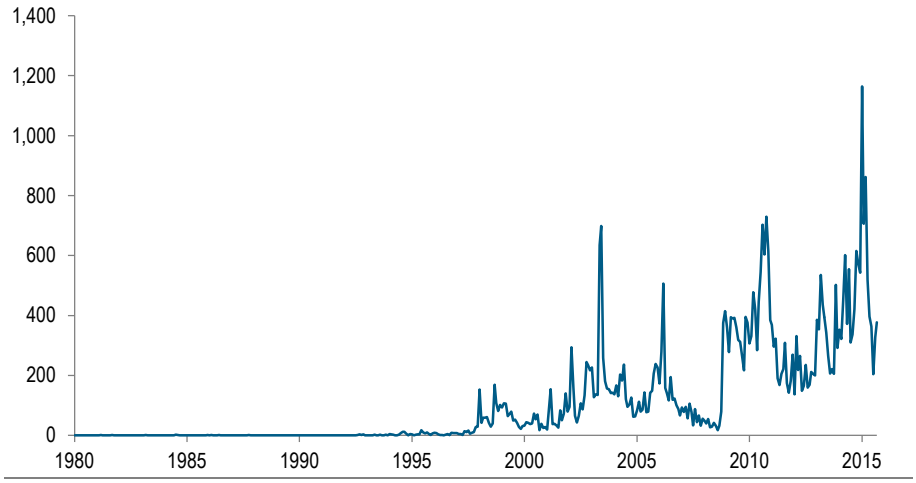
A wide range of possible inflation outcomes

Inflation is likely to stay low in the near term

Investors have become obsessed with deflation risks in developed markets (Figure 1) as concerns grow about the negative impulse from slowing emerging markets, especially China. We expect inflation to stay low over the next two years, held down by China's slowdown, a sharp fall in investment in the resources sector and ongoing spare capacity in developed countries. In the US, the strong USD is a further disinflationary factor.

Figure 1: Deflation concerns have grown over the last decade

No. of Bloomberg news articles with deflation as the keyword



Source: Bloomberg, Standard Chartered Research

Deflation worries have also raised questions about the medium- to long-term profile of inflation and its implications for monetary policy. We explore the long-term outlook for inflation in developed countries in detail. The range of outcomes is wide and we identify six potential scenarios (Figure 2). The outcome will depend on the balance of disinflationary forces and re-inflationary forces (Figure 3). We analyse these forces in greater detail and outline four factors that we expect will drive the outcome and should be monitored (refer to Figure 8 for a summary of these factors).

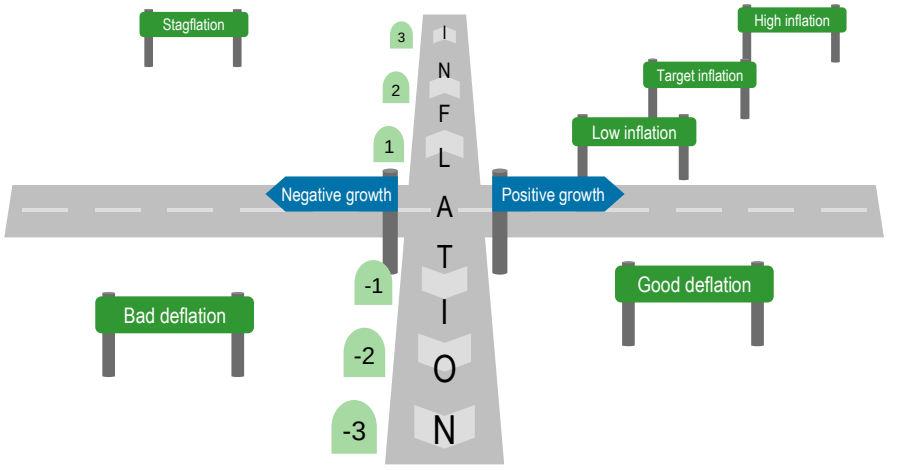
The case for lower inflation

We find some arguments for secular stagnation claims implausible

Expectations for low inflation or deflation in the medium term rest on two related claims: we face 'secular stagnation', which will keep demand weak; and the world has 'excess savings' making it hard for monetary policy to boost demand. Slow demand growth encourages a cautious mindset, including deleveraging and a reluctance to borrow, as occurred in 1990s Japan.

However, we are not so downbeat on the medium-term outlook for the global economy. Rising demand from burgeoning middle classes in emerging markets will boost consumption and investment demand globally. Global output is also likely to be supported by the growing labour supply from these countries. In addition, there is also evidence that widening income distribution does not have as much impact on reducing spending as is feared.

Figure 2: Six scenarios for long-term inflation



Source: Standard Chartered Research

The case for higher inflation

In our view, the low inflation seen currently in part reflects cyclical factors. Historically, economies have taken longer to recover from financial crises than non-financial crises (such as balance of payments crises) and inflation is likely to pick up as the recovery matures. We also expect central banks to keep monetary policy very accommodative to guide inflation back towards targets.

Factors constraining demand, such as fiscal restraint, are set to ease

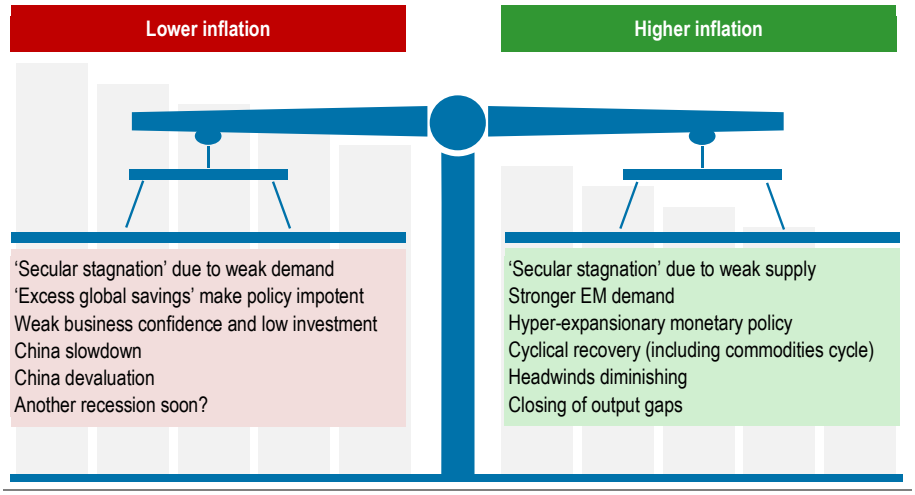
In addition, some factors that have restrained demand, like private-sector deleveraging and fiscal restraint, are set to ease. Fiscal restraint is already diminishing. Slowing labour-force growth and weak productivity growth, often part of the secular stagnation theory, are more likely inflationary than deflationary.

Four key factors to watch

We believe that the most likely scenario (of the six that we identify) over the medium term is a return of inflation towards targets (Figure 4). The biggest risk to this view comes from another recession that could push the developed world towards deflation

Figure 3: Forces driving inflation in the medium term

Positive and negative



Source: Standard Chartered Research

before the recovery has fully taken hold. This is clearly not our central view. However, we are aware that several factors will exert diverging pressures on inflation over the coming years. We identify four key factors that we think will determine the actual outcome over the medium term.

Key factor 1 – Investment

One of the most important tests will be whether private investment in developed countries picks up. Low investment rather than weak consumer spending is the main reason for sluggish demand. Note that the risk of global excess savings is driven not so much by increasing savings as by falling investment, particularly in China.

Investment is likely to pick up as companies take advantage of new technology

Investment in developed countries has been held back by a series of blows to confidence in the last 10 years, including the global financial crisis (GFC), euro crisis and China's slowdown. Facing only modest growth and widespread uncertainty, companies are reluctant to commit to new investments (Figure 5). When they do invest the cost is often relatively low as the price of digital technologies continues to fall. Despite high profits, US net investment is still well below pre-crisis levels.

Provided new crises are avoided, we expect a higher rate of investment eventually, partly as companies upgrade to new technology to stay competitive. We also doubt claims that investment is low because companies are 'short-termist'. Stock markets reward growth companies and the compensation of most company leaders is long-term oriented.

We also expect fiscal policy to be less of a constraint. Government investment should pick up as governments edge towards accepting the case for more infrastructure spending and fiscal deficit targets are relaxed.

Figure 4: Six inflation scenarios – Most to least likely inflation scenario over a five-year horizon

	Scenario	Comment
1	Back to target – old normal	Inflation back to 2.0% targets, robust growth. Causes: Confidence in monetary policy, diminishing fiscal restraint and strong demand from EMs send inflation back to target. Most likely scenario in the medium term
2	Lowflation	Inflation positive but below target, weak growth. Causes: High indebtedness, weak growth, limited fiscal stimulus and EM (especially China) slowdown result in inflation below target. Most likely in the near term
3	High inflation	Inflation between 2-4%, robust growth. Causes: Output gaps close faster than anticipated, loss of supply potential and very dovish central banks willing to accept high inflation to avoid another recession
4	Bad deflation	Falling prices, weak growth. Causes: Another recession – drop in inflation linked to high unemployment, weak growth, low or falling asset prices. Likelihood increases in the event of another downturn
5	Good deflation	Falling prices, strong growth. Causes: Strong productivity lift-off which is absent currently. Wider adoption of digital technologies could trigger this scenario
6	Stagflation	High inflation, low growth. Causes: Labour- or product-market rigidities that make wages sticky downwards despite poor growth. Least likely scenario

Source: Standard Chartered Research

China's savings trend has gained importance as OPEC surpluses fall

Key factor 2 – China's economy and policies

China's slowdown is an important factor in depressing global investment sentiment in manufacturing and the resources sector. While this is holding back economic growth this year, we see China's slowdown as cyclical and look for stabilisation over the next year. That said, chronic overcapacity remains in many industrial sectors including steel, cement and buildings, and the evolving consumer- and services-led economy will be much less capital-intensive.

China is also central to the global excess savings issue, especially now that OPEC surpluses are vanishing (Figure 6). China's savings, at close to 50% of GDP, represent the largest savings pool in the world (c7% of global GDP). If China's investment falls faster than savings, global excess savings will increase via a rising China current account surplus. We, however, suspect China's high corporate savings will fall back as profit margins are squeezed. Government savings should fall too as fiscal policy is used to support growth. Finally, the shift towards a more consumption-driven economy is likely to boost inflation over the medium term.

This year China is likely 'exporting deflation' directly, via the impact of the economic slowdown on commodity prices, weak producer prices due to excess capacity and, recently, the decline in the Chinese yuan (CNY). So far the decline in the CNY is small. Any further substantial decline from here will mean that China will continue to export deflation for a while. Our view, however, is that the CNY is more likely to stabilise as the economy itself stabilises.

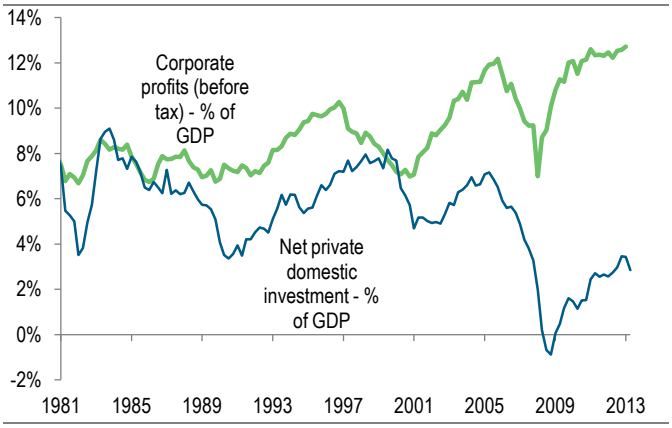
The bias in the last two cycles has been to overestimate output gaps

Key factor 3 – The response of wages to low unemployment

The third key factor to watch is the behaviour of wages. For the US, UK and Japan output gaps are closing and unemployment rates are nearing the 'natural rate'. Estimating these constructs is more art than science and subject to great uncertainty (Figure 7). However, there is evidence that the bias over the last two cycles has been to overestimate the slack in the economy. Still, even if the US starts overheating, might excess capacity in the euro area and China prevent US wages and prices rising? Our view is that globalisation may dampen the usual effects but only mildly; too much of the US economy is still insulated from foreign competition.

Figure 5: US companies are not investing their profits

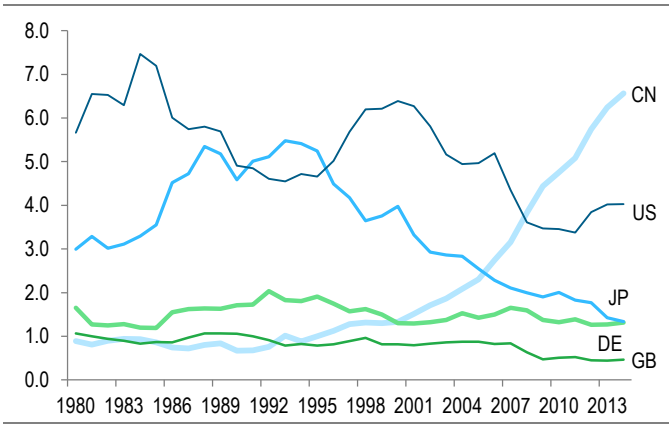
% of GDP



Source: Bloomberg, Standard Chartered Research

Figure 6: Gross national savings are dominated by China

% of world GDP



Source: IMF WEO, Standard Chartered Research

Key factor 4 – Whether productivity growth recovers

New digital technologies could speed up productivity growth over time

We believe slow productivity growth is inflationary rather than deflationary since it means that output gaps close faster and central banks are more likely to make the mistake of over-stimulating the economy as in the 1970s. Hopes for improved productivity growth from new technology so far have not been realised; productivity growth has been disappointingly low. Our view is that the new digital technologies do have the potential to speed up productivity growth over time. Higher investment should also raise productivity growth.

The future of inflation targeting

Questioning inflation targeting

The Fed, the European Central Bank (ECB) and the Bank of England (BoE) have done a reasonable job keeping inflation close to 2% since the 1990s. However, critics accuse them of focusing too much on inflation and not enough on ensuring financial stability. Some suggest the inflation target should be raised to reduce the risk of falling into deflation. Others argue that targets should be lowered, because even 2% inflation sees the price level double in 35 years and 'good deflation' should not be feared anyway.

Longer-term, political pressure to accept higher inflation may emerge due to high debt levels. Keeping interest rates (especially real rates) low could suit both the government and private debtors, allowing them to reduce debt. Historically, currencies have usually seen inflation over time unless they are fixed to gold, as during the gold standard era. The USD has lost 95% of its value since leaving the gold standard in 1932. However, central banks have been made independent to limit this risk, which is one reason we are not forecasting a repeat of the high inflation of the 1970s.

Inflation targeting to stay, macro-prudential measures to be added

We think a move away from inflation targeting is unlikely

We see very little likelihood that inflation targets will be altered any time soon, as central bankers are concerned this could undermine their credibility. Central banks' main response to financial stability concerns is to look for macro-prudential policies to protect the financial system from bubbles and possibly to limit the bubble itself, though the effectiveness of such measures and how they might interact with monetary policy remain uncertain.

Figure 7: Output gaps are notoriously hard to estimate, but seem to be closing
Estimates of output gap as a % of potential GDP

	2013		2016	
	OECD	IMF	OECD	IMF
Canada	-1.1	-1.2	-0.3	-0.2
France	-2.2	-2.2	-2.3	-2.5
Germany	-1.4	-0.6	0.7	0.4
Greece	-13.8	-10.9	-11.5	-3.6
Japan	0.8	-1.2	1.1	-0.2
United Kingdom	-1.8	-2.8	-0.5	-0.5
United States	-3.0	-2.5	-1.6	-0.1

Source: IMF, OECD, Standard Chartered Research

Conclusion – Four key trends to monitor

Our forecasts point to western central banks pushing inflation back close to targets over the medium term. There are risks to this view in both directions. The four trends to monitor are:

1. Investment: Will it make a typical cyclical recovery or remain lacklustre?
2. China's slowdown: Will growth stabilise and will the CNY fall further?
3. Wages and output gaps: Will wage growth accelerate as unemployment falls?
4. Productivity: Will it accelerate, helping to ease inflation pressures?

Fear of another recession is a key factor that will keep monetary policy very stimulatory

Finally, an overriding factor will be whether countries can avoid a new recession in the next few years, at least until inflation rises from recent low levels. To avoid such a downturn, we believe central banks need to keep policy accommodative. A new downturn soon would push inflation lower and, starting from core inflation nearer 1% than 2%, threaten a fall into deflation. It is this fear above all, and the knowledge that there is very limited scope for new fiscal or monetary stimulus to deal with such a downturn, that we think will make central bankers cautious about tightening. Central banks are also likely to have learnt from the recent policy errors in some European countries, increasing their willingness to err on the dovish side rather than risk recession and deflation. This is sensible at present, with core inflation below target. It does, however, raise the prospect of a period of inflation in the 2-4% range towards the end of this decade (such as in the UK during 2009-12), which markets are not factoring in currently.

Figure 8: Drivers of the inflation outlook

	Assessment	Importance
Disinflationary forces		
Investment trends		**High**
Secular stagnation/excess savings due to weak demand	A widely held view, but many forces are likely temporary	High
Ageing population boosts savings	Not when people actually retire. Japan's household savings have fallen. Rising demand from EM middle classes will boost global demand as well	Limited
Wider income distribution boosts savings	Savings are not high in developed countries	Limited
Private-sector deleveraging	May be over in the US, UK, Japan	Diminishing
Government deleveraging	Fiscal tightening to continue but set to be much less in future	Diminishing
Private investment to stay weak	But this is cyclical and it could increase if growth continues	High
New cheaper technology	This may be holding down the USD value of investment	Significant
Company 'short-termism' limits investment	Questionable – markets do reward growth companies	Limited
Lower potential growth slows demand too – caution, lack of confidence	Japan 1990s experience in part? But depends on demand	Uncertain
China slowdown		**High**
China's investment may fall more than savings	Would imply increased savings to rest of world	High
China is 'exporting deflation'	This is likely at present: as manufactured prices fall, the CNY is not rising and China's slowdown has hit oil prices	Temporary
Weaker China has led to commodities collapse	Only a one-off effect and commodities may recover	Temporary
China may devalue to boost growth	Not our view, but would lower world prices	Uncertain
Central bank policy error	Currently very dovish but risk by 2017-18	Significant
Risk of another world recession	Candidates? China slowdown, geopolitics, oil spike	Significant
Reflationary forces		
Cyclical disinflation pressure	Low inflation due to depth of GFC	Significant
Output gaps and wages		**High**
Output gaps are closing	In the US and UK; but not globally with China	High
Wages start to pick up	Phillips Curve still works so the continued drop in unemployment will push wages higher	High
Pressure on central banks to accept higher inflation	Historically high indebtedness has raised pressure to inflate away debt	High
Monetary policy is ultra-accommodative	Could bring inflation but only after the economy overheats	Significant
High debt could encourage monetisation	Political forces to tolerate high inflation and keep rates low	Long-term
Fiat currencies tend to be inflationary	This is the historical experience. Deflation occurs with fixed exchange rates like the gold standard or pegs	Long-term
Secular stagnation due to weak supply	In the 1970s, this was inflationary	High
Slow labour-force growth	Lowers the potential growth rate	Significant
Reaching limits of improved education	Lowers the potential growth rate	Significant
Weak productivity growth	**Lowers the potential growth rate**	**High**
Slowdown in technological change	Possibly, but we think it may pick up – new digital technology	Significant
Lower output because people now have the wrong skills or leave the labour force	Known as 'hysteresis'	Limited

Source: Standard Chartered Research

Six potential inflation scenarios

Inflation – A mid- to long-term view

Deflation concerns have dominated markets since the global financial crisis

Weak growth and persistently low inflation in the US and Europe since the GFC have raised fears that central banks will undershoot their 2% inflation target for an extended period or even face deflation. Fears of deflation peaked at the end of last year. The collapse in oil prices has taken headline inflation back to zero or even negative in many countries; with core inflation below target as well (Figures 9 and 10). Developed countries in Asia including Korea, Taiwan and Singapore have also seen very low inflation (Figures 11 and 12).

Deflation concerns re-emerged towards end Q3-2015 amid weak data from China, the drop in commodity prices and market volatility. There is talk of 'lowflation', meaning inflation could remain closer to 1% than 2% for an extended period or even indefinitely. Some worry that high debts and bloated central bank balance sheets will eventually point to inflation surprising on the upside. Meanwhile, central banks remain fixated on returning inflation to their 2% targets.

In this report we look at the medium- and long-term outlook for inflation (three-to-five years and beyond) in developed countries, ask whether persistent deflation is a likely scenario and consider the economic risks and market implications of different outcomes. We propose and investigate six possible inflation scenarios (Figure 13).

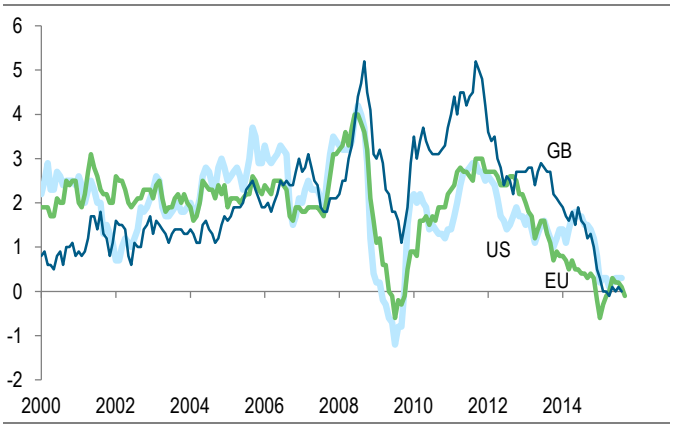
Six scenarios

1. The 'old normal': Inflation returns to c.2%

Major central banks are keen to return to the 'old normal' of inflation around 2%

Central banks remain determined to achieve their 2% target. As unemployment falls further, and assuming the old relationship between unemployment and inflation is still intact (the Phillips Curve), the US and UK will start to see rising wages soon, with Japan close behind. Rising wages would underpin growth, helping to open a 'positive output gap' (overheating) and push inflation up. Market measures of inflation expectations, as well as surveys, suggest that people believe the major central banks will be successful, with the exception of Japan – where market inflation expectations are still well below 2% – and the euro area, though expectations are now rising again towards target there. Our base-line forecasts also assume inflation moving back to around 2% in the next few years. But inflation has sprung persistent surprises since the 1960s and there are several other inflation outcomes that warrant consideration. We, however, believe this to be the most likely scenario over the medium term.

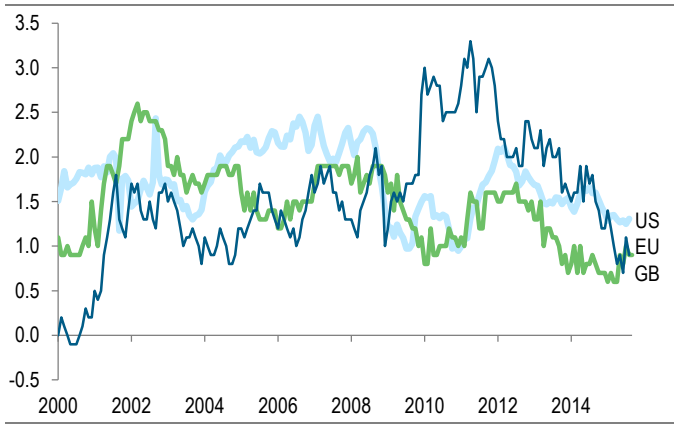
Figure 9: Headline inflation has dipped to zero as commodity prices have collapsed; *% y/y*



Source: Bloomberg, Standard Chartered Research

Figure 10: Core inflation is also muted

% y/y



Source: Bloomberg, Standard Chartered Research

2. 'Lowflation'

Inflation could be stuck near 1% indefinitely

This is a term coined to suggest a persistently positive inflation rate, but well below 2%. Six years after the GFC, the world economy is currently firmly placed in this scenario. In an environment of lowflation, central banks are likely to keep interest rates very low and even use further quantitative easing to achieve their 2% inflation target. However, it is also possible that central banks will accept low inflation and tighten monetary policy on other grounds, such as a desire to limit asset price bubbles. We expect this to be the most likely scenario over the short term.

3. High inflation

High inflation is a bigger risk than is currently being factored in by markets

In the early days of quantitative easing, there were worries that the rise in base money would lead to high inflation at some point. Weak growth, persistent shocks and continuing low reported inflation have allayed those fears. In our view such fears never made sense in the short term; higher base money does not immediately feed through to inflation.

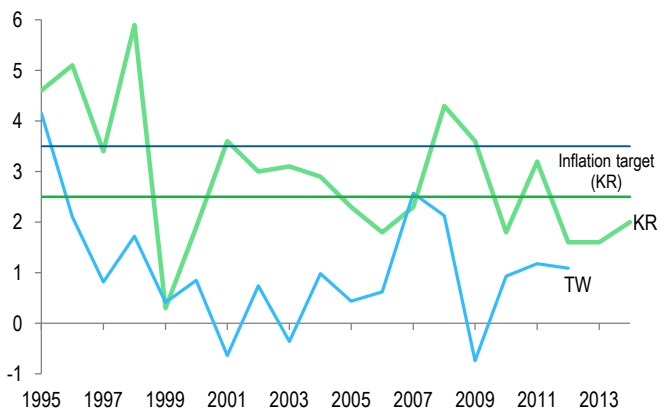
On a three-to-five year view and assuming we do not see a new world recession within that time, surprisingly high inflation may be a greater risk than generally realised. Various forces, discussed below, point to higher inflation. If inflation does move above 2% targets, closing in on 3% or higher, the question would be whether central banks could control it as well as they believe. There is a risk that central banks over-react, pushing the economy into recession. But fear of this could also lead them to under-react, allowing high inflation to last longer, as occurred in the 1970s. On a five-year view, we attach a greater likelihood to this scenario than is currently priced in by markets and see this as the third most likely scenario over the medium term.

4. Bad deflation

Falling prices along with weak growth and soft asset prices is the worst outcome

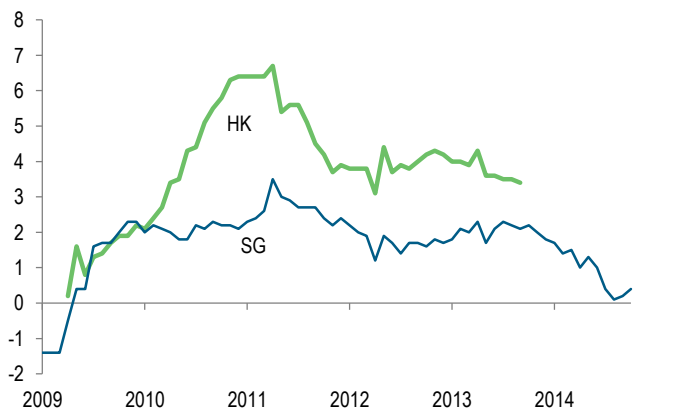
Deflation is defined as a sustained downward trend in the prices of goods and services, i.e., negative inflation. But it can be 'good' or 'bad'. Bad deflation is characterised by a weak economy, high unemployment, low or falling asset prices and a generally depressed environment. It is often associated with 'debt deflation' where a weak economy and falling prices lead to a difficult time for debtors, bringing defaults and write-offs, deleveraging and a reluctance to take on new credit. At present, investors worry most about debt deflation.

Figure 11: Core inflation is low in Korea and Taiwan
Core inflation, % y/y



Source: Bloomberg, Standard Chartered Research; Note: no inflation target for TW

Figure 12: Core inflation low in Singapore, underlying inflation is not in HK *(core inflation, % y/y)*



Source: Bloomberg, Standard Chartered Research; Note: HK: underlying inflation CPI all items ex. Govt one-off relief measures y/y

Episodes of bad deflation have usually been relatively short, ending when the economy recovered, but there have been a couple of longer episodes, notably the early 1930s and Japan in the late 1990s. Falling prices then seem to make the downturn worse and make it harder for central banks to generate an economic recovery. We expect central banks to guard zealously against this outcome, to avoid falling into a Japan-like trap. We see this as the fourth most likely scenario over a five-year period. However, its likelihood increases in the event of another recession in the developed world.

5. Good deflation

Deflation is not always bad – it can be good when brought about by productivity gains

A persistent decline in consumer prices can also qualify as 'good deflation', where prices are falling but growth is strong and unemployment is low. Typically, good deflation is caused by strong productivity growth alongside relatively fixed money supply. Good deflation was quite common in the 19th century, during the gold standard period, and some commentators argue that it could recur now and should be embraced, rather than trying to push inflation back up to the 2% target and risking new asset price bubbles. This inflation outcome is discussed least by clients, as productivity growth at present remains weak. However, new digital technologies such as robotics, big data, etc., could make the likelihood of this scenario more significant over the longer term. We see this as the fifth most likely scenario over the medium-term.

6. Stagflation

Persistent inflation with slow growth is rarer today

In the 1970s the combination of high inflation, low growth and high unemployment alarmed policy makers. Not only was stagflation painful but it appeared to contradict the cherished Phillips Curve relationship; high unemployment should imply low inflation and vice versa. In recent years there has been no sign of stagflation in the developed countries (leaving aside the UK experience of high inflation during 2009-12, which can be explained by the fall in the exchange rate). Stagflation has frequently been a problem in emerging economies, however, especially in Latin America in the 1970s and 80s. Fear of stagflation may explain why central banks' unconventional monetary measures, such as forward guidance and quantitative easing, have been carefully measured; countries have so far avoided pure central bank money-printing. This is the most unlikely scenario in our view, with the era of rigid wages long gone after the dismantling of union power and incomes policies.

Figure 13: Six inflation scenarios – Most to least likely inflation scenario over a five-year horizon

	Scenario	Comment
1	Back to target – old normal	Inflation back to 2.0% targets, robust growth. Causes: Confidence in monetary policy, diminishing fiscal restraint and strong demand from EMs send inflation back to target. Most likely scenario in the medium term
2	Lowflation	Inflation positive but below target, weak growth. Causes: High indebtedness, weak growth, limited fiscal stimulus and EM (especially China) slowdown result in inflation below target. Most likely in the near term
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6	Stagflation	High inflation, low growth. Causes: Labour- or product-market rigidities that make wages sticky downwards despite poor growth. Least likely scenario

Source: Standard Chartered Research

The Great Moderation: Inflation has fallen since the 1980s

Following the period of 'Great Inflation' in the 1970s in the developed world, when inflation hit more than 25% in the UK and 10% in the US, it has generally trended lower over the last 25 years (see the heatmap, Figure 14). The 'Great Moderation' period since the 1980s, where economies grew rapidly and inflation stayed close to targets, was attributed in part to the success of inflation targeting. Inflation targeting has been adopted by most developed-world central banks and many emerging countries since the early 1990s and is now standard practice in more than 30 countries globally, with India being a recent convert.

Lower inflation since the 1990s reflected productivity gains led by technological improvements

But lower inflation since the 1990s is also partly the result of productivity shocks from technological improvements, including the internet, and the integration of low-cost production centres such as China into the global trade network, which held down prices. The abandonment of wages and incomes policies, prevalent in the 1970s, and the decline in power of labour unions also reduced the problem of 'wage indexation', which had been a major cause of persistent inflation.

Figure 14: Headline inflation has trended lower since the 1990s

CPI inflation, year-end

Country	1990	1995	2000	2005	2010	2011	2012	2013	2014
Angola	1.8	3783.9	268.4	18.5	15.3	11.4	9.0	7.7	7.5
Argentina	1343.9	1.6	2.9	12.3	10.9	9.5	10.8	10.9	23.9
Australia	6.9	5.1	5.8	2.8	2.8	3.0	2.2	2.7	1.7
Bangladesh	11.8	7.7	1.6	7.1	11.6	7.6	7.1	7.3	6.1
Brazil	1621.0	22.4	6.0	5.7	5.9	6.5	5.8	5.9	6.4
Canada	4.9	2.1	3.1	2.3	2.2	2.7	1.0	1.0	1.9
Chile	27.2	8.3	4.5	3.7	3.0	4.4	1.5	2.8	4.6
China	4.3	10.1	1.5	1.6	4.6	4.1	2.5	2.5	1.5
Colombia	32.4	19.5	8.8	4.9	3.2	3.7	2.4	1.9	3.7
Egypt	21.4	9.7	2.5	4.7	10.6	11.8	7.3	9.8	8.2
France	3.2	2.1	1.8	1.7	2.0	2.7	1.5	0.8	0.3
Germany	-	1.5	2.1	2.1	1.9	2.3	2.1	1.2	0.2
Ghana	35.9	70.8	40.5	14.8	6.9	8.4	8.1	13.5	17.0
Hong Kong	11.5	7.1	-2.0	1.3	2.9	5.7	3.8	4.3	4.8
India	14.2	8.9	2.5	5.0	9.7	9.4	10.5	8.2	6.0
Indonesia	9.9	9.0	9.3	17.1	7.0	3.8	3.7	8.1	8.4
Japan	3.5	-0.6	-0.7	-0.7	-0.3	-0.3	-0.2	1.5	2.6
Kenya	41.4	6.9	11.8	4.9	5.8	18.9	3.2	7.1	6.0
Korea	9.3	4.8	2.8	2.6	3.0	4.2	1.4	1.1	0.8
Malaysia	7.0	3.2	1.2	3.2	2.1	3.0	1.2	3.2	2.7
Mexico	29.9	52.0	9.0	3.3	4.4	3.8	3.6	4.0	4.1
Nigeria	2.6	51.4	14.5	11.6	11.7	10.3	12.0	7.9	7.9
Pakistan	13.8	12.1	3.8	9.8	11.8	13.3	11.3	5.9	8.2
Peru	7649.7	10.2	3.7	1.5	2.1	4.7	2.6	2.9	3.2
Philippines	18.2	8.2	8.7	5.9	3.6	4.2	3.0	4.1	2.7
Russia	-	131.3	20.2	10.9	8.8	6.1	6.6	6.5	11.4
Saudi Arabia	2.1	5.0	-1.5	1.1	5.8	3.6	3.6	3.0	2.4
Singapore	3.8	0.8	2.1	1.3	4.0	5.5	4.0	2.0	0.0
South Africa	14.9	6.9	7.0	3.5	3.5	6.1	5.7	5.4	5.3
Sri Lanka	19.6	11.5	10.8	7.5	6.8	4.9	9.2	4.7	2.1
Taiwan	4.6	4.6	1.7	2.2	1.2	2.0	1.6	0.3	0.6
Thailand	6.4	7.5	1.5	5.8	3.1	3.5	3.6	1.7	0.6
Turkey	60.4	76.3	39.0	7.7	6.4	10.4	6.2	7.4	8.2
Uganda	26.9	11.5	4.2	3.7	3.1	27.0	5.3	4.3	5.0
United Arab Emirates	-	3.6	2.1	7.8	0.9	0.8	0.9	1.7	2.2
United Kingdom	7.8	3.0	0.9	2.1	3.4	4.7	2.6	2.1	0.9
United States	5.8	2.7	3.4	3.7	1.7	3.1	1.8	1.3	0.9
Vietnam	66.3	29.9	-0.6	8.8	11.7	18.1	6.8	6.0	1.9

Source: IMF, Standard Chartered Research; Note: Darker red denotes higher inflation rate than the average inflation from 1990-2007; green denotes lower inflation

Low inflation since 2008

Inflation has fallen further in the last few years and it is easy to see why. The GFC was the worst financial crisis since the Great Depression, leading to a large fall in output in the developed world in particular. Historically, sharp recessions have been followed by strong or V-shaped recoveries. However, this time the rebound has been much shallower (Figures 15 and 16), leaving plenty of spare capacity in these economies, keeping inflation depressed. Inflation in most emerging markets has also been low in recent years, helped by improved fiscal and monetary management. Even the recent fall in emerging market currencies is having only a transitory impact, with the exception of some countries in Africa where weak fiscal and monetary management is struggling to contain inflation.

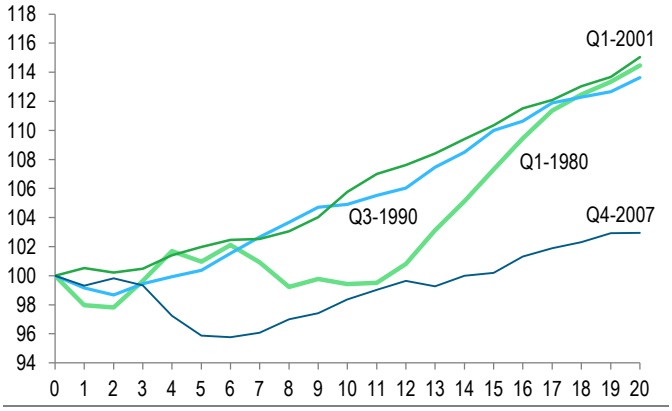
Why hasn't inflation fallen even more?

Well-anchored inflation expectations and less spare capacity than assumed could explain the absence of global deflation so far

Given the depth of the downturn, the question arises as to why core inflation is down by less than 1ppt in the US and euro area. US core inflation is running at about 1.3% currently compared with 2.2% in 2007, while core inflation in the euro area has fallen to 1% from c.1.8%, a very small decline after two recessions. Economists offer two possible explanations. One is that wage and price-setting behaviour has not changed much since inflation expectations are well-anchored at the 2% target and wages, on average, have not fallen (Meier 2010). The other is that the GFC has brought major structural changes, rendering large sections of the labour force unemployable, either because they have the wrong skills (e.g., construction workers or mortgage brokers) or because they have been unemployed for too long. This would imply there is less slack in the economy than at first glance.

Economists try to assess inflation behaviour by considering whether the recent data fits the Phillips Curve. Several studies for the US have shown that the 'normal' Phillips Curve is in fact behaving exactly as before if it is calculated using short-term unemployment, i.e., excluding the long-term unemployed (Gordon, 2013). The logic is that people who are unemployed for a long period either lack the right skills or have become unemployable and therefore no longer exert downward pressure on wages.

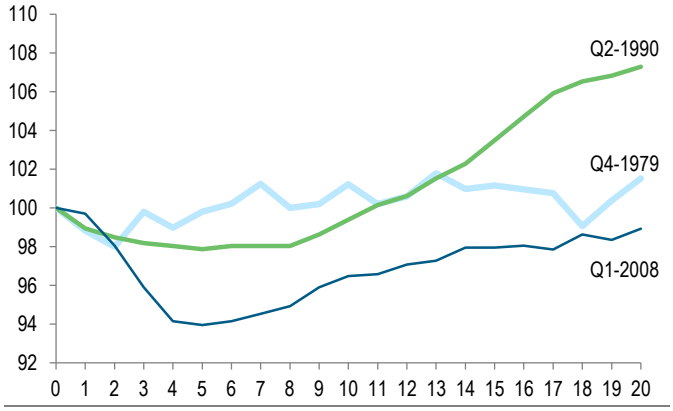
Figure 15: US recovery from 2007 recession has been unusually weak; *Index peak= 100*



Source: NBER, Bloomberg, Standard Chartered Research

Note: x-axis is the number of quarters after the peak

Figure 16: UK's performance has also been weaker than in previous years; *Index peak= 100*



Source: BoE, Bloomberg, Standard Chartered Research

Note: x-axis is the number of quarters after the peak

A study published by the IMF suggested that these two explanations are complementary and that both seem to apply (IMF 2015). With short-term unemployment in the US back to near the 2007 trough, a key implication is that wages should pick up soon, though so far signs are mixed.

Core inflation is currently around 1% in major developed countries. Slowing growth in emerging markets (especially China), the recent drop in commodity prices and broad-based USD strength have reignited concerns of a deflationary spiral. There are, however, several arguments supporting a more hawkish view of inflation beyond the most immediate term. Our six scenarios summarise possible inflation outcomes over the medium term. In the following sections, we analyse the primary upside and downside forces determining these inflation outcomes.

The case for lower inflation

The case for lower inflation

The key arguments for a weak trend revolve around the linked hypotheses of 'secular stagnation' and 'excess global savings'.

1. Secular stagnation could keep demand weak

Since the 2008 crisis there has been a revival of the secular stagnation hypothesis, first developed by Alvin Hansen in 1938 as an explanation for the malaise afflicting the global economy (Summers 2014).

Weak demand, especially investment, forms the basis of the secular stagnation argument

Summers argues that chronic deficiency in aggregate demand (especially investment) will lead to slower growth, lower employment and ultimately deflation unless remedial action is taken in the form of higher government investment spending. In the US, government investment has dropped sharply since the 2009-10 stimulus package. Meanwhile, low inflation or deflation may mean that real interest rates are too high to boost private investment or restrain savings, leading to 'excess savings'. The excess savings hypothesis is closely allied to the secular stagnation view, whereby structural excess savings mean that interest rates need to be especially low to combat secular stagnation or deficient demand. There are several possible explanations for the chronic deficiency in demand which we discuss in detail below.

a. Unfavourable demographics

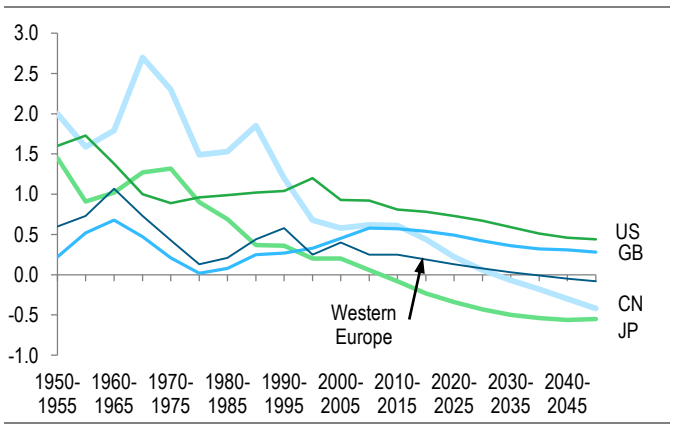
Older people will vote for low inflation to protect savings

It is tempting to assume that because Japan is ageing rapidly and has experienced more deflationary challenges than other countries, this proves that ageing causes deflation. Population growth is set to slow in the developed world, with the population ageing and the work force declining (Figures 17 and 18). It is argued this will lead to lower demand growth for consumer durables, automobiles and houses, push investment lower and reduce aggregate demand (Krugman, 2013). A similar demographic trend is expected in China, South Korea and Taiwan and some Eastern European economies, raising the spectre of stagnation in these markets as well.

Ageing populations may also nudge the political debate towards monetary and fiscal policies that keep inflation in check (Bullard, 2012). Older people are more likely to vote than younger people and it is believed that they particularly dislike inflation. They typically have more savings than younger people, which are at risk if inflation accelerates and many also rely on fixed incomes which may not be fully adjustable upwards if inflation accelerates.

Figure 17: Population growth is set to decline further

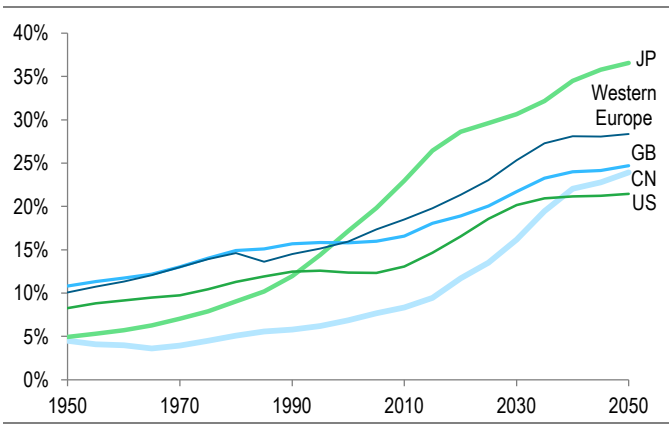
%



Source: UN, Standard Chartered Research

Figure 18: The West and China are ageing rapidly

Ratio of population aged 65+ as % of total population



Source: UN, Standard Chartered Research

Beware of drawing conclusions from Japan's ageing story

However, a recent BIS study argues that ageing populations have in fact been inflationary, historically (Juselius, 2015). The study looks at the link between 22 developed economies from 1955-2010 and finds that a larger share of dependents (young and old) has been inflationary, while a rise in working-age population is usually disinflationary. This fits with the expectation that typically people in the working-age cohort save and build assets while retired people dis-save and consume. Therefore as the baby boomers retire we should expect savings to decline. In the US, the main baby-boomer bracket is now aged 50-60 and will increasingly be retiring and spending, rather than saving ahead of retirement.

Rising demand from a growing emerging-market middle class

Stronger demand from emerging markets lowers secular stagnation risks

We also remain more upbeat on global aggregate demand over the medium to long term. World population is set to rise to 8.5bn by 2030 (UN), with a bulk of the increase coming in Asia and Africa. In addition, about 95% of the rise in the labour force is set to come from emerging markets, with Asia, in particular India, and Sub-Saharan African countries (especially Nigeria) leading the way (Figure 19). This rise in the labour force is set to be accompanied by a growing middle class in these countries.

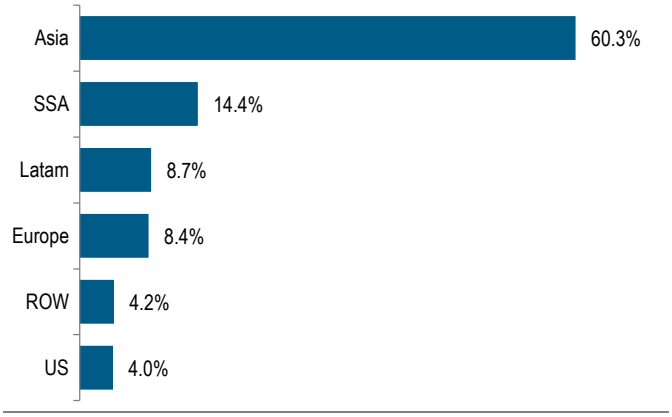
According to an OECD study (Kharas, 2010), the number of people in the 'middle class' range globally will rise to 4.9bn by 2030 from about 1.8bn in 2010. Growth will come primarily from emerging markets, while the numbers in Europe and the US will remain steady. The study defined the 'middle class' broadly as those with daily per-capita income of USD 10-100 in PPP terms. While the lower end of this range is low by western standards, it is at around this level that disposable incomes are sufficient to allow purchases of consumer goods such as televisions, motorcycles, cars and other goods that characterise the affluent middle class in the West. A growing middle class will also dramatically increase demand for services, including tourism, education and financial services.

The combined purchasing power of the global middle classes is estimated to more than double by 2030 to USD 56tn

This shift presents tremendous opportunities in new consumer markets as EM consumption expands beyond the basic needs of food and shelter towards consumer durables and services. The OECD estimates the combined purchasing power of the global middle classes to more than double by 2030 to USD 56tn, with more than 80% of this demand coming from Asia (Figure 20). This expansion should support global aggregate demand, alleviating concern about secular stagnation. The focus over the coming years for these emerging economies will have to be on education and skill enhancement to reduce the skills gap of this rising work force.

Figure 19: Share of global working-age population, 2030

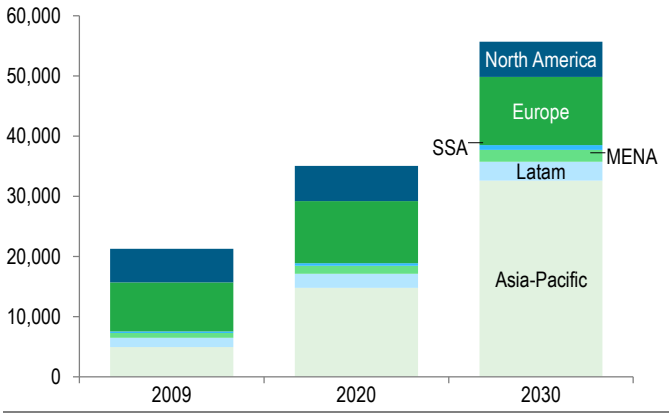
% of total population



Source: UN, Standard Chartered Research

Figure 20: Spending by the middle class

USD bn, PPP dollars



Source: OECD, Standard Chartered Research

b. Income inequality and falling share of labour income

Labour share has fallen with weaker trade unions and automation

Another reason for expecting weak demand, according to the secular stagnation theory, is the behaviour of wages. After the highs seen in the Great Inflation period of the 1970s, wage growth has moderated in the developed world. In some countries this wage disinflation has, in part, been attributed to the loss of trade union bargaining power (Figure 21).

Rising income inequality is said to have dampened consumption and investment demand

It may also reflect technological innovations and reductions in trade barriers that make it easier to move production centres offshore or automate processes. This has led to a loss of middle-income jobs (Autor, 2013), widened income inequality and steadily lowered the share of labour income in total GDP (Figure 22), while boosting corporate profits and incomes of those at the top end of the income and wealth distributions (Figure 23). While many see globalisation as the cause of rising income inequality within countries, the IMF finds that this widening is mainly attributed to technological change (Jaumotte, 2009).

It is often argued that wider income inequality may pose a problem for economic growth. High-income earners have a lower marginal propensity to consume, so a change in income distribution in their favour lowers consumer spending and aggregate demand and raises savings (Bernstein, 2013).

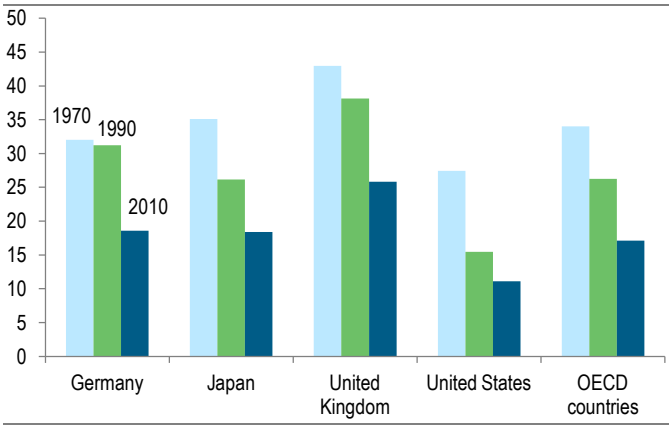
Extent of income inequality is exaggerated by current measures

Measures of income share are misleading as they exaggerate the extent of income inequality

However, measures of income share and Gini coefficients can be misleading and probably exaggerate the level of income inequality; this is because of problems in measurement, such as not taking into account changes in household composition over the last 30 years, as well as changes to tax laws that have boosted reported incomes of high-income individuals (*Special Report, 16 July 2014, Taming the Gini: Inequality in perspective*). A better measure of underlying inequality is spending per person by income quintile. In the US, this has been fairly stable (Figure 24), at least when comparing the top 20% with the lowest 20% of households (Furchtgott-Roth, 2013).

Moreover, within major developed countries overall personal savings rates show no signs of being higher than before, adjusting for the stage of the cycle; the US personal savings rate is running at about 5% of disposable incomes, similar to the level in 2003-04 and below levels for most of the 1990s. A similar pattern holds for Germany, while the UK household savings ratio is close to historic lows.

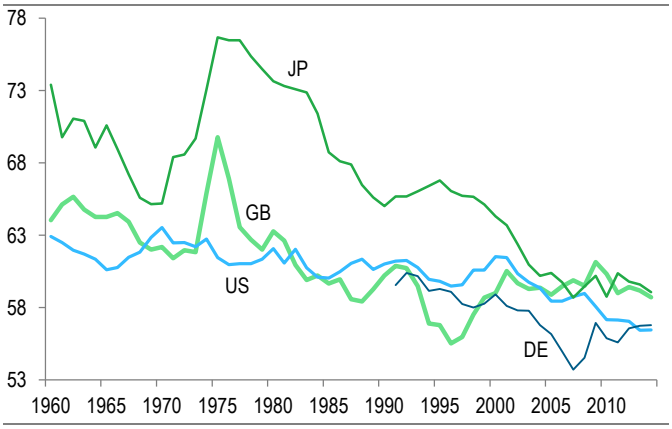
Figure 21: Trade union density has declined sharply in developed countries; *ratio*



Source: OECD, Standard Chartered Research

Figure 22: Wage shares in GDP have fallen

% of nominal GDP



Source: Bloomberg, Standard Chartered Research

2. Excess global savings reflect weak investment

High savings in China, coupled with its rising share in the world economy, has boosted global savings

A second reason for lower inflation revolves around the 'excess savings' argument. Global savings turn excessive relative to investment either because the saving propensity of economic agents has increased meaningfully or because global investment has fallen (or a combination of the two). Both these factors are at play currently, with high indebtedness encouraging households and governments to try to consolidate and investment trends being exceptionally weak following the crisis. In our view, however, investment will be the key determinant of the evolution of global savings over the medium to long term.

a. Global savings are rising

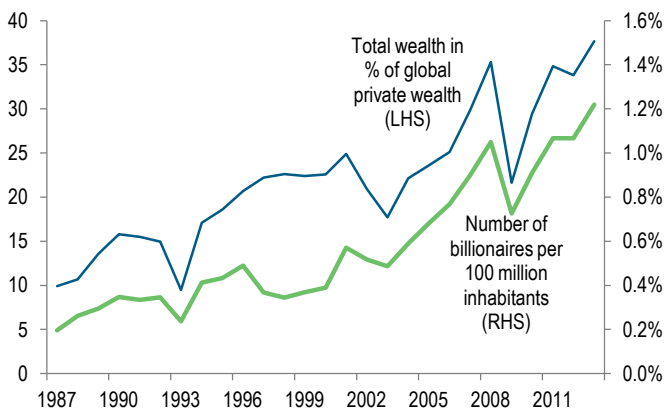
High savings in commodity-producing (oil countries) and a few other countries, such as China and Germany, have kept global savings high, around 22-24% of global GDP since the 1980s, though this has risen slightly recently (Figure 25). Lower commodity prices have substantially reduced oil savings but we expect this to be temporary given our forecast of rising commodity prices over the next few years. To a large extent, however, global savings will be driven by China's high net savings trend in the coming years (Figure 26). This has become especially important given China's growing share of the world economy. We look at this issue in greater detail later in this section.

b. Debt deleveraging will lower growth and encourage savings

Rising household leverage supported spending in the mid-2000s

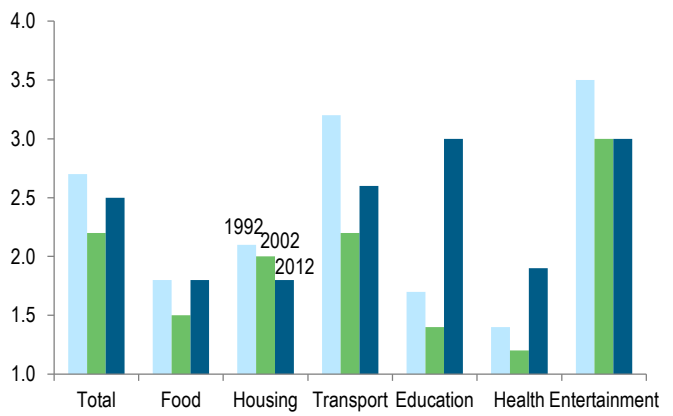
High debt has the potential to keep demand weak and encourage greater savings. US wage growth has been slowing for nearly four decades, but in the run-up to the crisis this had not constrained consumption growth as it was offset by households' improving access to credit. High levels of borrowing in the mid-2000s helped US personal spending to grow by 3.5-4% p.a. during 2004-05, when the savings ratio dipped briefly to the 2-3% range from around 5%. This would have provided a one-off boost to the economy of c.2%, though multiplier effects would have amplified this.

Figure 23: Wealth of billionaires is rising in relative terms
Billionaires as a fraction of global population and wealth



Source: piketty.pse.ens.fr/capital21c, Standard Chartered Research

Figure 24: Ratio of spending by top 20% to lowest 20% differs little over time in the US; *real expenditure per person by income quintile, 2012 USD*



Source: Manhattan Institute Calculations, 'The myth of increasing income inequality' (2013), Standard Chartered Research

Since 2008, US households have been trying to deleverage; the savings rate rose from around 3% to over 6% during 2008-12 but has since fallen back to about 5% (Figure 27). The ratio of household debt to GDP rose steeply from 2004-07 before falling back. It has likely stopped falling and may begin to rise gradually, though a new ramp-up in debt seems unlikely (Figure 28). While deleveraging is probably over, the US is unlikely to see a repeat of the mid-2000s experience.

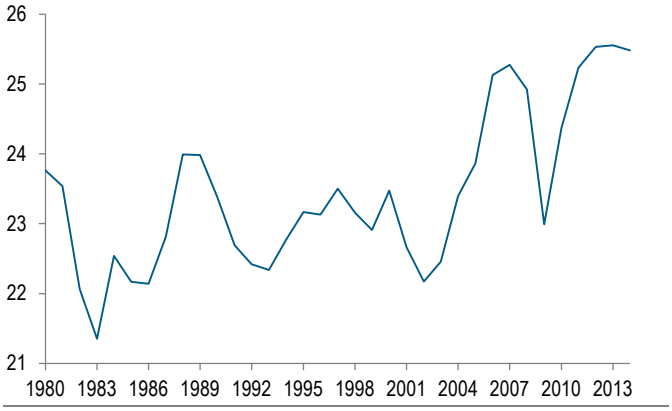
c. Government fiscal retrenchment may continue

The worst is over but there is no room for a new stimulus

High government debt may be a bigger problem (Figure 29). After using stimulatory fiscal policies in 2009-10, most developed world governments since 2011 have followed a policy of fiscal consolidation in a bid to stabilise debt levels and protect credit ratings. With government debt ratios now high in most developed countries there is little room for new fiscal stimulus if economies slow; many countries will likely try to reduce budget deficits further and reduce debt ratios in coming years which points to ongoing fiscal austerity, albeit mild compared with recent years.

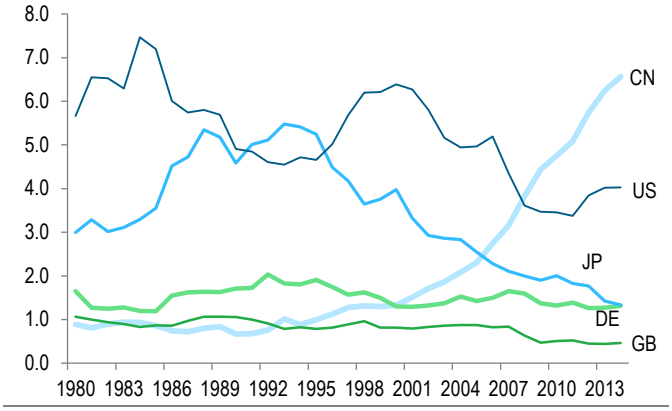
That said, we view the fiscal outlook as tending to support the accelerating inflation view. Few countries now plan major fiscal retrenchment, which has been a major factor holding back recovery (Figure 30). Fiscal policy is now nearer neutral.

Figure 25: Global savings rate has risen more recently
% of world GDP



Source: IMF, Standard Chartered Research

Figure 26: Gross national savings especially high in China; *% of world GDP*

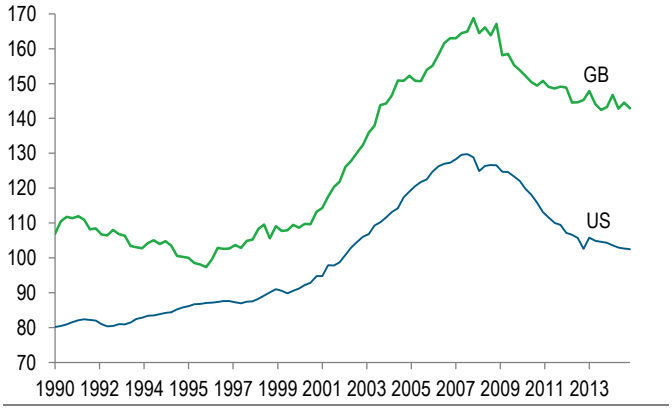


Source: IMF WEO, Standard Chartered Research

Figure 27: Household savings rates are not showing signs of rising; *% of personal disposable income*

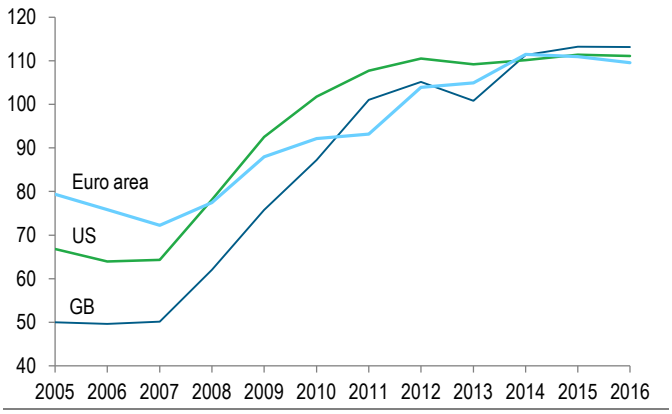
Source: Bloomberg, Standard Chartered Research

Figure 28: Household debt ratios are levelling off
Household debt as % of disposable income



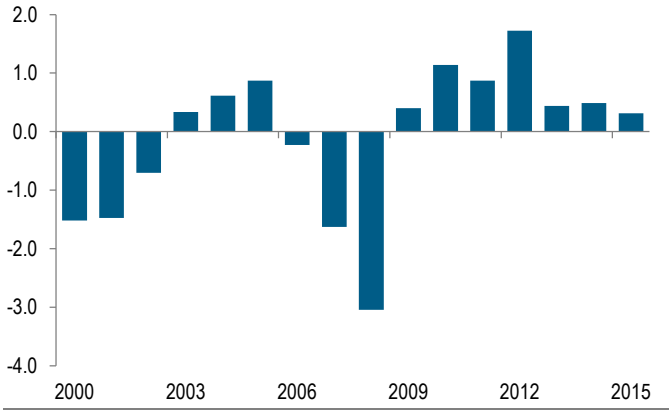
Source: OECD, Standard Chartered Research

Figure 29: Government debt is much higher than before
Gross debt as % of GDP



Source: OECD, Standard Chartered Research

Figure 30: Fiscal tightening is less of a drag in the OECD now; *annual change in underlying primary balance as % of nominal GDP*



Source: OECD, Standard Chartered Research

d. Companies are worried about future demand and new shocks

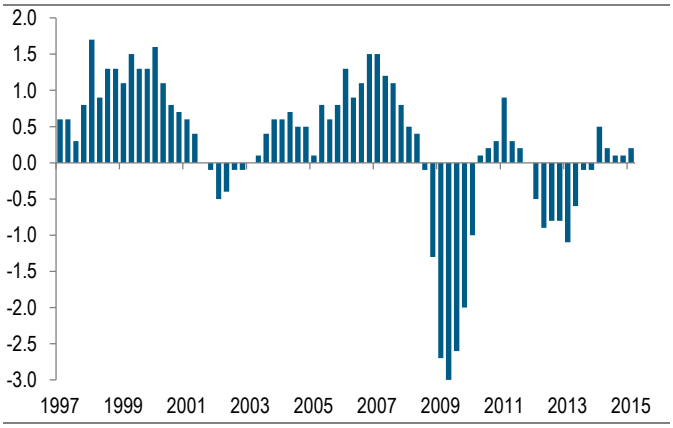
Weak corporate investment was a key factor in Japan's persistent low demand in the 1990s and it seems to be a factor currently in the US and Europe (Figure 31). While US corporate profits are near a high in relation to GDP, net private domestic investment is still much lower than pre-crisis (Figure 32). In the euro area, investment was a major negative for GDP during both recessions since 2008 and has so far recovered only very modestly, compared with previous recoveries.

A sharp decline in investment was driven by corporate deleveraging

Part of the decline in investment can be attributed to a build-up in corporate debt ahead of the GFC which had to be unwound in the quarters following the crisis (Figure 33). The deleveraging of corporate debt was accomplished primarily through lower investment. This process is now fairly advanced, with debt to equity ratios for key developed countries in line with or below historical averages, eliminating one constraint on renewed investment spending.

The main reason for low investment is companies' subdued or uncertain expectations for future demand (IMF WEO). The succession of shocks to the world economy in the last 10 years – including the boom and bust in oil prices, the financial crisis and the euro crisis – has left business cautious, waiting for the next shoe to drop (*Special Report, 15 April 2015, Risks and Opportunities 2015*). This uncertainty has led to a rise in demand for cash holdings, reflecting the precautionary motive (Figure 33), and continuing to dampen corporate investment demand.

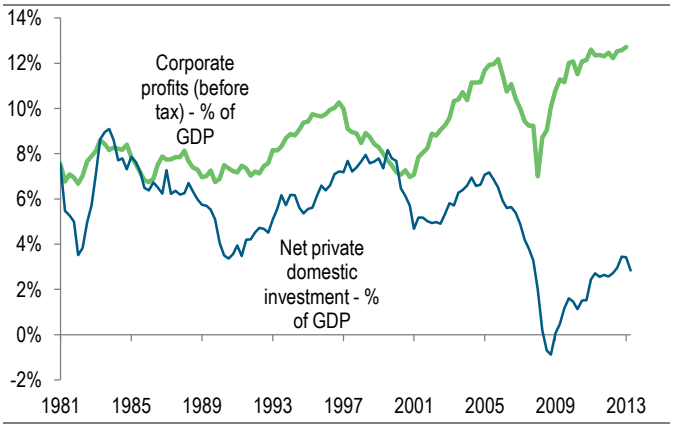
Figure 31: Investment growth has been anaemic; *euro-area gross fixed capital formation contribution to GDP, ppt y/y*



Source: Bloomberg, Standard Chartered Research

Figure 32: Corporate profits are not being invested

US corporate profits and private net investment % of GDP



Source: Bloomberg, Standard Chartered Research

Figure 33: Companies have cut back debt and have built up cash holdings

	Debt to equity ratio			Share of cash and deposits in total assets (%)		
	Average Q1-1999 to Q4-2007	Q4-2008	Q3-2014	Average Q1-1999 to Q4-2007	Q4-2008	Q3-2014
United States	0.62	0.87	0.58	8.88	7.81	9.21
United Kingdom	0.86	1.30	0.89	22.20	21.58	31.01
Japan	1.65	2.04	1.14	23.10	24.52	24.15
Euro area	1.09	1.30	0.94	10.15	11.77	11.80
Germany	1.29	1.57	1.12	10.24	11.76	10.91
Spain	1.01	1.41	0.87	9.93	11.15	11.19
Korea	3.41	2.75	1.37			

Source: OECD, Standard Chartered Research

e. Technology may have lowered investment demand

Technological advancements have sharply reduced the price of capital goods and investment

Technological advancements have led to significant reductions in the price of capital goods, implying a lower capital outlay to fund investment. New digital technologies have not only almost eliminated the cost of copying existing technologies from one location to another but also make possible the provision of goods and services without incurring heavy initial set-up costs. This, in turn, reduces the value of investment spending, creating excess supply and deflationary pressures within the economy.

f. Short-termism by company management

It is also alleged that the slowdown in investment could reflect 'short-termism', particularly in the US and UK, where corporate management teams are rewarded by raising profits in the short term rather than the long term, via bonuses linked to profit performance (Smithers, 2012, Haldane, 2015). While this argument is intuitively compelling, it does imply that stock market investors are not capable of recognising when 'short-termist' behaviour is limiting or endangering long-term prospects. Given that markets do reward high-growth companies with high multiples, and also most executives' rewards are increasingly based on long-term performance via stocks and options, it is unlikely to be the main reason for low investment.

Weak investment is a key issue – Will it pick up soon?

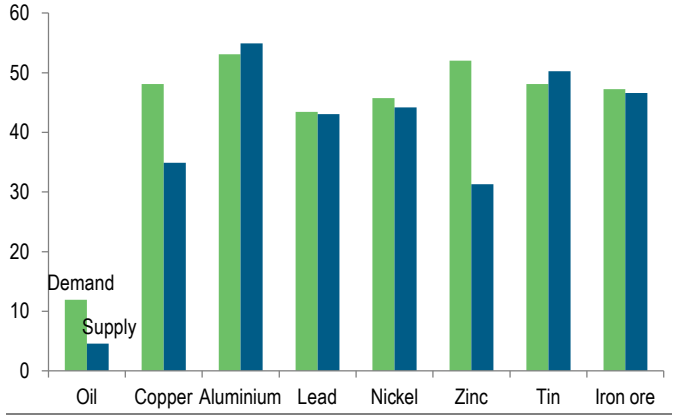
Over the next couple of years, investment is likely to remain subdued, in our view. The US recently lowered its capacity utilisation data series, and now shows the overall level at 77.8%, down from the end-December level and still well below the 80-81% levels seen during 2005-08. Similarly, in the euro area there is ample spare capacity, with growth still relatively slow.

New technologies could mean that companies have to invest just to stay competitive

However, over the more medium term, investment is likely to rise. Investment is cyclical, so as growth continues and capital utilisation rises, it should start to pick up. Some of the excitement about new digital technologies such as robotics, drones, driverless cars, etc., will translate into new investment, notwithstanding the low cost often associated with investing in these areas. It is slightly paradoxical that while the media is currently full of articles about automation taking jobs, the reality is that both productivity growth and investment are low, suggesting that this is not happening yet on any scale. New technologies will also encourage companies to increase investment just to remain competitive, as these technologies and business models transform their markets.

Figure 34: China dominates key commodities markets

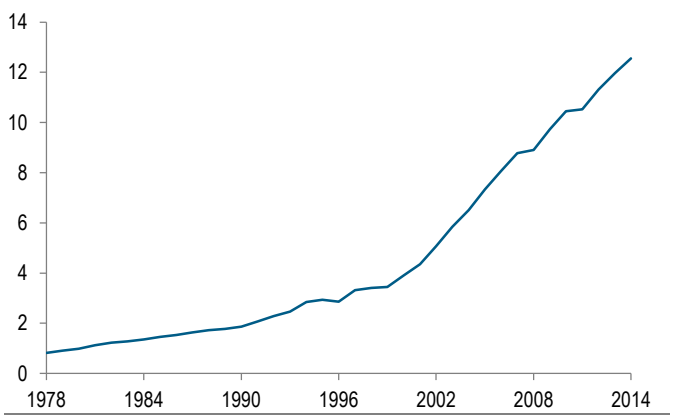
% of world demand or supply, 2015



Source: Standard Chartered Research

Figure 35: China's share of world trade has surged

% of total world trade



Source: WTO, Standard Chartered Research

China's slowdown – What happens to net savings?

A key determinant of global excess savings will be what happens to China's net savings ratio. China's economic slowdown has hurt business sentiment worldwide, but particularly in Asian countries such as Korea, Taiwan and Japan whose economies are closely linked. It has also contributed to the sharp drop in investment in the resources sector, particularly energy (Figure 34). The evolution of China's rebalancing will be crucial to the global inflation outlook.

Indirect deflationary impulses: Overcapacity in China and excess savings

Several sectors in China still face overcapacity, which will dampen investment

China's extraordinarily high investment rate, together with its growing shares in world GDP (c.11.5%) and trade (c.12.5%) (Figure 35) has helped shift the centre of gravity of global investment to Asia. But this high investment, particularly during 2009-12, has created overcapacity in capital-intensive sectors including mining, steel, cement, glass, cars and residential and commercial buildings (IMF, 2014). As new investment and the economy slow, the absorption of this spare capacity will take more time, holding back new investment in these areas for longer (Figure 36). Meanwhile, the new sectors of the economy that are being encouraged, such as services, are much less capital-intensive.

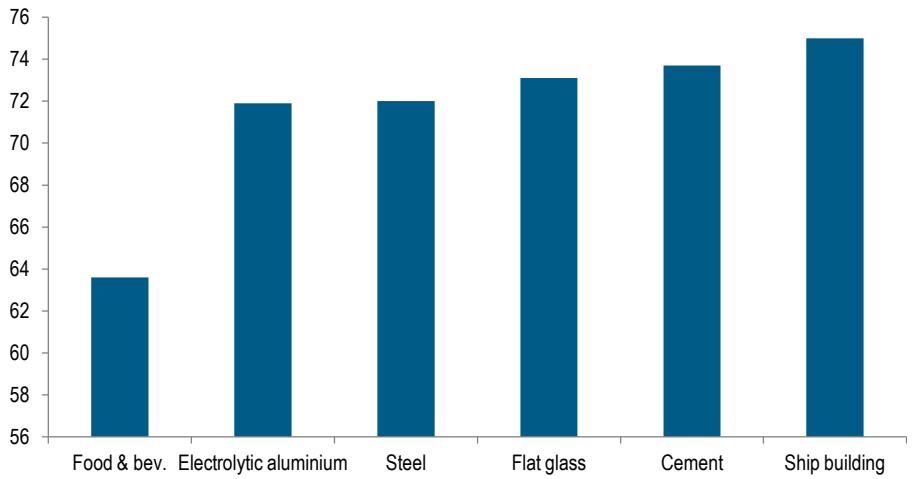
Slower demand growth in China inevitably slows demand abroad too, as has been seen in the weakness of exports to China. One key question then is how much further this process has to go? Will China's economy continue to slow or is the worst over?

Near-term, we still see plenty of policy room to stabilise the economy via easier monetary policy and selective fiscal measures. We see industrial-sector overcapacity as a cyclical issue that will be worked off over time. We anticipate a further gradual slowdown in growth rates in coming years, reflecting China's move into the ranks of middle-income countries.

China's slowdown affects the rest of the world via the excess savings route. If investment declines faster than savings then China's excess savings will rise, widening its current account surplus and adding to excess savings in the world. Over the next few years, this is exactly what we expect will happen.

Figure 36: Sectors in China with excess capacity

Capacity utilisation rate, %, end-2013



Source: China development Research Foundation, Standard Chartered Research; Note: Any sector with capacity utilisation of less than 80% is considered to have excess capacity

Government savings are set to fall in China on health-care and education costs

But over the more medium term, there are grounds for thinking that China's savings will fall too. Corporate (or enterprise) savings constitute a large part of total savings and the combination of excess capacity and economic reforms to promote competition could pare back profits and corporate savings. Also, a rising portion of total savings in recent years has been in the government sector. Pressure to spend more on health and education, as well as to expand infrastructure spending (given local authorities' funding constraints), could shrink savings in this sector too. In addition, the recent reform effort has been focused on moving to a more consumption-driven economy; over time this will lower savings. The shift to a consumption- rather than investment-based economy can also be expected to lower prices of intermediate goods and push up those of final, consumer goods, boosting CPI inflation.

Direct deflationary impulses – CNY, commodity prices and export prices

China may also have a more direct impact on global inflation, by lowering prices of manufactured goods and causing commodity price swings.

China has experienced periods of overall deflation, which is uncommon in emerging markets. Normally emerging markets avoid deflation because the prices of non-traded goods tend to rise quickly as wages in the non-traded sector catch up with rising wages in the traded sector where productivity is rising faster. So even if industrial prices are stable or falling, prices of services rise along with higher wages. But China's tendency towards over-investment, as well as rapid productivity growth, has produced sharply falling prices for manufactured goods and overall deflation at times, including in 1998-99, 2002 and 2009.

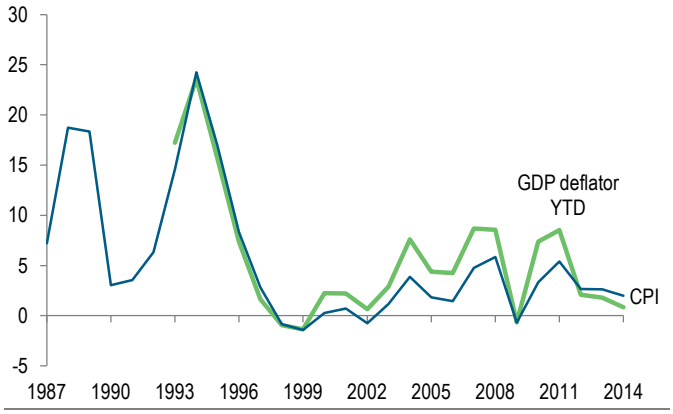
Slower growth in China has depressed global commodity prices

Is China exporting deflation? It likely is today and it has at times in the past. In the 1990s China exerted a disinflationary trend (helped by the devaluation of the CNY in 1994 and the Asian financial crisis), but the effect was unlikely to have been large given China's small size within the global economy at that time (Figures 37, 38). In the 2000s ahead of the GFC, China was a much bigger player in the world economy but the downward pressure from low manufacturing prices was largely offset by the rising CNY (un-pegged in mid-2005) and the rise in commodity prices.

Today, slower growth in China is a major factor in the decline in commodity prices, alongside increased supply in many cases. What is less clear is the impact of China's export prices. WTO data suggests China's export prices rose rapidly from 2005 to October 2012, up 32% in USD terms. This was faster than in most other countries

Figure 37: China CPI and GDP deflator

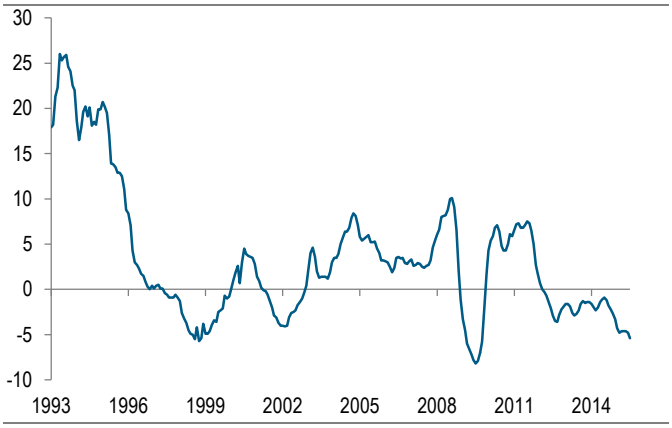
%, annual, NSA; GDP deflator subject to one-quarter lag



Source: Federal Reserve Bank of St. Louis, Bloomberg

Figure 38: China producer prices are falling fast

% y/y



Source: Bloomberg, Standard Chartered Research

and likely reflected the strengthening CNY, up 30% in that period. But in the past year, the CNY has weakened back to 2012 levels in USD terms. Our view is that the CNY is unlikely to fall much further and it will appreciate again in coming years, after the recent plateau, but only at a very gradual rate of around 1% p.a.

While China's export prices may decline in the next year or so due to excess capacity and slower CNY appreciation, as the economy stabilises and the CNY resumes gradual appreciation the effect is likely to moderate. Our forecasts also suggest commodity prices will firm in coming years, reflecting the limited amount of excess capacity and high marginal costs relative to current prices.

We expect modest weakness in the CNY and no sharp devaluations

There is concern that China will devalue the CNY significantly further to offset slow growth. Given low inflation, devaluation could boost growth without triggering an inflation risk for China. This would likely send a further disinflationary impulse to the rest of the world, as it did the last time China devalued, in 1994. We disagree with this analysis. Our view is that growth will not be slow enough for a significant devaluation to make much sense for China, especially given its foreign debt exposure and the need to rebalance the economy. Nor do we believe that the CNY is significantly overvalued; the current account remains in surplus and manufacturing productivity growth remains strong.

A modest further decline in the CNY is possible if the currency was completely liberalised, especially if the USD strengthens further against other currencies. Even if the authorities did allow the CNY to be completely market-determined, the direction is uncertain; the steady opening of China's capital markets is likely to encourage inflows to Chinese securities as well as outflows. Our forecast remains for a relatively stable CNY with a slight upward trend.

3. A central bank mistake

A few other factors apart from secular stagnation and excessive global savings could push the world economy towards deflation.

There is growing concern that the Fed and other central banks may increase rates too early or too far, derailing the recovery. The focus on 'neutral rates' reflects anxiety that neutral rates might have come down because of the problems described above, without central banks realising.

Another possible policy mistake could arise from an early attempt to reverse QE. The Fed and other central banks suggest that they expect to reduce their balance sheets to normal levels eventually, though they are not in any hurry (Figure 39). Governor Carney recently made clear that the BoE expects rates to rise significantly first, before the balance sheet is addressed. The Fed anticipates that its balance sheet will be unwound gradually by stopping the reinvestment of maturing bonds at some point, so that the SOMA portfolio runs off over an extended period. However, just as QE stimulated the economy, this could have the effect of restraining it.

A reduction in central bank balance sheets implies a steeper yield curve, as government bond yields must rise to encourage the private sector to hold more bonds. This applies whether central banks actively sell securities back into the markets or let them mature and do not reinvest. The government must raise new funds to repay the central bank; the debt cannot just be cancelled as is sometimes suggested, because it has a counterpart in the reserves held by banks at the central

bank and, similarly, banks excess reserves are matched on their balance sheets by deposit liabilities.

Higher bond yields will tend to slow the economy, though this could be offset by keeping short-term rates lower than they otherwise might be, holding the whole yield curve down. The yield curve would be steeper than without the balance sheet reduction.

Central banks have erred on the side of caution and are likely to delay balance sheet reductions

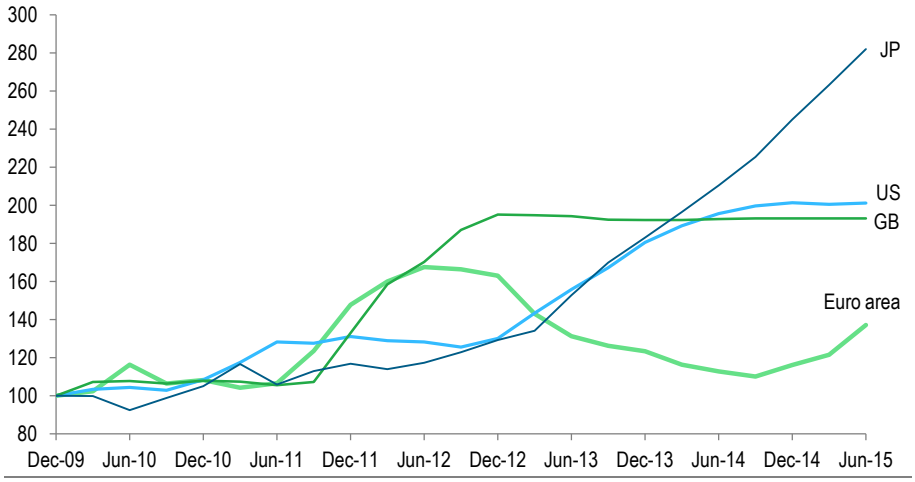
Central banks are currently fairly dovish and are likely to move very cautiously to normalise their balance sheets. They are likely also aware that just as QE announcements had an immediate impact on the markets, announcements of balance sheet reductions could do the same, as we saw with the taper tantrum in 2013. If this caution persists, central banks may delay any attempt to reduce their balance sheets by many years, or even indefinitely. However, there is also the possibility that the mood shifts and they decide to move more quickly at some point, potentially slowing the economy. Meanwhile, they will need to continue to pay interest on excess reserves to prevent them being lent out rapidly, which would have an inflationary impact.

4. A new economic downturn

An underlying worry is that there is a new downturn, whether due to a central bank mistake or an event such as a hard landing in China or a return of the euro-area crisis. If inflation is still only around 1% or less, the risk of deflation at that point is considerable. In such a scenario with interest rates already so low, the fear is that central banks have little ammunition left to support recovery. Moreover, there is little room for fiscal stimulus in many countries. The fact that interest rates are low may also provide a reason for central banks to want to raise rates, even if some argue it is too early. For example, Canada has been able to cut rates in the face of the oil-led recession, because it had raised them earlier. Still, for the most part the fear of another downturn is likely to mean that central banks maintain a very cautious stance.

Figure 39: Central banks' balance sheets have ballooned

Index, Q4-2009 = 100



Source: Bloomberg, Standard Chartered Research

The case for higher inflation

The case for higher inflation

Contrary to the widely held view that disinflationary forces will remain pervasive in the medium to longer term, we believe there are positive factors which could boost inflation over a five-year view.

1. Inflation has been subdued due to the depth of the crisis

Recoveries following a banking crisis take longer than following an ordinary recession

Low inflation in recent years could be mainly cyclical, exaggerated this year by the collapse in energy prices. Recoveries following a banking crisis usually take longer than after ordinary recessions, averaging around eight years (the median is 6.5 years) (Reinhart, 2014). So it is not surprising that modest growth and low inflation have been persistent. But that does not mean they will be permanent. Growth has been picking up (Figure 40) and most estimates of output gaps are closing for many economies.

As headwinds such as the housing-supply overhang, fiscal retrenchment and bank deleveraging abate, growth rates may rise, especially with monetary policy exceptionally loose. In the euro area, the crisis in 2011-13 pushed economies back into recession after an initial recovery from the GFC. Today, with the Greek situation defused, fiscal retrenchment reduced and economies recovering, growth in the euro area is gradually accelerating too, though it is several years behind the US and UK.

2. Output gaps are closing; are wages set to rise?

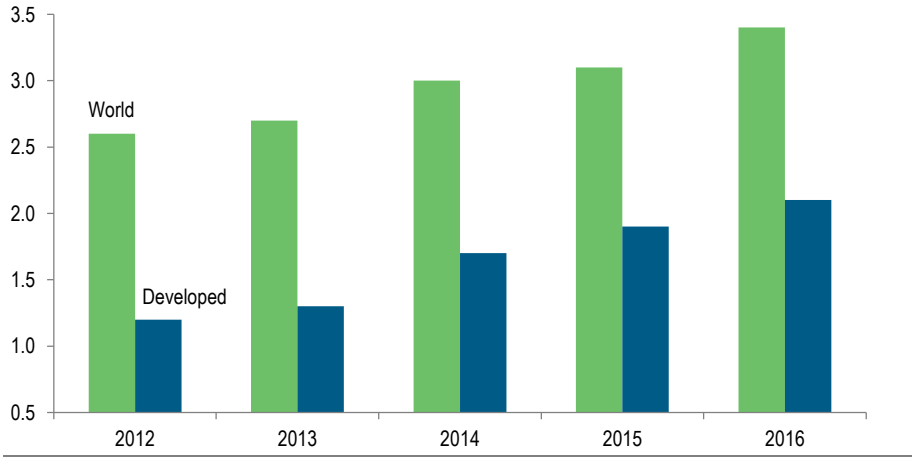
Estimating output gaps is especially tricky

To target inflation central banks rely heavily on the concept of the output gap. If actual output is below potential output (a 'negative output gap'), then inflation tends to fall. If actual output is above potential output (a 'positive output gap') then the economy overheats, pushing inflation higher. The concept is analogous and related to the natural rate of unemployment or non-accelerating rate of unemployment (NAIRU), which tries to measure full employment.

The trouble is that calculating the output gap (or the natural rate of unemployment) is more art than science. A recent study by the Federal Reserve Bank for San Francisco noted seven different ways to calculate the US output gap and gave a range of 2.4% to -2.6% (averaging -0.3) for Q1-2015 (FRBSF 2015). Data for past years is often revised substantially after the event. While central banks agonise over whether the output gap is 1% or 2% of GDP, it is not uncommon for later revisions for past years to move it by 3ppt or more.

Figure 40: Global growth has picked up and is expected to rise further

% y/y



Source: Standard Chartered Research

Wrong estimates of output gaps led to high inflation episodes in the 1970s and 1980s

Output gap mis-measurement was seen to be the primary cause of the high inflation in the US and UK in the 1970s and 1980s (Nelson, 2001). Output gaps were thought to be large and as a result monetary stimulus was excessive. Productivity growth had slowed and potential output had fallen, probably because of the sharp rise in oil prices.

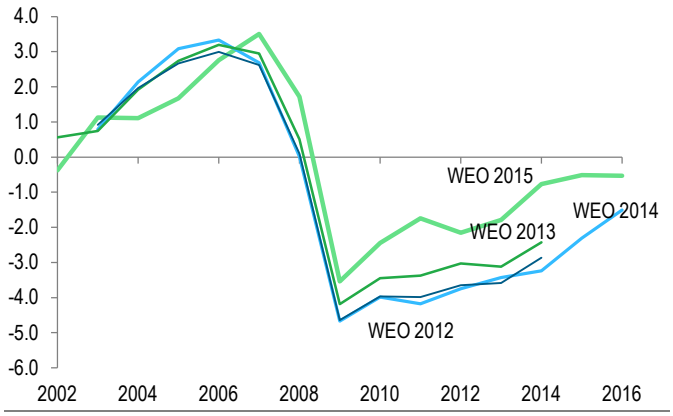
In the years leading up to 2007, the US and UK were generally thought to be running at or just under potential output but revised estimates now suggest they were over-heating, though this was showing up more in asset prices than inflation.

With these caveats, it is evident that the output gap in the US and UK and even the euro area has been closing in recent years, which suggests that the downward impetus to core inflation may be lessening (Figures 41 and 42). This is being seen in lower unemployment rates as well (Figure 43). This has yet to result in wage pressure in the US (Figure 44) but we are beginning to see signs of wage inflation in the UK (Figure 45). Japan's output gap was also closing in 2009-13 but the recession in 2014 has set the process back. Still, judging exactly how far countries are from closing the output gap is hard. Central bankers have become very cautious about this and now seem to want to wait until inflation is actually increasing before acting, moving away from the concept of pre-emptive tightening that was standard practice in the past. This makes good sense if inflation is below target (as now) but would become a more uncomfortable position if inflation moves up to the target.

The global output gap is still substantial, especially because of excess capacity in China

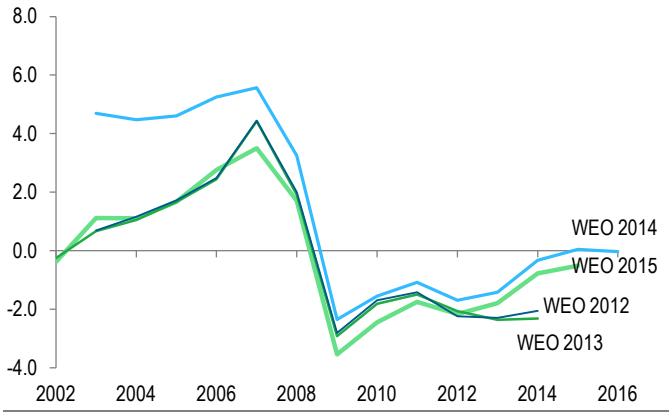
It can be argued that what matters for inflation in an era of globalisation is the global output gap. The OECD publishes an indicator for all OECD countries (essentially all developed countries) which suggests that it is still wide open (Figure 46). And this does not include China, where there is clearly considerable excess capacity as already noted. We doubt that the domestic output gap is redundant; globalisation may mute the effect of a tight labour market but the potential for quick substitution to imports or outsourcing is likely to be limited.

Figure 41: US output gap estimates have been lowered
% of potential GDP



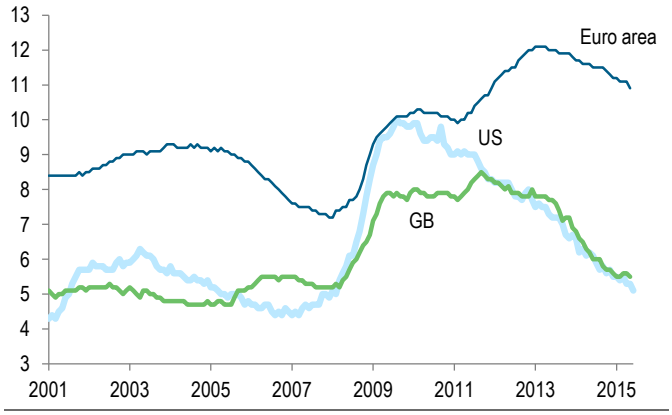
Source: OECD, Standard Chartered Research

Figure 42: UK output gap estimates are also closing
% of potential GDP



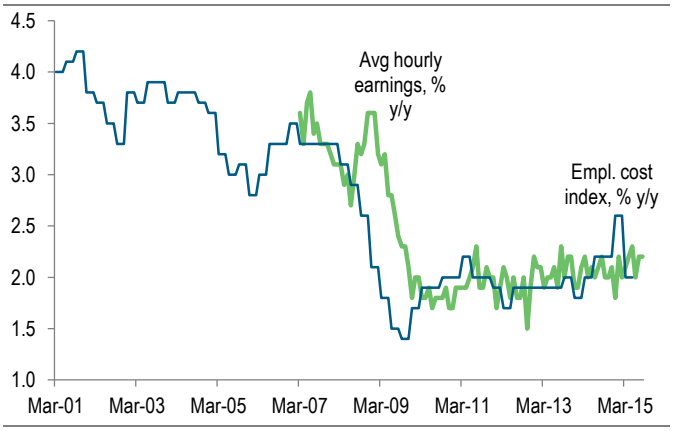
Source: OECD, Standard Chartered Research

Figure 43: Unemployment is back to historical averages in the US and UK; *% of labour force*



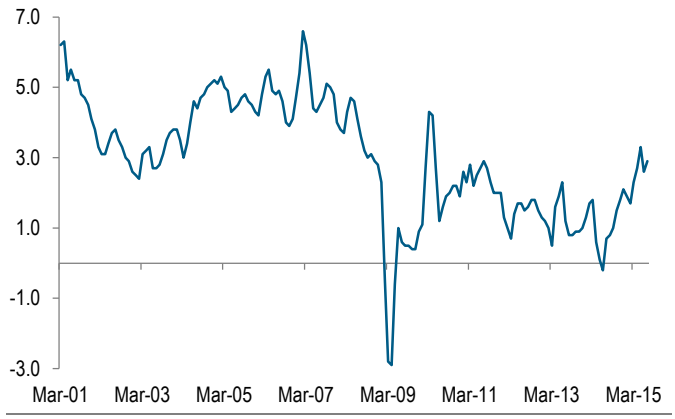
Source: Bloomberg, Standard Chartered Research

Figure 44: US wage growth has yet to pick up
Average hourly earnings, % y/y vs employment cost index



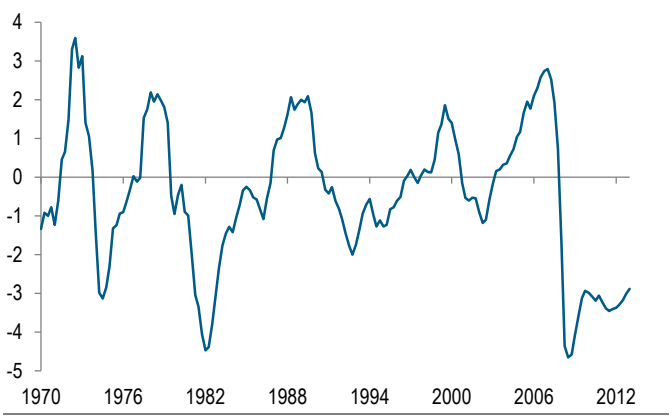
Source: Bloomberg, Standard Chartered Research

Figure 45: Wages are starting to rise in the UK
% 3M average of weekly growth/year on year



Source: Bloomberg, Standard Chartered Research

Figure 46: OECD area total output gap is still wide open
% of potential GDP (data to 2013)



Source: Bloomberg, Standard Chartered Research

3. Policy is expansionary now

Central banks remain ultra accommodative

Another factor that could lead to higher inflation over the medium term is the currently very accommodative policy, with near-zero interest rates, together with QE in the euro area and Japan. The accumulated assets from past QE on the balance sheets of the Fed and BoE also represent easy money, even though those portfolios are stable now. It is true that real interest rates are not exceptionally low, because low inflation prevents that. Nevertheless, they are negative (when calculated using core inflation), whereas a normal 'neutral' level would be considered to be about 2% (*On the Ground, 12 June 2014, 'The neutral rate – Has it really fallen?'*). Low rates are needed given the headwinds discussed earlier, though the neutral rate should gradually rise as the headwinds abate.

Money supply growth data suggests easy monetary policy is supportive of growth

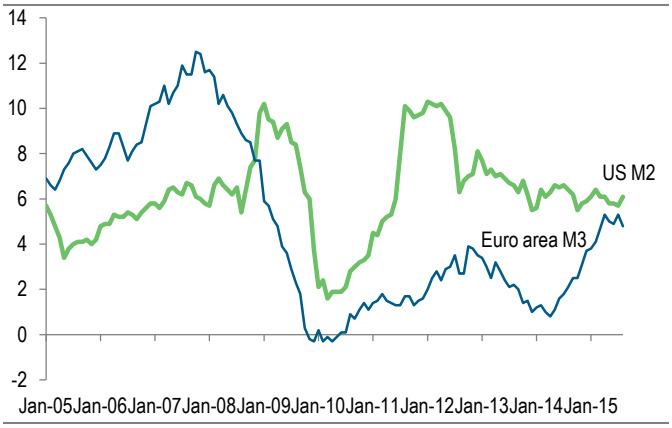
Money supply growth data also suggests at least a supportive policy (Figure 47). Broad money is rising at a healthy pace of about 6% in the US (M2 and also M3 according to Shadowstats) and about 4.5% in the UK (M4 adjusted). Even in the euro area M3 growth has accelerated to 5% p.a., up from only 1% in early 2014. Japan's broad money growth has also accelerated in the last two years, to about 4% (M2) and 3% (M3). Money supply data is no more than suggestive over a short period but these rates of increase are not only higher than before, they also suggest improving growth.

Fiscal policy is less restrictive

Easy monetary policy since the GFC has had to combat the headwinds from restrictive fiscal policy. But fiscal austerity is lessening everywhere (Figure 48 and 49). There are also signs that some developed country governments are heeding the clamour for more spending on infrastructure. This makes perfect sense given the aged capital stock in many countries (including the US, UK and Germany) and the low funding costs available. The argument is reinforced by the pessimism on the growth outlook discussed above, as well as the low level of government investment in many countries (Figure 50). Some of this extra investment spending may be included in budget spending (and therefore limited by overall deficit targets) but governments may also use ways to push it off-budget.

Figure 47: Money supply growth has picked up

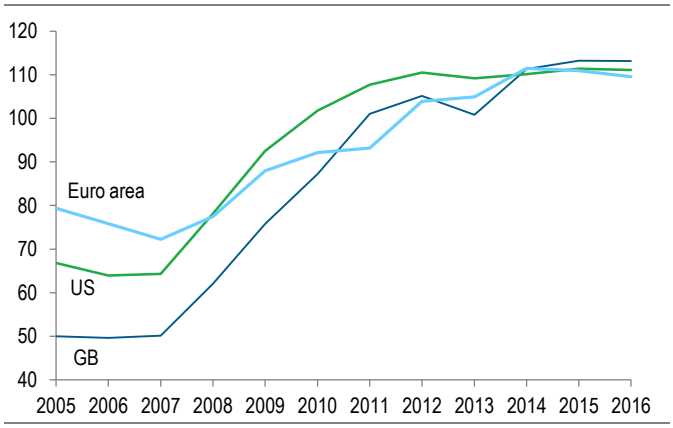
% y/y



Source: Bloomberg, Standard Chartered Research

Figure 48: Government debt is much higher than before

Gross debt as % of GDP



Source: OECD, Standard Chartered Research

There are also likely to be greater calls for some form of fiscal stimulus (in conjunction with monetary stimulus) in the event of another leg down in global growth. This could take the form of greater infrastructure spending, public works programmes or tax cuts aimed at boosting consumer and business spending. With debt levels already very high, however, the likelihood of a substantial fiscal boost is low and central banks are likely to remain the first port of call for stabilisation.

4. The supply side: lower potential output

The slowdown in growth might reflect a permanent loss of potential output rather than demand deficiency

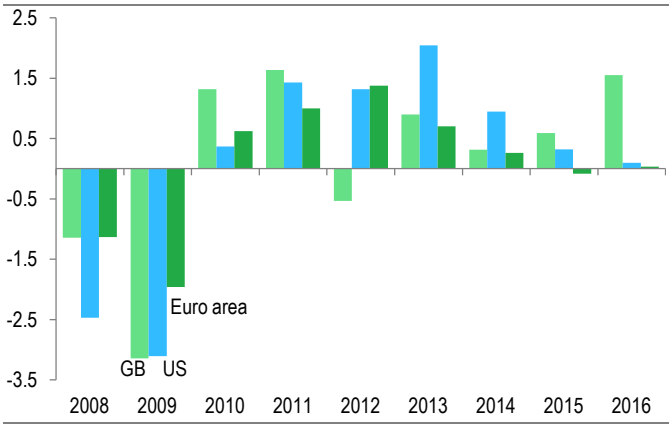
Supply-side constraints may also play a role in driving inflation higher in the future. While the secular stagnation hypothesis put forward by Larry Summers argues that the world is facing deflationary pressures and low long-term interest rates due to deficient demand, others argue that this permanent slowdown is a reflection of a loss of potential output or supply (Eichengreen, 2014). For OECD countries that experienced a banking crisis from 2007-11, the median loss of potential output in 2014 was estimated to be 3.75% while the broad OECD group saw potential output losses of 2.75%, with wide variations across countries (Ollivaud, 2014).

This was primarily driven by a drop in trend productivity, resulting from both lower investment and lower total factor productivity. Among the major countries, the UK was worst affected, with an estimated 8.6% loss, reflecting overheating before the crisis and a sharp drop in total factor productivity growth since. The US is calculated to have lost 2.5%, while Japan and especially Germany are calculated to be on a stronger trend since the crisis; this is mainly because of various reforms, mostly unrelated to the crisis, which boosted labour market participation.

Slower productivity growth is pulling potential growth lower

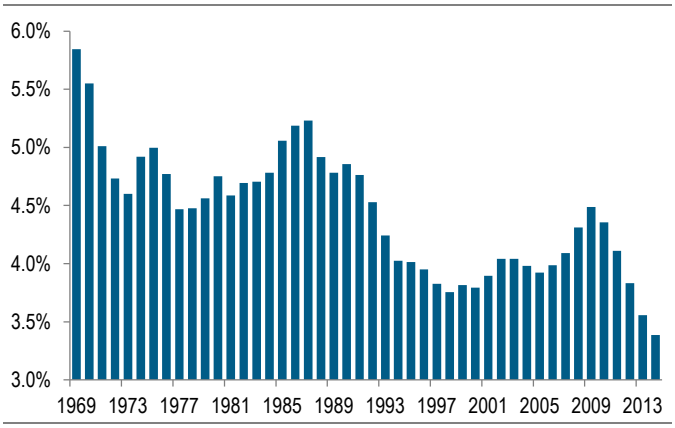
The slower pace of total factor productivity (TFP) growth is emphasised by Gordon (2014). His argument here is not that the productivity slowdown is driven by slower technological change. Gordon assumes that technology changes at the average pace of the last 40 years; in his view technological advances have already slowed compared with the average growth seen in the eight decades prior to 1972 and are unlikely to slow any further. But productivity growth will be weaker because of limitations on further improving education in developed countries (e.g., the percentage of people finishing degrees or higher degrees has likely peaked), ageing populations and higher government debt. US productivity growth has already slowed considerably in recent years (Figure 51).

Figure 49: The US and euro area are no longer tightening
Annual % change in underlying primary balances



Source: OECD, Standard Chartered Research; Note: positive numbers imply tightening

Figure 50: US government investment has fallen sharply in recent years; *% of GDP*



Source: Bureau of Economic Analysis, Standard Chartered Research

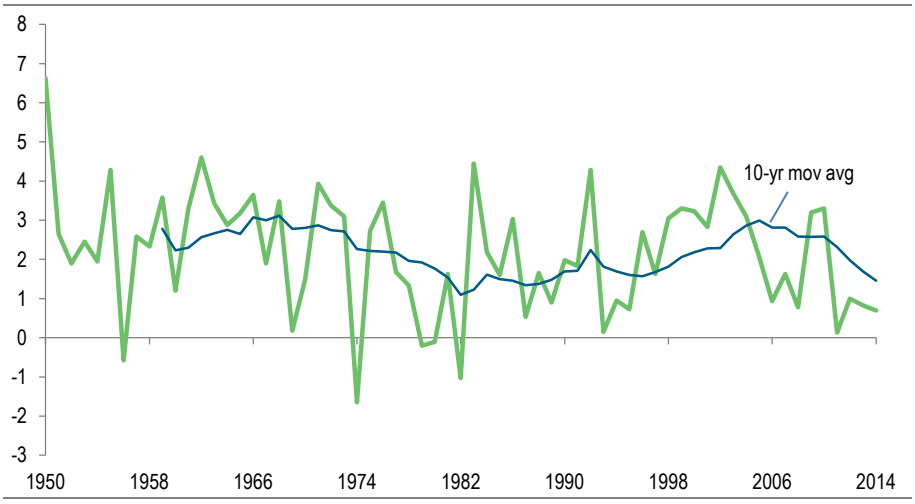
Hysteresis in the labour market

Some economists also argue that major financial crises like the GFC make large parts of the labour force unemployable over time, raising structural unemployment, NAIRU and lowering labour force participation rates. There is some evidence of a loss of employment (Figure 52) and higher long-term unemployment for some countries (Figure 53), especially in the euro area after the crisis.

The resulting drop in supply potential is known as 'hysteresis' (a technical term for when a system's output is influenced by past as well as current inputs). The OECD study, as well as other studies (IMF, 2015), suggest only a modest impact from loss of 'employability' in reducing supply potential; these studies attribute most of the decline to lower investment and slower growth of TFP. It is also not clear that the NAIRU itself has increased for all countries. While NAIRU forecasts for the euro area and Japan have risen, they have fallen for the US and the UK, albeit marginally (Figure 54).

Figure 51: US non-farm business-sector output per hour

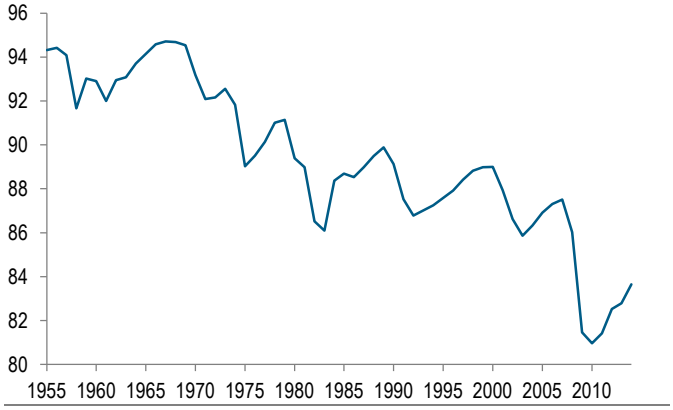
SA annualised %



Source: Bloomberg, Standard Chartered Research

Figure 52: Employment recovery has been very weak

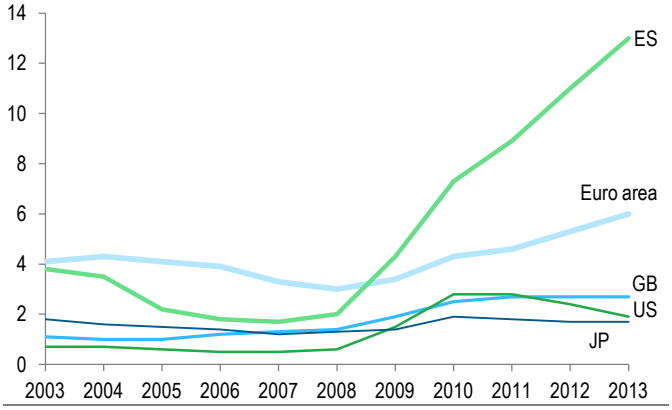
US male (aged 25-54 years) employment rate, %



Source: FRED, Standard Chartered Research

Figure 53: Long-term unemployment has risen in Europe

%



Source: Eurostat, Standard Chartered Research

Lower supply potential is likely inflationary

The link between lower supply potential and inflation is complex. Standard theory suggests that a drop in potential supply would reduce output gaps and as a result lead to a faster rise in inflation as the economy recovers. Similarly, hysteresis, which raises the NAIRU, would also suggest rising inflation at still-elevated levels of unemployment. This seems to be what happened in the 1970s.

High leverage and supply loss might encourage governments to save more

However, in the face of high leverage levels, weak growth would make it harder to reduce both public and private debt. This, in turn, could induce governments and consumers to follow policies geared towards higher savings and lower investment, keeping demand weak as well, which would be deflationary (IMF, 2015). The evidence over the last six years would suggest that the loss of employability has helped buoy core inflation rates, lending support to the standard theory argument.

5. Pressure on central banks to accept higher inflation

Pressure for debt monetisation could lead to inflation

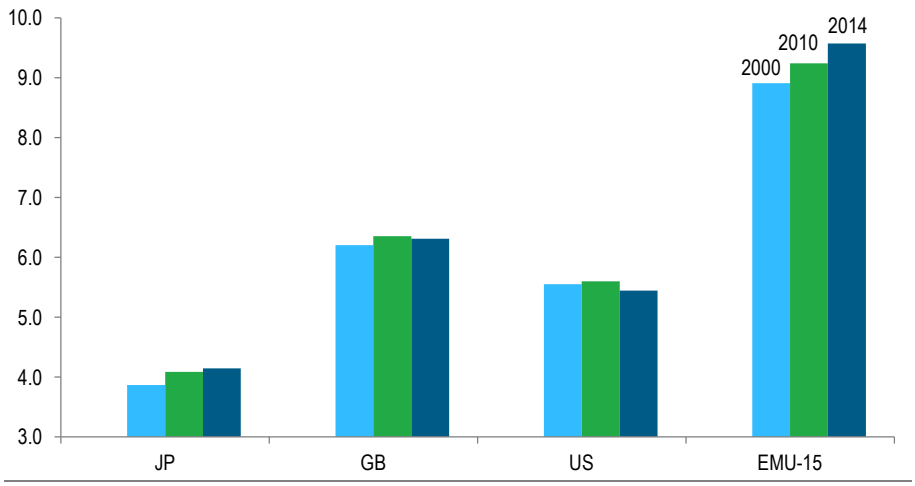
Historically, when debt burdens become large there has often been political pressure to lighten the load via inflation. For example in the late 19th century 'free silver' was a major policy issue in the US; proponents wanted to move to 'bimetalism', using silver in addition to gold as money, which would have effectively expanded the money supply, restoring inflation in what was then a deflationary environment. Free silver was supported by heavily indebted farmers (and silver mines) and resisted by creditors. The creditors prevailed. In the 20th century governments struggling with large deficits and high debts and in the face of political pressure have resorted to money printing at times; debt monetisation resulted in hyperinflation in Germany in the inter-war period and was one of the main forces behind persistent inflation in Latin America in the 1970s and 1980s.

Governments could be under pressure to run high fiscal deficits and create inflation

In coming years pressure to tolerate higher inflation might re-emerge. For example, a political reaction against austerity could lead governments to run excessive deficits again, coupled with a relaxed attitude to inflation. In countries where buoyant housing markets have gone hand-in-hand with rising household debt, we could see a situation where there is pressure to push up inflation to monetise debts

Figure 54: NAIRU rates are behaving differently across western countries

%



Source: OECD, Standard Chartered Research

(as house prices begin to fall and distress rises). Central banks' independence implies their ability to resist such pressure, but it cannot be taken for granted that they will remain independent. Taking the long view, monetary regimes come and go with surprising rapidity. Inflation targeting itself is a relatively recent monetary-targeting regime preceded by the gold standard (1880-1914), the Bretton Woods international monetary system (1946-1971) and full employment targets in the 1970s. Even today, several countries follow regimes other than inflation targeting, such as currency boards (HK) and exchange rate pegs (Middle East, CFA franc zone in Sub-Saharan Africa).

Will QE ultimately be inflationary?

Central banks have tools to prevent QE from stoking rapid increases in inflation

The use of QE by developed country central banks since 2008 has led to fears of possible monetisation of government debt. But a rise in base money (which includes banks' excess reserves at the central bank) does not automatically raise the broad money supply (M2, M3, etc.), which is what matters for inflation. A rise in base money only feeds through to broad money if banks expand their lending and thus boost broad money; so far this has not happened in a big way. If lending does take off, central banks could control it by raising interest rates (including on excess reserves) to deter borrowing, and selling government debt back into the private sector as discussed above.

Central banks might react too slowly, allowing inflation to pick up, or alternatively too quickly, slowing the economy. In 1937 the Fed moved to reduce the excess reserves in the banking system which had built up following the monetary expansion after the US left the gold standard. Unfortunately the Fed seems to have drained those reserves (through asset sales) too quickly. Banks abruptly cut lending which, coupled with a simultaneous sharp tightening of fiscal policy, sent the US back into recession. The 1937 experience could make the Fed cautious about reducing excess reserves, leading it to move too slowly.

Two further points are worth making about the 1937 experience. First, it was in 1938, directly after this experience that Alvin Hansen first proposed the idea of secular stagnation. Second, it is sometimes argued that only the Second World War rescued the US from depression, implying that weak conditions are very difficult to escape. But it can also be argued that it was two successive monetary policy mistakes, in 1931-32 and again in 1937, that made the 1930s such a painful period.

Will central banks tolerate higher inflation?

There is another argument. Central banks historically have been able to bring down inflation via monetary policy, while there has been less success in stoking inflation when an economy falls into deflation (as evident from Japan). So it is possible that central banks would be more willing to accept higher inflation (than current targets) than lower inflation. This is likely to increase central bank inertia in unwinding monetary policy stimulus, even with a possible risk of an inflation overshoot. Central bankers firmly reject this notion at present. However, several economists continue to argue for a rise in developed world inflation targets to 4% or higher from the current 2% targets (Ball, 2014).

6. Fiat currencies tend to be inflationary

Historically deflation has been associated with fixed exchange rate regimes

Historically, stable prices and deflation have been associated with fixed exchange rate regimes such as the gold standard. The deflation seen in Hong Kong in the early 2000s reflected the impact of its currency board arrangement (BIS, 2005). We live with so-called 'fiat money' or currency, meaning that it derives its value from government regulation or law. When there is no exchange rate anchor, and governments or the central bank manage monetary policy, there has always been a tendency to inflation. Prior to the establishment of the gold standard in the 18th century, inflation was common as governments frequently increased coinage to pay for their spending. Since the abandonment of the gold standard in the early 1930s currencies have lost 95% or more of their value. The US price level is up about 18 times since 1933 and has doubled since 1988. This gives reason to be sceptical that the future is likely to be either lowflation or deflation.

Making central banks independent has been the answer to this problem and it has worked reasonably well in controlling inflation in the last 20 years. This provides grounds for confidence that a repeat of 1970s levels of inflation (reaching 6% in Germany, 10% in the US and 30% in the UK) is unlikely. But, as we discuss in the following pages, inflation targeting may have created other problems, including financial instability and – according to some – excessive monetary easing. There are reasons for questioning whether the regime will last for the very long run. In a timeframe of 5-10 years it most probably will, though we view the risk of inflation nearer 4% than 2% as a higher medium-to-long term risk than market consensus suggests.

Conclusion

Inflation is likely to pick up towards targets over time

With core inflation at only around 1% currently (1.3% in the US, 0.9% in the euro area, 1.0% in the UK and 0.8% in Japan) the major central banks have nothing to fear from high inflation over the next year or two. The emphasis therefore is on creating above-trend economic growth so that the output gap closes, unemployment falls and, according to past relationships, inflation should pick up towards the 2% targets. This means continuing QE for the ECB and Bank of Japan (BoJ) and maintaining low interest rates for the Fed and the BoE. The Fed and BoE may raise rates but are likely to move only very slowly, keeping rates well below what might be a 'neutral rate' until inflation moves close to 2%. In this report we presented six possible inflation scenarios.

Bad deflation if there is another recession

Another recession is the biggest risk to our inflation outlook

Longer-term we believe the potential range for inflation outcomes is wider than consensus implies. The risks of bad deflation rise if there is another recession soon but this is not our core scenario. Starting from only about 1% inflation, a new downturn could see the inflation rate drift down to zero as wages stagnate, and potentially tip over into deflation, especially if there is debt distress or a new banking crisis. Guarding against this risk is a high priority for central bankers.

Good deflation needs a technology miracle

The world is seeing some deflation or at least very low headline inflation due to the fall in oil prices. But this is temporary. 'Good deflation', where prices fall because of a new productivity miracle, looks out of reach at present; productivity growth is very weak. Yet, the excitement over new digital technologies, such as robotics, driverless cars, the cloud, etc., could gradually translate into a new wave of investment and innovation on a medium-term view.

We stay in lowflation in the near term

We expect inflation to stay low but positive in the near term and to rise thereafter

'Lowflation' is where we are now. Inflation is well below target and proving hard to raise. If fears of secular stagnation and excess savings prove correct, this could be where economies stay. A new mild downturn, not enough to bring deflation but sufficient to depress inflation further for a while, would also support this outcome. In this case we should expect continued low interest rates and possibly more QE from the Fed and/or BoE. Yet, over time there is also the possibility that central banks rethink their commitment to the 2% target, perhaps out of fear of asset price bubbles or financial instability. We cannot therefore rule out a world where inflation is more or less zero while interest rates are set at around 2-3%. This would look more like the pre-1914 world than the current situation of zero rates.

Stagflation is unlikely

The stagflation scenario looks unlikely to us. The major economies no longer have rigid wages due to strong unions or incomes policies, as they did in the 1970s. And central banks' approach to QE has been cautious. They have avoided pure monetary financing of fiscal deficits, which is usually the route to a loss of confidence in the currency and a ticket to hyper-inflation as was seen in Latin America in the 1970s or Zimbabwe more recently.

Our core forecast is for inflation to return to target

Central bankers will be delighted if inflation picks up as hoped and they can return the economy to a world of 2% inflation, cease QE and move interest rates off the zero level. For the US and UK and possibly Japan this may be closer than appears. Another year or two of robust growth should see output gaps closed and unemployment at levels that previously generated higher wages. Time will tell whether these relationships still work in a globalised world; our view is that they do.

Inflation above target is more likely than currently reflected

Central bank recession fears could push inflation higher over the more medium term

Finally, if inflation does reach target but economic growth remains robust beyond that, these same relationships will tend to take inflation above target. What then? We do not believe central bankers will risk their credibility by raising inflation targets (more on this in the next section), despite their discomfort over the last few years. But we do think they might be more inclined to risk above-target inflation than risk hitting the economy too hard with monetary tightening and causing another recession. For this reason, we think the probability of a period of inflation in the 2.5-4.0% range in the major countries is much higher than many believe.

The future of inflation targeting

The future of inflation targeting

The outcome of long-term inflation trends is set to have a bearing on monetary policy regimes in the developed world over the coming years. Central banks in the developing world still deciding their targets will watch developments in the major markets closely. The Great Moderation since the 1980s is attributed partly to the success of inflation targeting. The GFC, however, exposed the drawbacks of prevailing monetary policy and worries about the long-term inflation trend have raised questions on whether central banks should pursue targets besides inflation to set monetary policy. Currently there is fierce debate on the merits of and drawbacks of competing targets including nominal GDP targets, monetary aggregate targets, price level targets and inflation targets.

The Fed and ECB are not too far off target

Major central banks have been successful in keeping inflation within target for the last 20 years

Arguably the US and euro area have done a good job in the last 20 years or so, keeping inflation within range of target and with limited volatility (Figures 55 and 56). Inflation expectations have also remained within a limited range (Figures 57 and 58). Even today, despite the GFC and weak economic growth core inflation is not too far from target. Provided economic growth can continue to bring unemployment lower (which it has only just started to do in the euro area), output gaps should close and, over time, inflation will edge back up.

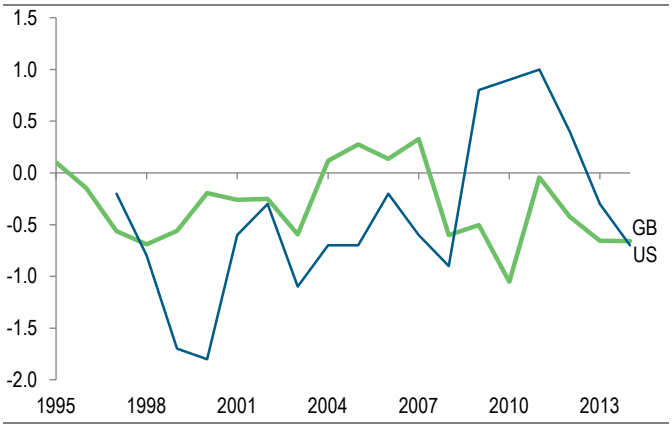
That assumes that the old relationships between the output gap, unemployment and inflation still hold. Inflation targeting relies heavily on these theories and enormous effort is expended to try to judge the output gap and the natural rate of unemployment. At extremes of the cycle it is usually (though not always) clear where the economy is, but as the economy expands and approaches estimates of full potential and full employment, the question arises whether the old relationships and parameters remain valid.

In a globalised world, it has become important to look at global output gaps

As discussed above, some argue that because of globalisation and reduced union power what matters today is the global output gap. Phillips originally argued that his curve worked based on UK data from 1861-1957, an extraordinarily long period. To make the pre-WW2 curve fit the post-war era, he had to argue that various special shocks may have temporarily thrown it off course (Sleeman 2011). This was an early indication that while the Phillips Curve is a strong empirical regularity it is not a rigid relationship. Parameters seem to change at times; in particular the

Figure 55: Inflation has been near target in US, UK

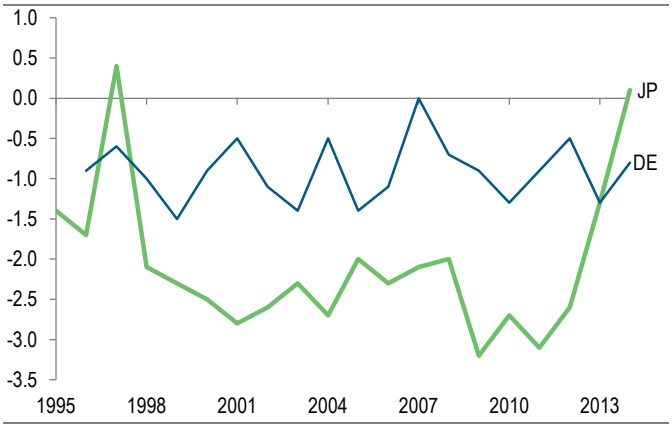
Core inflation less 2% (inflation target), % y/y



Source: Bloomberg, Standard Chartered Research

Figure 56: Inflation has undershot in Japan and Germany

Core inflation less 2% (inflation target), % y/y



Source: Bloomberg, Standard Chartered Research

natural rate of unemployment is believed to have risen in the US and UK in the 1970s before falling again later.

Another study suggests that while a stable national-level Phillips Curve may be elusive, there is evidence that the relationship still works on a regional level, using state data (Nicolini, 2013). The authors argue that the national Phillips Curve has been unstable because of changing approaches to inflation over the long term.

However, as noted earlier, recent research suggests that the relatively small decline in inflation since 2008 despite the deep downturn can be explained if the long-term unemployed are excluded. Looking forward, as the labour market tightens wages should pick up. What is less clear is whether this is imminent, or whether it might take a fall in unemployment to nearer 4% for wage growth to pick up, given the structural changes in the labour force. It is this uncertainty, together with the fall in oil prices that is suppressing inflation, which has helped keep the FOMC on hold so far in 2015.

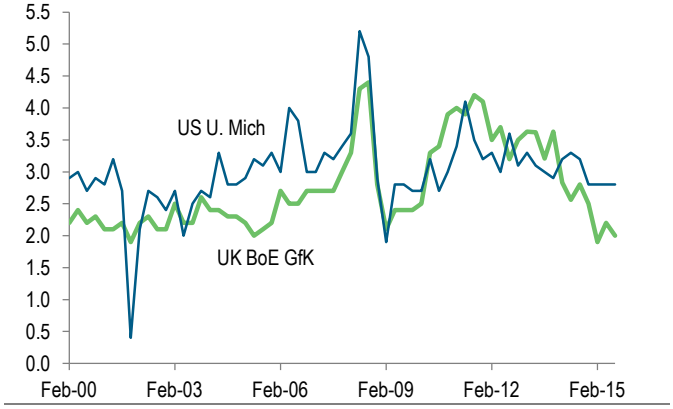
In the US wages did pick up in the mid-2000s, once unemployment dipped into the 5-5.5% range. But this was also the time when the global output gap closed, so that experience does not disprove the claim that it is the global output gap that matters.

Wages are already accelerating in the UK but not in the US

So far, there is little hard data showing that US wages are picking up, though survey data from the National Federation of Independent Businesses suggests they should soon. In the UK, where the output gap is also closing fast, there are already signs of accelerating earnings. Our view is that the domestic output gap is still relevant, though it is possible that the large global output gap could dampen the impact this time. Also, although the US and UK unemployment rates have recently fallen to levels which caused rising wages in the past, there is a lag involved and it is hard to be too precise about levels. Central banks must act in the face of uncertainty, though the knowledge that inflation is currently below target means they will proceed cautiously. Productivity growth (discussed in Topic 3) is a hotter topic in the UK. If productivity growth accelerates, wages can rise further without driving cost pressures higher.

Figure 57: Inflation surveys show modest expectations

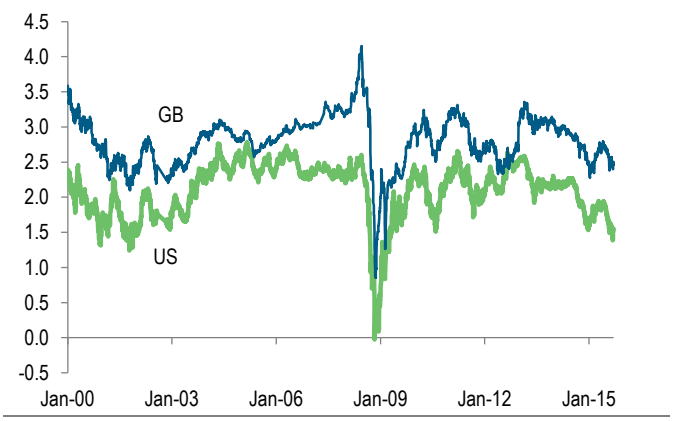
% balance (UK); % (US)



Source: Bloomberg, Standard Chartered Research

Figure 58: 10-year market breakevens are contained

Breakeven inflation expectations %



Source: Bloomberg, Standard Chartered Research

The problem with inflation targeting

Inflation should not be the only target

Critics of the current low interest rate policy argue that central banks were mistaken in the early 2000s in focusing almost entirely on inflation, a fixation which paved the way to the GFC; and may be in danger of again creating asset bubbles and risking financial instability today. According to this view, championed by the Bank for International Settlements (BIS), central banks should also be concerned about financial stability, which may be threatened by keeping interest rates too low for too long (BIS, 2014/15).

There is little evidence of asset bubbles so far in the US, in real estate or stocks, though some argue that prices in commercial real estate and the stock market are relatively high and that risk-taking in areas such as credit has become extended. It is also possible that low US interest rates have 'blown bubbles' elsewhere, e.g., in some housing markets such as Canada and Australia. The rapid credit growth and heady housing valuations in some Asian markets like Singapore, Hong Kong and Malaysia are likely also linked to low US rates, though China's credit bubble looks to be more home-grown.

Enter macro-prudential policies

Former Fed chairs Greenspan and Bernanke argued that they would deal with burst bubbles after the event if necessary. The GFC has discredited this approach. Now central banks plan to use macro-prudential policies to limit bubbles, or at least the financial sector's vulnerability to bubbles, alongside tighter bank capital controls and better financial-sector supervision. Monetary policy is assigned to deal with inflation and macro-prudential policy to deal with macro-instability issues, though how these two policies will interact in practice is still a matter of debate.

Existing evidence shows that macro-prudential policies are useful for reducing major bank distress

The evidence from countries that have used macro-prudential policies to contain bubble risks, including in Asia and Spain, suggests that such policies may be able to reduce the risk of major bank distress but cannot prevent bubbles developing, and these can sometimes have major macroeconomic consequences. The BIS has repeatedly argued that monetary policy may also need to be used to 'lean against' emerging bubbles, even if that means raising interest rates in circumstances where a strict inflation-targeting regime would suggest not. Otherwise, if the bubble bursts the resulting recession will pull inflation down and threaten deflation anyway.

So far there is little sign that the Fed, or indeed other major central banks, are much moved by the financial stability argument. This could change if asset prices rise rapidly or risk-taking starts to appear excessive in a major way. We do believe, however, that concern about the long-term consequences of ultra-low interest rates is likely a factor in the thinking of at least some FOMC members. It is encouraging them to advocate at least 'getting started' on rate normalisation and could tip the balance towards more tightening if the decision is borderline.

Is 2% the wrong target level for inflation?

Central banks settled on a target inflation rate of about 2% in the 1990s, based on the view that it was low enough to represent near price stability but high enough to give them some space during a downturn to avoid deflation and to push real interest rates to low or even negative levels.

Given the risks of deflation, is there a case for targeting a somewhat higher rate of inflation, say 3% or 4%, rather than 2%, as suggested by Olivier Blanchard, outgoing Chief Economist at the IMF? A higher general target for inflation would allow more room for real interest rates to fall when economies face negative shocks, thus lowering the risk of entering deflation. The downturn would have to last longer or be more severe.

There is a case building for a higher inflation target of 3% or 4%

The opposite view is that the 2% target is unnecessarily high; it does after all imply that the price level doubles every 35 years. Perhaps we should just accept lowflation or even deflation (which can be 'good deflation').

A change in target levels is very unlikely

A move to a higher inflation target by central banks would be a massive shift for markets and seems extremely unlikely any time soon. A higher average rate of inflation would be seen as negative for economic efficiency and fairness. Moreover, central banks fear a loss of credibility if they change target too easily, especially after the pain of bringing inflation down in the 1980s.

A formal change in target is unlikely but central banks are likely to tolerate target overshoots for a while

However, we believe that if inflation does move up to 3% or even a little higher, central banks would find reasons to tolerate it, at least for a while. UK inflation averaged 3.5% for four years from 2008-11, during which time the BoE cut rates to near zero and held them there. The BoE viewed high inflation as temporary due to the devaluation of sterling, high commodity prices and rising government charges. It was right, though inflation stayed high for much longer than it expected.

The main risk to our view is that, with inflation low currently, 'we are only one recession away from deflation'. If there is a shock in the world economy of some sort soon (e.g., an oil-price spike, crisis in a major country, etc.), then a new world recession could see the US and Europe join Japan in deflation, with possibly Korea, Taiwan, Singapore and China there too. The risk of another downturn is a major reason for central bank dovishness. In the absence of an unexpected downturn, however, inflation should move up and deflation fears subside, allowing central banks to follow more traditional monetary policy.

The bottom line

We expect the developed world to avoid deflation but remain stuck in a 'lowflation' environment for the next two years. However, over the longer term, the possibility of outcomes is much wider than markets are currently pricing in. We believe that four main factors will determine the more medium- to long-term trend in inflation: (1) what happens to investment in developed countries; (2) China's slowdown and whether it devalues further; (3) whether wages do indeed respond to lower unemployment; and (4) whether productivity growth picks up.

Our assessment of the trends underlying the secular stagnation and excess savings arguments is that many are temporary and that these problems should diminish over time, allowing countries to close their output gaps. Although globalisation will have a dampening effect on the wage response, we expect wages to eventually rise as usual, taking inflation higher. Our forecasts see inflation rising to target over the next few years. Beyond that we see risks of above-target inflation.

We expect a sharper debate on whether inflation targeting is still the best monetary policy target over the next two years as the developed world continues to struggle with 'lowflation'. However, we expect central banks to conclude that the costs of moving away from inflation targeting are higher than the benefits. Central banks are likely to increasingly use macro-prudential and other tools to manage the financial stability targets in addition to inflation targeting. We expect concerns about secular stagnation or another recession to make central banks more tolerant of above-target inflation for some time.

Appendix

Deflation – What's to be feared?

Five reasons central banks dislike deflation

Deflation is defined as a sustained decline in the general price level of goods and services. But it is viewed with trepidation by many economists and central bankers for several reasons (Figure 59). For us, some of these fears are justified, others are not.

Central banks fear deflation as they cannot force negative real rates

1. Central banks cannot create negative real rates

The most important reason central banks fear deflation is that it becomes very difficult or even impossible to push real rates into negative territory. While we see negative interest rates for wholesale deposits currently in Switzerland and Sweden, it is difficult to make retail deposit rates negative as people may simply withdraw and hold currency. Even the rates in Switzerland and Sweden would still be positive in real terms if deflation moved to -0.5% or lower. Zero or negative rates also upset the workings of the money market and make money market funds vulnerable or unviable. Without the ability to establish negative real rates, central banks facing a severe downturn must use forward guidance or QE, the effects of which may be less certain (Figure 60).

Deflation can raise labour market rigidity through sticky wages

2. Harder for real wages to adjust

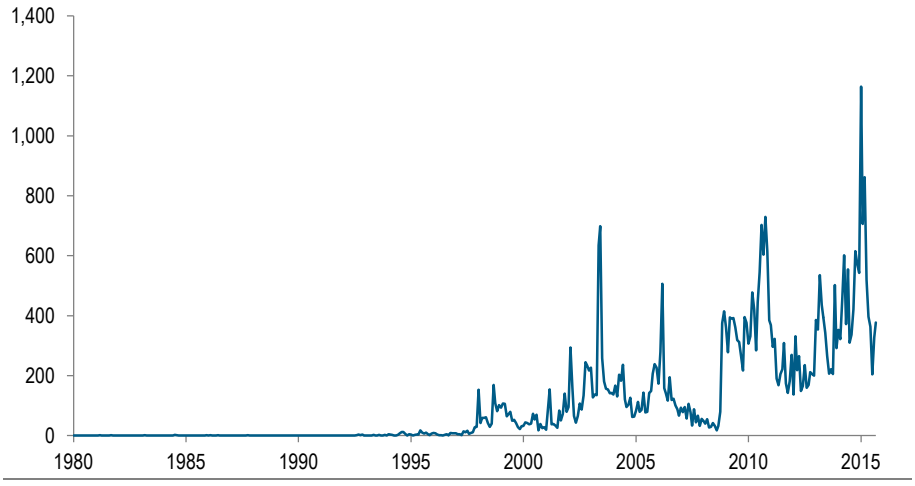
Deflation may increase labour market rigidity. In a period of inflation real wages are reduced by nominal wages standing still, which can be an important mechanism to encourage economic recovery. But employees often resist a cut in wages so that in times of deflation, real wages tend to rise, which may encourage layoffs and discourage new hiring. A period of deflation with stable wages may also make it more difficult for relative wage differentials between different occupations or performances to adjust, making the labour market less efficient. However, downward sticky wages need not always be a problem if deflation is driven by a supply shock – 'good' deflation. In that case rising real wages are a natural outcome.

3. Consumers delay purchases, thus worsening the economy

It is often argued that falling prices will make consumers delay purchases because they can buy more cheaply at a later date. The inflation rate is an

Figure 59: Worries about deflation have grown over the last decade

No. of Bloomberg news articles with deflation as the keyword



Source: Bloomberg, Standard Chartered Research

Japan's consumers seem to be held back by low income growth rather than a reluctance to spend

average of different goods and services and, even in an environment of positive inflation, some prices are falling. For example, the prices of digital goods such as TVs and computers have been falling for decades and it seems unlikely that this has been much of a factor in delaying consumption. Japan's personal savings rate has declined persistently since 1990 and is now close to zero despite deflation (Figure 61). Japan's consumers seem to be held back by low income growth rather than a reluctance to spend.

4. Higher debt in real terms

Falling prices exacerbate the position of debtors by increasing the real burden of their debts. This may induce debtors to cut their spending, but creditors are unlikely to increase their spending by the same amount. People may also be reluctant to borrow for fear that the repayments will become an increasing burden. Defaults are also more likely, potentially creating financial instability. This can lead to a vicious circle in which weak spending due to rising real debt and constrained borrowing leads to a weaker economy and further deflation. This seems to have been an important factor in Japan in the 1990s, particularly in the corporate sector. It is also a concern at present in some countries, given historically high household and government debt levels (BIS, 2015). But it is not clear that deflation itself is the cause of debt deflation; more likely an economic downturn and asset price decline allied with a starting point of excessive debt is the cause. Moderate deflation in an expanding economy will only very gradually hurt debtors and the level of real interest rates will be more important.

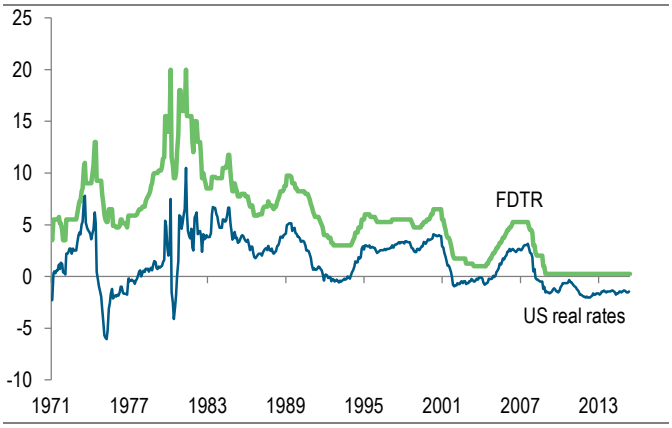
5. Lower nominal yields are a threat to guaranteed returns

The final reason to fear deflation today is that if nominal interest rates remain low indefinitely, some investment companies with fixed liabilities and many retirees relying on coupon payments may be in distress. Some insurance companies have guaranteed minimum rates of return on investments while some pension funds may have unrealistic long-run return expectations (though this was often true during past periods of positive inflation too).

For retirees the problem is not so much deflation as low real rates. If they were anticipating annual income from investments of (say) 5% in a 2% inflation environment they are no worse off with a 2% return in an environment of -1% inflation. In fact they might be better off since tax will probably take less of a bite.

Figure 60: US real rates are often negative during slumps

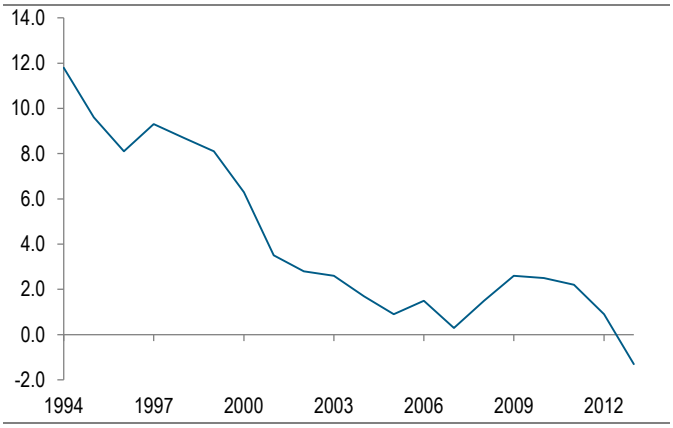
%



Source: Bloomberg, Standard Chartered Research

Figure 61: Japan's savings down despite deflation

Household savings rate %, fiscal year



Source: Bloomberg, Standard Chartered Research

But they need to understand and accept that they must also sell 3% of their assets every year to have the same income. However, if real rates are low they do lose out. For example, in the case of Japan over the five years to end-2013 (ahead of the consumption tax increase), the inflation rate averaged about zero while the yield on a five-year government bond bought at end-2008 would have been about 0.8%, representing a much smaller real return than in the other two cases.

Deflation can be good as well as bad; good deflation is the result of productivity shocks

Not everyone is convinced that these problems with deflation are so bad. Certainly, if an economy moves from, for example 0.1% y/y inflation to -0.1% y/y inflation there is essentially no difference. Except that it will generate headlines about deflation which could negatively influence confidence. One reason for this is that people often equate deflation with a weak economy or even depression. But there can be good deflation as well as bad deflation (Figure 62).

Good deflation

Good deflation, a period of sustained economic growth with falling consumer prices, but often rising asset prices, generally stems from a positive supply shock. This supply shock could be from major technological innovations that combine to push down costs and prices or it could be from a fall in resource prices, such as energy. Typically, investment is strong so real interest rates are likely to be positive. Rising productivity and full employment underpin the rise in real wages, brought by stable earnings and deflation. Finally, strong demand for housing and other real assets supports the value of collateral that backs bank loans.

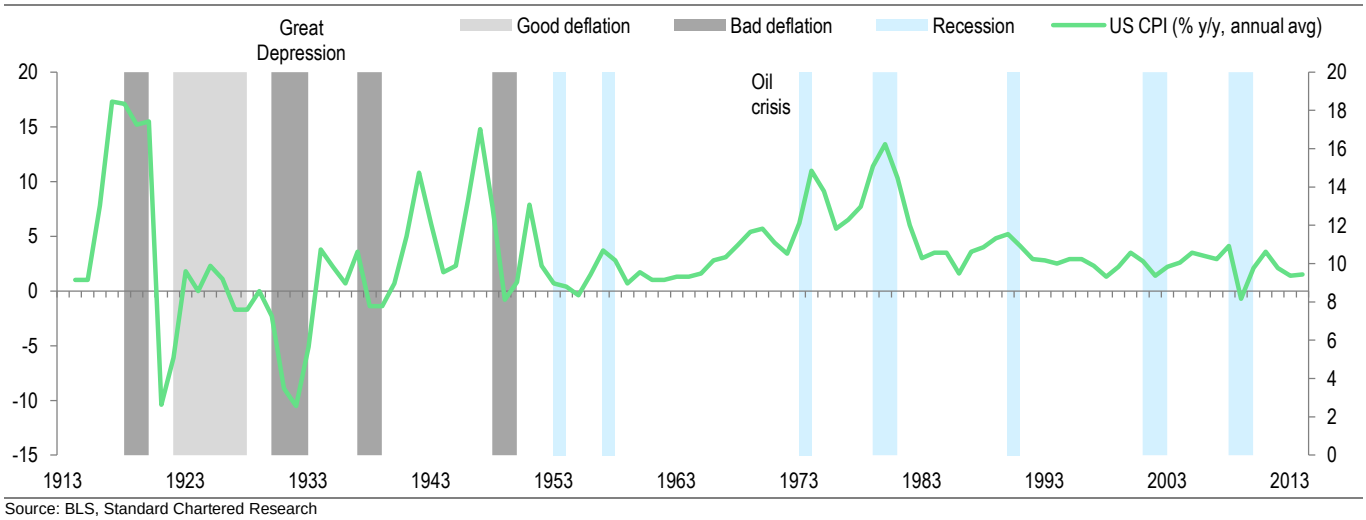
The period from 1873-96 was a period of good deflation brought about by the industrial revolution

The last quarter of the 19th century from 1873-96 was a period of good deflation, reflecting the second industrial revolution (Figure 62). Prices fell in many countries by about 2% a year, but growth averaged about 2-3% a year driven by a productivity boom with the spread of coal, steam, railway and refrigeration technologies. These technologies also helped to open up new regions to the world market, including the interior of the US, Argentina and Australia. Meanwhile the gold standard kept the money supply in check (Figure 63).

The 'roaring 20s', from 1921-29 was also a period of good deflation (around 1-2% p.a.), combined with rapid real growth in many countries (with the exception of the UK which re-pegged to the gold standard at too high an exchange rate). Growth was driven by the spread of electrification, cars, telephones and radios (Bordo, 2005).

Figure 62: 'Good' and 'bad' deflationary periods

% y/y



Source: BLS, Standard Chartered Research

Today commodity prices are down, which could point to a period of good deflation. But productivity growth almost everywhere is weak. In the US, non-farm business-sector output per hour has averaged only 0.8% p.a. in the last three years. Admittedly this is a short period to assess trends but labour productivity growth has also slowed, according to the 10-year average.

The US enjoyed a surge in productivity from about 1990-2005, apparently associated with the personal computer and internet, but this has faded. We have argued that new digital technologies could give another boost to productivity in coming years but how quickly this will happen is open to question (*Special Report, 18 Jan 2015, Technology: Reshaping the global economy*).

Bad deflation

Bad deflation occurs when falling prices are associated with, and exacerbated by, a weak economy, often accompanied by falling asset prices. Bad deflation happened routinely in the 19th century since the price level usually did not rise rapidly even during economic upswings (and often fell); therefore a downturn quickly led to deflation. But these periods typically did not last long or cause lasting damage. Sometimes bad deflation can also turn into a 'debt deflation' when debt defaults due to the weak economy and falling prices cause still more weakness and price deflation, creating a vicious cycle which may last longer (Fisher 1933).

The Great Depression of 1929-33 was a period of bad deflation, with falling prices exacerbated by weak economies

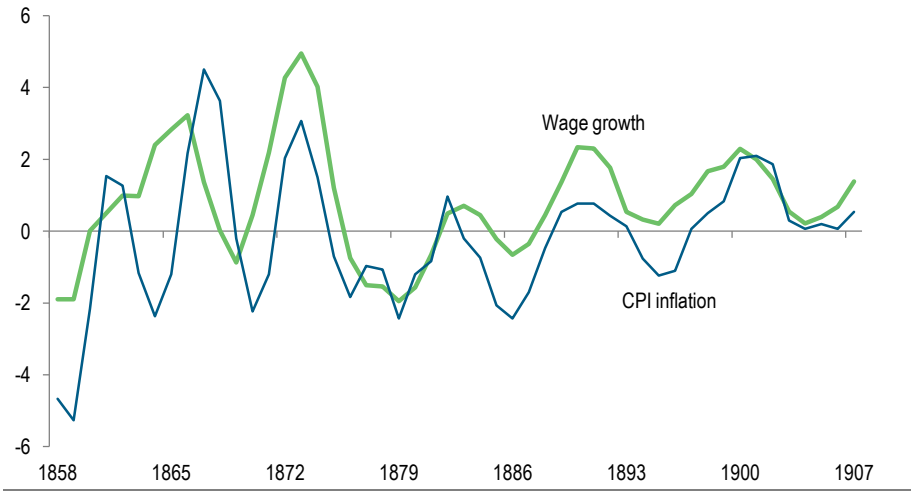
The Great Depression is the poster child of bad deflation. US GDP fell by 32% from 1929-33 real output levels while the price level fell about 30%. Deflation reappeared in Japan in the 1990s and, although Japan suffered far less than during the Great Depression, it has proved a very uncomfortable experience. That said, arguably Japan's deflation in the period 2002-07 could be characterised as 'good deflation'.

Temporary dips

Most deflation episodes since the mid-20th century can be classified as 'temporary dips'. A BIS sample of 38 countries comparing all inflation and deflation years, shows well over 100 episodes of deflation in this period. The majority, approximately 65%, have lasted no more than a year, with many of these shorter episodes coinciding with declining oil prices. Of the 24 episodes of deflation lasting two or more years, 20 have been in economies with fixed exchange rates, mostly emerging markets.

Figure 63: Deflation was common during the gold standard

UK, three-year moving average, %



Source: Bank of England, ONS, Standard Chartered Research

Japan's deflationary experience

Japan's mild but persistent deflation since 1998 can mainly be explained by inadequate demand (Figure 64), though falling inflation expectations may also have played a role. Japan had a persistent output gap over this period according to OECD estimates. But the causality needs to be treated cautiously because the output gap calculation is based on the fact that the price level was falling. That said, measures of labour market tightness and capacity utilisation rates confirm that the economy was less buoyant than previously.

BoJ was slow to respond to the onset of recession

One reason for this demand deficiency may have been the slow monetary response of the authorities to the recession in the early 1990s. Initially the BoJ was pleased that real estate prices were falling, as house prices were perceived to have been in a bubble which was creating social tensions (Figure 65). Even when the BoJ instituted QE (initially in 2001), its purchases were relatively ineffective because it bought mostly short-term securities and mainly from the banks; QE is likely to be more effective if the purchases are long-term paper and from non-banks (since this directly boosts broad money supply whereas banks may simply hold excess reserves in place of short-term securities, with no effect on the money supply or lending) (Figure 66).

Another reason for deficient demand was the initial failure to deal with a 'zombie' banking system. Only from 1997-98 did the authorities add capital to the banks and push them to write down bad debts.

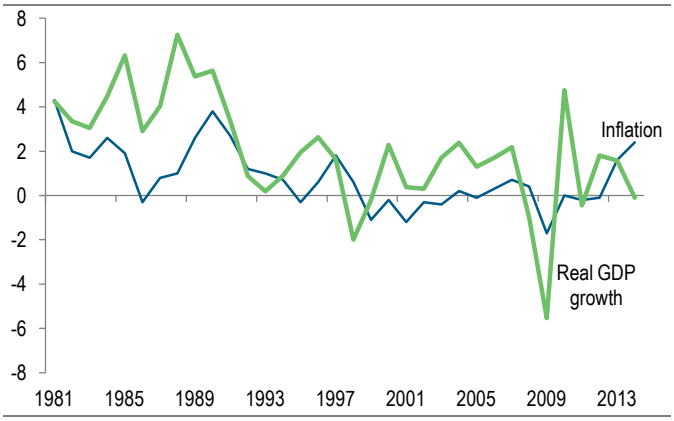
Demand deficiency in Japan was stoked by a soft form of debt deflation

Probably the most important reason, however, was that a soft form of debt deflation took hold. It was not so much that there was widespread bankruptcy and liquidation; rather consumers, banks and particularly businesses focused on paying down debts and reducing their balance sheets, creating a so-called balance sheet recession (Koo 2008). House prices declined by 60% from the 1990 peak, not troughing until 2004. Commercial real estate and stock prices declined by similar amounts (Figure 67). Companies focused on paying down debt and private fixed capital investment fell back.

Some of this process has been seen in the West since the GFC. For the worst-hit countries in the euro area, such as Greece, Portugal, Ireland and Spain, there have been very severe balance sheet retrenchments. France and Italy have also seen some, as did the US and UK for a short period from about 2008-12. In the euro area

Figure 64: Japan's inflation and real growth

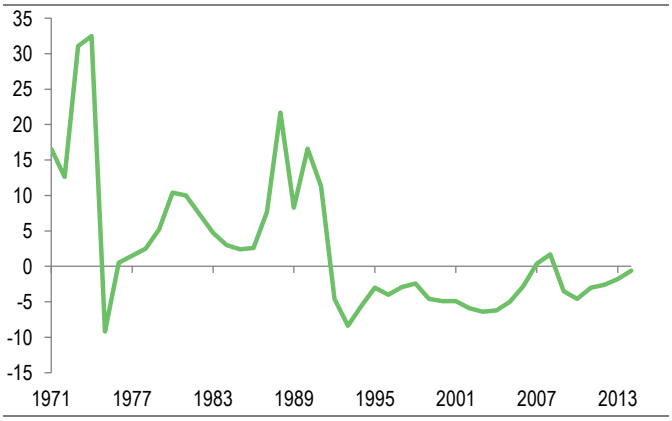
% y/y



Source: Bloomberg, Standard Chartered Research

Figure 65: Land prices in Japan

Annual, % y/y



Source: Bloomberg, Standard Chartered Research

bank lending has just moved back into positive territory y/y after a long period of decline. Our view is that the West has avoided a prolonged balance sheet recession, partly because asset prices have been stabilised (albeit lower in some cases e.g., house prices in the US and Spain) and because the bubbles were not as large and widespread as in Japan. Japan experienced massive bubbles in both residential and commercial property, as well as the stock market, in the 1980s. The US stock bubble was largely deflated in the early 2000s; valuations were not so extreme in 2007. US commercial real estate prices did fall after 2008 but the market was not as wildly extended as Japan in 1990.

In the US, prices are up about 12% since 2008 which provides a cushion for debtors

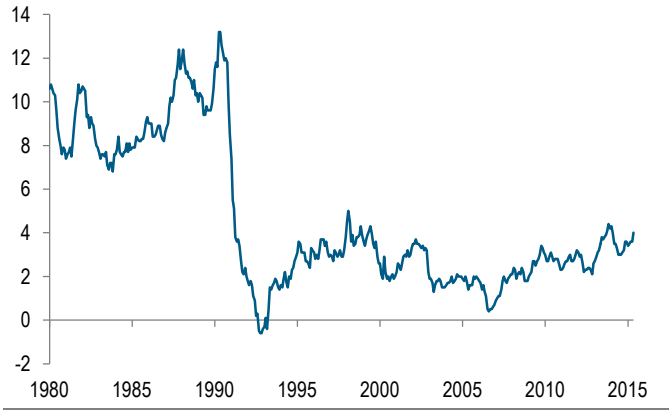
In Japan, consumer price deflation itself likely exacerbated the deleveraging process. If the general price level had risen rather than fallen, it could have provided a cushion, underpinning asset prices and debt, as occurred in many countries during the 1970s when asset prices also fell significantly in real terms. Even for the US, prices and wages are up about 12% since 2008, a modest but significant cushion for debtors, particularly if they are paying variable rates or, like household mortgage holders, can refinance at lower rates.

Japan's so-called 'lost decade' of growth from about 1991-2002 followed the asset price bubble's collapse. Japan's GDP deflator began its decline in 1995 and core CPI deflation fully materialised in 1998 with the onset of a recession. Core CPI remained negative almost all the time until 2014. Wages were essentially flat from 1997 to 2001, then dipped during the 2001 recession before picking up slightly in 2005-07.

Arguably the 2002-07 period should count as a period of good deflation, with the boost to Japan coming from the growth of China, as well as the overhaul of the financial system. Japan's GDP growth averaged 1.9%, not significantly different from the US when the fall in the labour force is taken into account. Deflation continued but gradually the inflation rate moved back to about zero in 2007. Deflation took hold again after the GFC, when the economy went into recession.

Figure 66: Japan's M2 growth

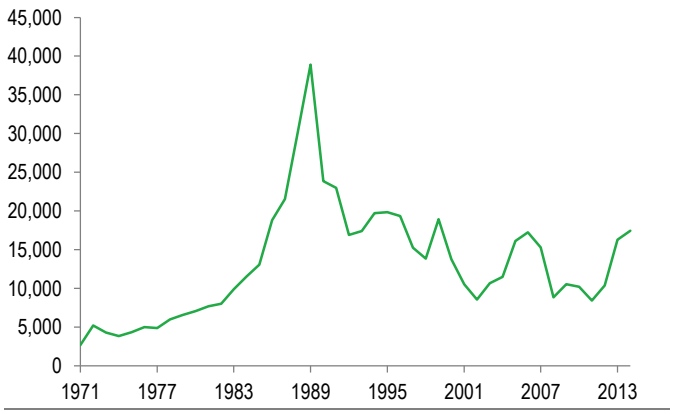
Money stock, average amount outstanding, % y/y



Source: Bloomberg, Standard Chartered Research

Figure 67: Equity prices in Japan

Nikkei 225 price-weighted average



Source: Bloomberg, Standard Chartered Research

Lessons learned by western central banks

Major central banks have tried to avoid the mistakes made by the BoJ in response to the crisis

The Fed and other western central banks seem to have learnt three main lessons from Japan's experience. First, in a severe downturn involving a financial crisis and asset price collapse, it is important to use a 'bazooka' with rapid easing to avoid a change in inflation expectations which locks in low inflation or deflation. Second, the purchase of longer-term bonds is important rather than short-term bonds. Fed QE also targeted mortgage bonds in particular, helping to keep mortgage rates lower to aid the housing market. Third, the focus should be on doing enough QE to keep inflation expectations near target.

Japan's push to boost inflation

For a considerable time in the 2000s the BoJ seemed to give up on defeating deflation, arguing that falling prices were structural and that only economic reforms could raise economic growth. The current government did not accept that, appointed a new central bank governor and now a key part of 'Abenomics' is to raise inflation to the 2% target. Estimates suggest that Japan's negative output gap is now small, so only a year or two of above-trend growth would close it completely and begin to create a positive output gap which should boost wages and inflation (Figure 68).

Japan's latest drive to push inflation and growth higher has met with mixed success

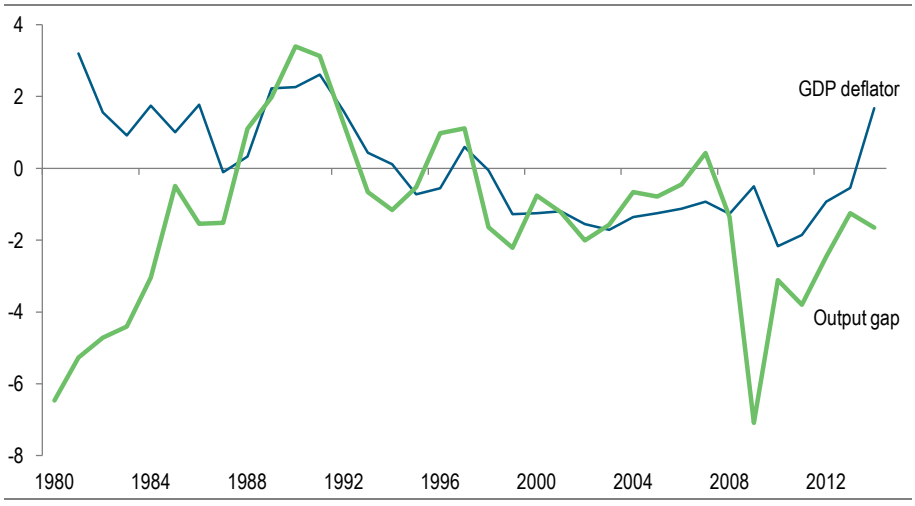
Progress on achieving above-trend growth has been mixed. Improved confidence, an initial fiscal stimulus and the higher stock market are supporting growth. But while the weaker Japanese yen should help exports and encourage import substitution over time, it also dents real consumer incomes, which limits consumer spending growth. Moreover, the attempt to begin to close the government's deficit last year with an increase in the sales tax backfired, with investment slowing and the economy drifting into a brief recession. Japan's economy also seems to be held back by the slowdown in China.

Some argue that in addition to creating a positive output gap the authorities need to work harder to push up inflation expectations. Government attempts to encourage higher wage settlements by large companies has met with modest success. Deflationary expectations in Japan are deeply entrenched.

In our latest survey of Japanese local market participants, almost all were sceptical about the BoJ's 2% inflation target and new timeframe for achieving it (see *On the Ground, 24 June 2015, Japan – Winning over the reluctant consumer*). We think the BoJ may ease again this October as the 2% inflation target remains difficult to achieve.

Figure 68: Negative output gap since 1998, except in 2007

Output gap (% of GDP), GDP deflator (% y/y)



Source: Bloomberg, Standard Chartered Research

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