

## IN FOCUS: GLOBAL

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*The risks of high inflation are small, and fears have been overstated*

*In our first article we focus on understanding where the main inflation risks come from*

*Inflation results from either overheating or inflation expectations losing their anchor*

### Inflated fears – Part I

**In the first of a series of articles, we explore the outlook for inflation. Risks of above 5% global inflation are small in the next few years, but are more likely to arise from growing fiscal debts and chronic easy monetary policy than a fast rebound in economic activity**

Will the extraordinary expansion of central bank balance sheets lead to a serious bout of inflation? Is the US becoming Argentina, as renowned Harvard historian Niall Ferguson seems to suggest? Is *The Wall Street Journal* right in suggesting that “as the economy improves ... the risk of inflation will soar.” Is the Fed “debasing” the US currency?

The short answer to all of these questions is “no.” We see very low risk of high inflation – 5%-plus in the developed economies – for the next several years. But contrary to popular belief, we believe strong growth is not the primary inflation risk. The bigger risk is an un-anchoring of inflationary expectations driven by:

- A prolonged period of loose policy, implemented to fight high unemployment, that could undercut the hard-earned credibility of central banks;
- The dominance of fiscal policy over monetary policy – losses on assets and chronic tax shortfalls could tempt governments to “inflation tax” their way out of their debt and deficit problems; and
- Loose policy could encourage investors to seek better stores of value than easy-policy currencies.

However, these risks are low. Among OECD countries, only Italy (after the 1992 recession) has had three years of above 5% inflation without a positive contribution from oil prices, coupled with years of weak growth and large increases in debt/GDP ratios. Since then, low global inflation has made an un-anchoring of expectations less likely today than in the early 90s.

In a series of articles we lay out the main justifications for our view. First, we present a simple framework, which suggests that investors should focus on expectations not “real” factors in understanding inflation risks in coming years. In particular, we examine how inflation expectations could come unglued, even with a weak economy. Second, we show that today’s quantitative easing measures present different inflation risks than traditional easy monetary policy and explain how exit strategies can be manageable given a backdrop of strong growth. Finally, we examine the *global* implications of the injection of liquidity by central banks, including its implication for commodity and asset prices, and the international reserve status of the USD. We begin this series by focusing on inflation expectations.

#### Of output gaps and expectation traps

To understand why inflation risks are low, it is important to look beyond slogans and take a broad look at the economics of inflation. In the standard expectations-augmented Phillips curve, inflation arises either because of overheating in the economy or because inflation expectations lose their anchor:

$$\Pi = \Pi^e + a \times (Y - Y_p)$$

where  $\Pi$  is inflation,  $\Pi^e$  is expected inflation and  $Y - Y_p$  is the output gap (output minus the potential level of output). In this framework, policy changes cause inflation by either

simulating spending, thereby pushing GDP above potential, or by causing people to expect inflation so that they raise prices in anticipation of inflation.

*This setup suggests we focus on inflation expectations ...*

What does this mean for the future inflation outlook? Output gaps do not pose a serious inflation risk over the next several years. Indeed, they suggest deflation, not inflation, will be the main risk through 2010. Figure 1 shows our forecast of the level of the global output gap, a GDP-weighted aggregate of the output gaps in a large set of countries. By 2007, the output gap had risen 2pp above potential, causing a pick-up in inflation. The collapse in real activity and inflation around the world by the end of 2008 has been dramatic.

*... because output gaps are expected to remain negative throughout 2010 and beyond*

More importantly, our expectations of a feeble recovery in G4 economies imply that the global output gap will remain very negative through 2010 and beyond, as growth returns but remains at or below trend. Thus “real” factors will provide a strong disinflationary force for some time, and the risks of inflation due to a fast rebound seem largely overstated.

**Nothing to fear, but fear of inflation itself?**

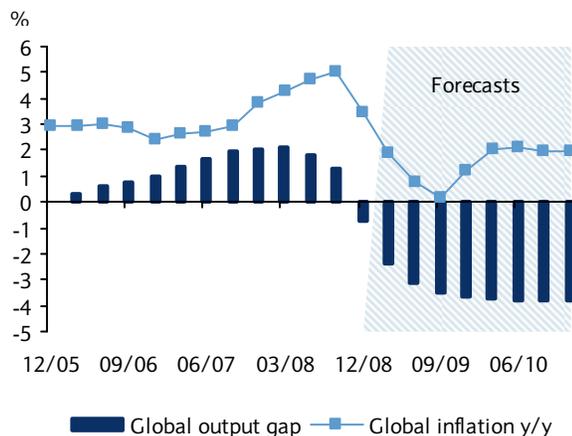
*High inflation expectations can be self-fulfilling*

How then can monetary policy today generate high inflation? The answer lies on the first term of the Phillips curve – inflation expectations. Inflation can increase simply because people expect inflation and adjust their wages and prices appropriately in order to avoid being surprised by it. And there is no reason for expectations to build as gradually as the slack-driven dynamics, which suggests that even as slack grows, expectations can still become un-anchored and generate inflation.

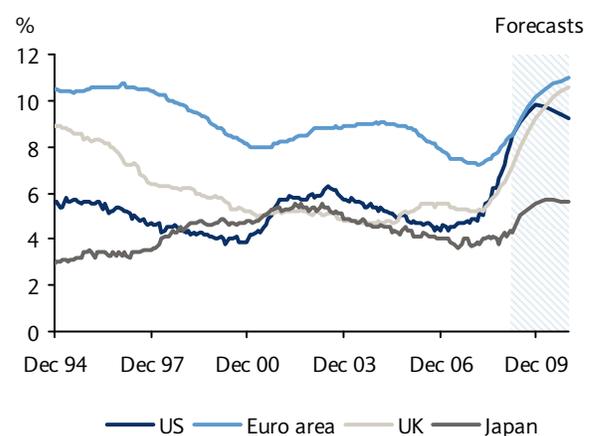
*Exploiting inflation expectations to lower unemployment could raise inflation expectations*

Previous episodes of high inflation give us some hints about how people come to believe that prices will accelerate. Three ways of losing the grip on inflation expectations are relevant in today’s environment. First, as we have seen around the world, high levels of unemployment can lead central bankers to ease aggressively. But the systematic attempt to exploit the relationship behind the inflation-output trade-off can backfire. A prolonged period of easy money could eventually cause firms to raise their inflation forecasts rather

**Figure 1: Global output gap and inflation**



**Figure 2: High unemployment can lead CBs into temptation**



Note: GDP gap assumes 2005 as the base and is the gap between GDP based on potential growth rates and GDP based on actual/forecasted growth rates. See endnote for potential rates assumed.<sup>1</sup> Global series are weighted averages using IMF PPP-based share of world GDP. Source: Haver, Barclays.

Source: Haver, Barclays

<sup>1</sup> Assumed potential growth are US (2.3%), Canada (2.8%), Argentina (3.5%), Brazil (4%), Chile (4.3%), Colombia (4.5%), Mexico (3%), Peru (5.7%), Venezuela (3.3%), Japan (1.2%), Australia (3%), China (9.5%), HK (4%), India (6.5%), Indonesia (4%), Korea (4%), Malaysia (6%), Philippines (4.8%), Singapore (4.5%), Taiwan (4.5%), Euro (1.5%), UK (2.3%), Czech Rep (3.5%), Hungary (2%), Poland (3.5%), Russia (3.5%), Turkey (4%), South Africa (3.5%).

*Monetary policy is also limited by debt levels, which have risen dramatically and can pose a concern if weak growth persists*

*A shift away from currencies could itself lead to higher inflation*

*Don't expect a breakdown in monetary control in developed countries anytime soon*

than hire more workers. With unemployment close to double digits in the G3 economies (Figure 2), this can lead central bankers into the temptation of fighting unemployment. Based on a global Taylor rule, easy money is expected for a long period of time (Figure 3).

The second risk of rising inflation expectations comes from the interaction between the budget deficit and monetary policy. The US and other governments face major deficit and debt challenges in the coming years. Normally, an independent central bank would be loath to “monetize” debt. However, political pressures are growing. In the US, Chairman Bernanke’s four-year term as Fed chairman ends in January 2010, and politicians are holding up two appointments to the Fed’s board. A populist chairman might be tempted to reduce the real value of debt by creating surprise inflation. Even without politicizing the central bank, debt dynamics may force the Fed’s hand, as central banks, preferring the lesser of two evils, may choose to monetize debts to avoid an explicit default.<sup>2</sup> This risk naturally rises as the debt burden becomes higher. The huge increases in G3 debt/GDP ratios in coming years (Figure 4), makes this a concern, especially in a scenario of a prolonged period of weak growth.

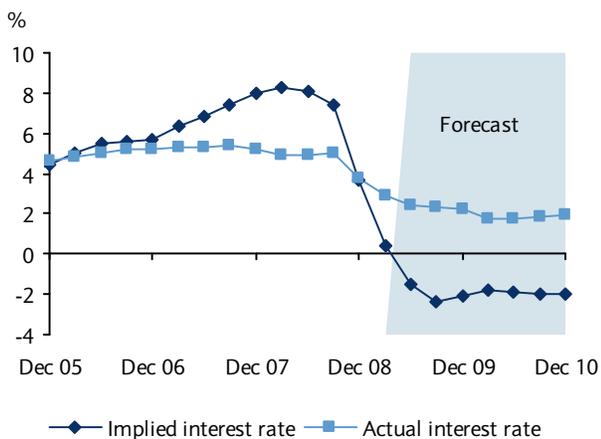
The final risk relates to the self-fulfilling nature of the need for a stable store of value. Currencies are used as a store of value in a low-inflation environment, but the risk of higher inflation may lead investors into other assets that hedge inflation better. And a prolonged scenario of ultra-easy monetary policy can call into question a central bank’s credibility and lead to a move away from “nominal” assets, a dynamic that can itself fuel inflation.

**But risks are low**

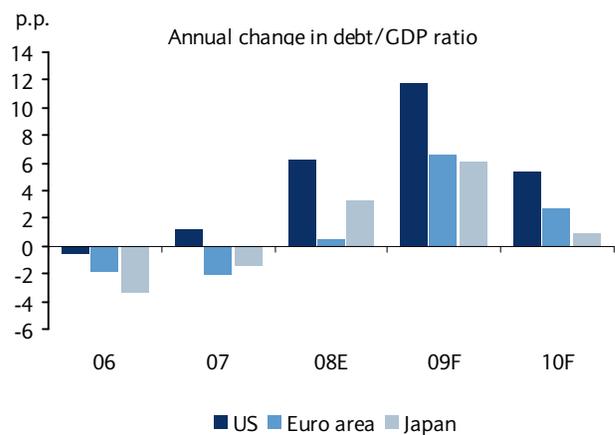
Thus, the main risk of inflation is a loss of anti-inflation credibility at central banks. And while evidence of inflation-targeting regimes gluing expectations is weak at best, the last 15 years of low inflation is likely to prevent firms from raising prices drastically anytime soon.

Moreover, although debt levels in G4 economies are expected to climb to their the highest level in many decades during 2010, even at these levels, developed economies have not been prone to debt-dynamics problems that led to low growth and high inflation in the past. And the experiences in emerging market economies in previous decades, shows it takes a long time for monetary control to break down. Don't expect this it anytime soon, either.

**Figure 3: Global Taylor rule points to persistently easy money**



**Figure 4: The risks of the dominance of fiscal policy**



Note: Our simplified global Taylor rules assumes the following coefficients:  $i_{TR} = 04 + 1.5*(p - .02) + .5*(y)$  where p is the global inflation rate and y is the global output gap. Global output gap and global inflation are weighted averages based on IMF PPP-based share of world GDP. See footnote 1. Source: Haver, Barclays Capital

Source: Barclays Capital

<sup>2</sup> Sargent and Wallace (1981) elegantly proved this theoretically, and Latin American countries have tested it empirically!

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Inflated fears – Part II

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*In normal times, a doubling of central bank money would be a scary prospect*

*But today the money multiplier transmission has stopped, so the size of the monetary expansion is not inflationary*

*Commentators suggest that when the economy recovers, QE will be a problem*

**We argue that concerns that quantitative easing will lead to high inflation are the result of an oversimplified use of monetary theory. Moreover, exit strategies are not doomed to create inflation, especially if the recovery is strong and creditless.**

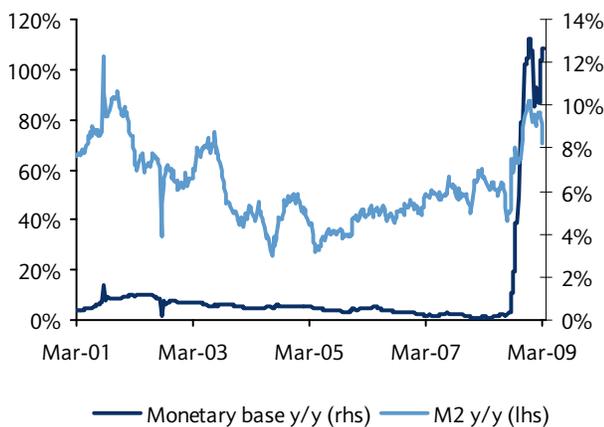
One of the most famous dictums of economics is that “inflation is always and everywhere a monetary phenomenon.” The textbook description of this process is as follows. It starts with cash and reserves in the banking system, or the “monetary base.” In a normally functioning banking system, when a central bank increases the monetary base, there is a multiplier effect on loans. Banks lend out the excess cash, and those loans are spent and redeposited in banks, creating new bank lending power, new bank deposits, and so on. For instance, until recently, the money multiplier in the US was almost 10 – that is, \$1 of money base supported almost \$10 in bank loans. The surge in loans, in turn, increases nominal purchasing power, causing an eventual surge in prices. While today’s complex credit markets complicate the process, this is the core idea behind the famous dictum.

With this in mind, the doubling of the Fed’s monetary base (Figure 1) seems a scary prospect. In normal times, it would lead to a doubling in purchasing power, but here is the rub: there is nothing normal about today. Banks are not lending; hence, the surge in the monetary base is piling up in excess reserves. At the same time, risk-averse households are holding more than the normal amount of cash. Figure 2 shows that while the monetary base in the US has doubled, the increase in broader aggregates has been much smaller (less than 10%). In other words, the US money multiplier has collapsed (Figure 2).

**Will the recovery bring inflation?**

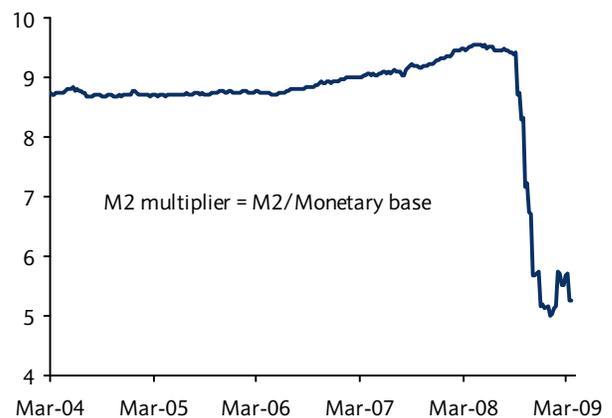
So despite the large increase in the monetary base worldwide, inflation is not a scary prospect right now. But what will happen when the economy, banks, and credit markets recover? Many commentators – including Martin Feldstein in Monday’s *FT* – suggest that as soon as the headwinds revert, the liquidity pumped into credit markets will create inflation. They believe the purchasing power of money will jump as the traditional money-multiplier

Figure 1: M0 and M2 growth y/y in the US



Source: Federal Reserve

Figure 2: US M2 money multiplier



Source: Federal Reserve

process normalizes, sparking inflation. Crucially, they believe that central banks will be unable to mop up all the liquidity in time.

*But in looking at the underpinnings of QE, we believe this is not the case*

Figure 3 depicts the workings of quantitative easing (QE) and helps explain why we disagree with this popular view. Take the case of the Fed’s purchase of commercial paper – a part of the Fed’s QE. As the Fed buys, say, GE’s commercial paper (CP), both GE’s assets (i.e., its bank account) and its liabilities rise.<sup>2</sup> As bank deposits increase, commercial banks decide whether to hoard cash or lend. Currently, banks are hoarding cash, which implies that reserves rise and loans remain unchanged (the rise in bank reserves matches the initial purchase of CP in the Fed’s balance sheet). But by keeping loans in check, banks are effectively undercutting the multiplier effect of the Fed’s program. If commercial banks were suddenly to start exchanging reserves for loans, they would boost the purchasing power of money considerably, and this would be inflationary, just as the basic rules of monetary theory suggest.

*Credit takes time to recover even after the economy turns, and central banks have time, as the recovery won’t be sudden.*

So why don’t we believe in this story? Recoveries from financial crises are typically creditless – that is, even if the economy recovers, it typically takes a long time before the traditional money-multiplier process boosts the purchasing power of money again. (In the typical OECD cycle, it takes five quarters after the start of the recovery for credit to grow.) So even if central banks are trying to avoid this outcome, the chances that credit will quickly swing back are small, as confidence in lending is slow to return. Moreover, as we argue in the next section, central banks should have plenty of time to react to a changing environment in private credit markets. The economy doesn’t morph directly from deep recession to inflation, and central banks are likely to monitor credit conditions closely throughout the transition period.

Figure 3: Understanding quantitative easing...

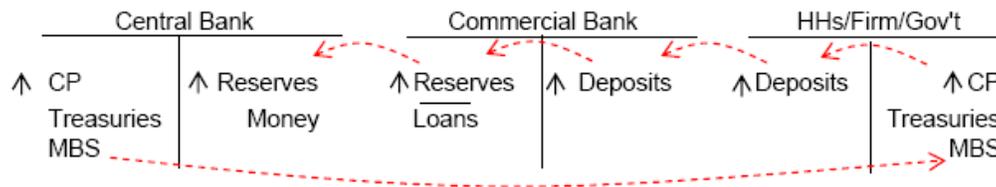
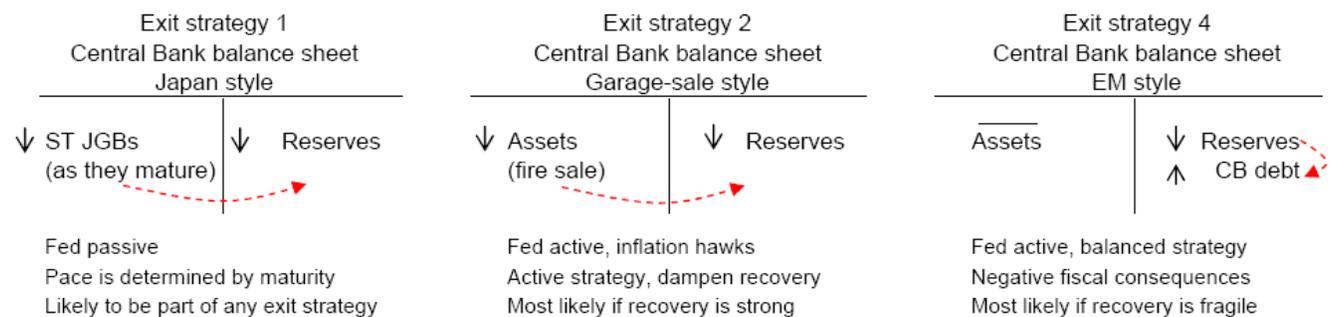


Figure 4: ... and exit strategies from QE



<sup>2</sup>The same logic applies to the purchase of MBS from Freddie and Fannie, or Treasuries from the US government.

## How to un-QE?

The speed at which central banks can unwind their current positions is key to understanding the risks of inflation. We see four alternative exit strategies:

1. *Japanese style*: A passive strategy in which the central banks' balance sheets gradually shrink as short-term assets mature and reserves are "returned" (left panel of Figure 4).
2. *Garage-sale style*: If the passive strategy is too slow, central banks can sell the credit and other assets they have accumulated, drawing reserves out of the system (center panel of Figure 4).
3. *Bob Hall style* (see recent [article](#)): Increase the interest rate on reserves to encourage banks to hold onto reserves rather than lend them out. Currently, banks are willing to hold excess reserves at low rates because they crave low-risk assets. As the economy improves, they will want to lend out these reserves, generating additional buying power. Paying a higher interest rate on reserves can slow or stop this expansion. More than an exit strategy per se, this is a way of delaying the inflationary effect of the transformation of reserves into loans when the banking sector recovers.
4. *Emerging markets style*: Central banks can issue their own debt (or have the Treasury issue extra debt and deposit at the central bank). This extracts reserves from the banking system, preventing an expansion in loans and money, as central bank debt has a lower "multiplying" effect than reserves (right panel of Figure 4).

*Central banks will have to participate actively in the unwinding of QE*

While central banks have plenty of "exit" tools, the challenge is tougher than that faced by Japan in 2006. At that time, two-thirds of Bank of Japan (BoJ) assets were short term, which allowed for a measured pace of balance-sheet contraction (alternative 1). By contrast, the Fed and the BoE are rapidly building up longer-term and less liquid assets. This means that any exit strategy is likely to involve some active managing of reserves. In particular, the faster the recovery of the traditional role of banks and credit markets, the more likely central banks will have to participate actively in the unwinding of QE (alternatives 2 to 4). But a stronger recovery would also suggest that selling credit assets would be less disruptive to the markets and the economy (alternative 2). In particular, if the economy is healthy, central banks would find it easier to tighten policy (sell assets and reduce reserves) fast enough to prevent inflationary consequences.

*And they will likely face hard choices given our expectation of a feeble recovery*

But a more fragile and uncertain recovery may be the Fed's and the BoE's most difficult and more probable scenario. With unemployment close to 10% in both the US and the UK and expectations for a feeble recovery, the Fed may be reluctant to cap any incipient recovery. The Fed could also face serious pressure from politicians, as special interests are likely to prevent a quick exit from extraordinary credit policies. The weaker the economic recovery, the stronger these pressures are likely to be. And while weak economic activity would imply that "real" factors would not lead to a strong rebound of inflation, the risk that expectations could become unanchored – as discussed in Part I – would be heightened in these circumstances.

In short, we believe that the risks of high inflation have been overstated and are likely to fall depending on the strength of the recovery; the stronger and more certain the prospects of a recovery, the easier it will be for the Fed to undo its recent activities. This is important for investors who are trying to understand the risks and how they will be correlated with inflation in the coming years.

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## Inflated Fears – Part III

**Don't use commodities as a predictor or a hedge for inflation; use them as a way to take advantage of a strong recovery of EM Asia and a broad-based weakening in the USD.**

Investors typically argue that commodities are a good predictor of inflation and that they will put significant pressure on inflation as a recovery materializes. The data do not seem to support these views, especially as at the start of recoveries commodities usually pick up from depressed levels, but this inflationary pressure is more than offset by high spare capacity. By contrast, commodity prices are likely to surge if a strong EM Asia-based recovery materializes and if there is a broad-based weakening of the USD.

## Show me the numbers!

*Commodities account for 4% of personal consumption in the US*

The most obvious link between commodity prices and inflation is through their role as an input into the production of final goods. Calculating the share of commodities in total consumption requires understanding how much wheat and oil is used to create a loaf of bread. This can be proxied by the use of input-output tables. A recent New York Fed article<sup>1</sup> suggests that the total share of commodities (including grains and oil) in final consumption is only around 4% (1% for grains, and 3% for gas and oil).

*Rising commodity prices are expected to add less than 1pp to inflation by the end of 2010*

So what was the role of commodities prices (roughly  $\frac{3}{4}$  oil prices and  $\frac{1}{4}$  grain prices) in the recent run up and down of inflation? The answer is given in columns 1 and 2 in Figure 1. Assuming that all the rise and fall of commodity prices was fully passed on to the consumer, this implies that 1.6pp of the rise in inflation between 2Q06 and 2Q08, and -2.4pp of the fall in inflation since 2Q08 was accounted for by commodities. This underscores that commodities prices have been positively correlated with the change in inflation in recent years and that despite their small size in total consumption, their effect on overall inflation is large. But commodity prices have recently had the largest swings in modern times. If we

Figure 1: Role of commodities price on US inflation

	June 06 - June 08	June 08 - Mar 09	Mar 09 - Dec 10
Change in y/y inflation (in pp)	0.7	-5.3	2.0
Change in commodity prices (% annualized)	41.4	-62.0	23.1
Contribution of commodities to inflation (in p.p.)	1.6	-2.4	0.9

Note: Commodities based on  $\frac{3}{4}$  oil and gas and  $\frac{1}{4}$  crops. Oil and gas contribution to consumption is 2.85% and crops contribution is 1.00%. Source: Hobijn, Bart. 2008. "Commodity Price Movements and PCE Inflation" Federal Reserve Bank of New York. *Current Issues in Economics and Finance*. Vol 14, 8. Nov 2008, Haver, Bureau of Labor Statistics, Barclays Capital

Figure 2: Falling pass-through (ie, ratio of 8-quarter CPI inflation to 8-quarter change in oil prices) in EM

	Industrial Economies	Emerging Economies
1973Q4	0.20	0.23
1979Q1	0.25	0.33
1992Q2	0.11	0.14
2004Q1	0.06	0.12

Source: De Gregorio, Jose, Oscar Landerretche, and Christopher Nielson. "Another Pass-through Bites the Dust? Oil Prices and Inflation" Central Bank of Chile Working Paper no. 417. May 2007

<sup>1</sup> "Commodity price movements and PCE Inflation" by Bart Hobijn, *Current Issues in Economics and Finance*, December, 2008

assume that commodity futures are correctly pricing the expected change in prices in the coming 18 months, they would imply an increase in consumer prices of less than 1% (ie, a projected increase of 23% times the 4% commodity share in consumption). This is by no means negligible, but it should help dampen the claims that a rebound in commodity prices is a strong determinant to high (ie, above 5%) inflation.

*The pass-through of commodity prices to the consumer is higher in EM, but this pass-through has fallen in the past decade*

Moreover, there are two reasons why the effect of commodities on inflation may vary across countries. First, the “intensity” of commodities in consumption varies considerably across countries. EM countries have historically had a higher pass-through into consumer prices, as their dependency is higher than in developed countries. But despite this higher intensity, the pass-through has fallen considerably in the past decade (Figure 2 reports a simple measure of pass-through, the 8-quarter change in consumer prices relative to the change in oil prices in the same 8 quarters, at the start of large oil shocks). This lower pass-through can be attributed to a second reason, the behavior of the value of the local currency relative to the dollar. De Gregorio et al. have found that part of the reduction in the impact of the commodity prices on EM inflation is related to the fact that in recent cycles, EM countries had currencies appreciating at the same time as commodity prices in USD were strengthening, dampening the rise in commodity prices in domestic currency – ie, what affects domestic inflation.

*The effect of commodities on inflation even smaller when local currencies strengthen*

In short, the 20% annualized expected increase in commodity prices implied by future markets would have an effect on US inflation of less than 1%. It would be even smaller in countries where we expect local currencies to strengthen, such as the UK, the euro area, New Zealand and Australia.

**The “hot hand” paradox**

*Commodities have missed past inflation surprises in the past*

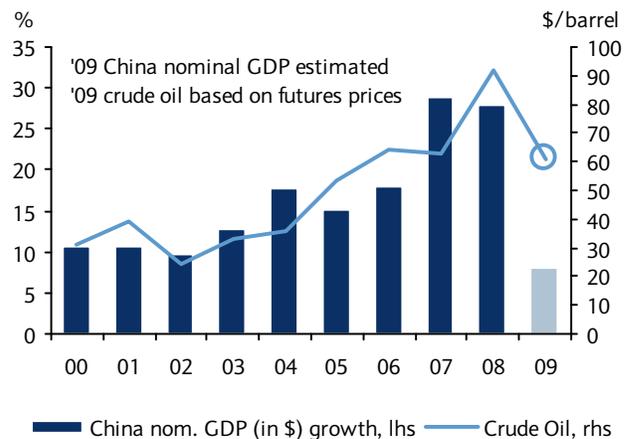
But markets also believe in a distinct link between commodities and inflation beyond the mechanical relationship just explained. The perception that commodities are a good inflation hedge implies that they are a good leading indicator for future inflation. The belief is so strong that it is sometimes taken as a fact, just like basketball fans are convinced of the

**Figure 3: The explanatory power of commodity prices**

R <sup>2</sup> (in percent) in regression of inflation surprises on commodity prices (quarterly, 1975 – 2009)		
	United States	Eurozone
Oil Prices (WTI)	3.4	0.0
CRB All Commodities	0.8	1.5
CRB RM	2.1	1.4
CRB Food	0.0	0.0
CRB Metals	0.9	0.9
CRB Textiles	0.0	0.0
CRB Fats/Oils	0.0	0.0
CRB Livestock	0.0	0.0

Note: Inflation surprises are defined as the residuals in the following regression:  $\Pi(t) = \alpha_0 + \alpha_1 \times \Pi(t-1) + \alpha_2 \times \Pi(t-2) + \alpha_3 \times \Pi(t-3) + \epsilon(t)$ . As a second stage, the inflation surprises are regressed on 4 lags of changes in commodity prices. The R2 of this second regression is reported in the table. Quarterly data from 1983 onwards were used. Source: Barclays Capital

**Figure 4: Chinese nominal GDP growth in USD was growing at close to 30% in USD before the crisis**



Source: Haver Analytics, China National Bureau of Statistics, Barclays Capital

presence of a “hot hand” (i.e., the probability of scoring after having scored is higher than normal). But in both cases, some cold statistics suggests otherwise. The evidence against a hot hand in basketball is overwhelming, and Figure 3 suggest that in the last 30 years commodities have also missed quarterly inflation surprises (i.e, changes in quarterly inflation that past inflation is not able to predict; the note to the graph provides the details of the system of regressions being estimated).

*Oil and raw materials explain only about 3% of inflation surprises*

The figure shows the amount of variation of inflation surprises that can be explained by previous changes in commodity prices. A value of 100% would mean that lagged changes in commodity prices are perfect predictors of inflation surprises, and 0% means no predictive power at all. WTI oil and CRB raw materials and total can explain about 5% of the variation in prices, a very poor explanatory power. In the case of Europe (all variables expressed in euros), the performance is even worse. The message is clear: while commodities influence inflation directly, given their small input share, there are other factors affecting inflation that makes their predictive power close to nil. In particular, and of particular relevance today, at the start of business expansions commodities usually recover from depressed levels, but this is more than offset by high spare capacity. Historically, the period of fastest decline in core consumer prices is at the start of economic recoveries.

### Overheating or overcapacity?

*Inflation from overheating is unlikely with large output gaps worldwide*

With hindsight, it is likely that the overheating of the global economy – partly due to lax credit worldwide – fuelled the high inflation and high commodity prices in the run-up of the financial crisis. But while commentators are fast to make parallels with recent times, it is difficult to see a ramp-up of inflation due to overheating anytime soon. As we discussed in the first piece in this series, the levels of overcapacity worldwide are at record highs and are likely to remain high for some time. This suggests that, mechanically at least, the role that the expected increases in commodity prices play in future inflation is likely to be overwhelmed by the large output gaps that will remain in place through 2010.

*High inflation can also result if expectations are unanchored*

Moreover, we have highlighted that other sources of inflation (besides the Phillips curve mechanism that relates aggregate excess demand with inflation, see Part I) could be at play in coming years. In particular, if the rise in inflation comes from an unanchoring of inflation expectations due to fiscal and political risks, then it is unlikely that the rise in inflation will be preceded by a sharp rise in commodities.

*Use commodities as a view on a strong EM Asia recovery and a weak dollar*

So here is a possible scenario for macro investors. If the recovery materializes with China maintaining its strong growth but developed countries growing mildly, it is likely that the increase in commodity prices will be accompanied by low global inflation (as we have been arguing in parts I and II) and a weaker USD across the board (*The new global balance, 23 March 2009*). So don't use commodities as a predictor or a hedge of inflation; just use them as a view on the strong recovery of EM Asia (that disproportionately affects commodity prices) and a weakening dollar.

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