

Taking the Pulse of Inflation Around the World

April 2011

As global economic activity picks up and energy and food prices rise, inflation worries are once again making headlines. Uncertainty over the effects of the Middle East unrest and the Japanese catastrophes has stoked those concerns.

Executive Summary

As global economic activity picks up and energy and food prices rise, inflation worries are once again making headlines. Uncertainty over the effects of the Middle East unrest and the Japanese catastrophes has stoked those concerns. BNY Mellon Asset Management recently surveyed a range of investment professionals across our specialist boutiques to get their independent perspectives on inflation risk around the world. In the U.S., high unemployment, excess capacity and a continued large output gap are generally cited as dampening inflationary pressure over the next year. But in the U.K. and continental Europe, central bank authorities are already considering the extent of monetary tightening, not whether to tighten, as inflation rises above target rates. Inflation concerns are strongest in emerging markets where faster growth and smaller output gaps (if they exist at all) appear to be setting the stage for a cyclical pick-up in core inflation.

Jamie Lewin, Director
BNY Mellon Investment Strategy and Solutions Group¹

With respect to developed markets, I believe the risks of a sustained pick-up in core inflation in the near term are quite small. Keynesians would argue that inflation is the result of demand and supply imbalances in the real economy caused either by an increase in aggregate demand and/or a decline in aggregate supply. In the current environment, notwithstanding both a pick-up in demand and recent supply-side shocks to oil and food production, from a whole economy perspective (taking into account both visible and invisible economic activities), the level of aggregate demand remains below its potential, to the extent that increases in aggregate demand can be met through an increase in aggregate supply and not by rising prices.

In contrast, monetarists would argue that inflation is directly related to the pace of money supply growth. Thus, they argue that a high and sustained increase in the supply of money would be needed to generate a significant and sustained pick-up in core inflation.

¹ Investment Strategy and Solutions Group is part of The Bank of New York Mellon, a principal banking subsidiary of BNY Mellon.

Despite the efforts of central banks in developed markets to boost the money supply, broad-money supply growth remains weak, suggesting limited upside pressure on core inflation over the medium term.

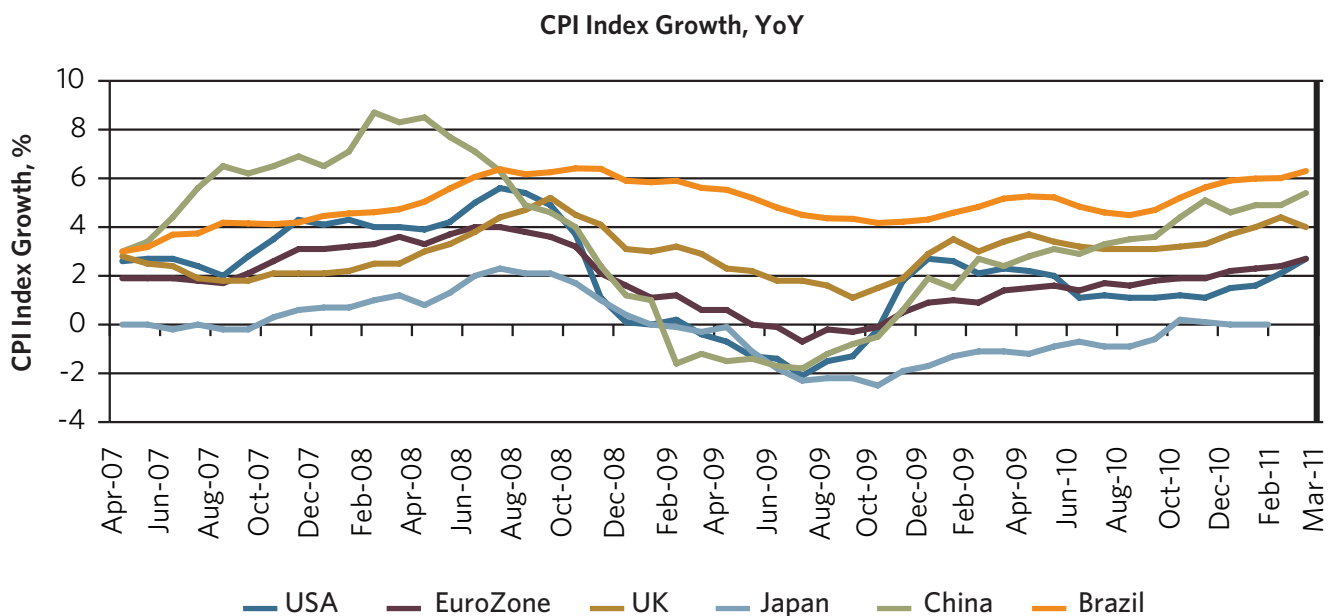
However, despite the efforts of central banks in developed markets to boost the money supply, broad-money supply growth remains weak, suggesting limited upside pressure on core inflation over the medium term.

I believe recent fluctuations in commodity prices have been driven by short-term supply pressures; food and textile prices have been affected by climate events such as flooding and droughts, while the oil price has been affected by geopolitical events in the Middle East. To see these pressures as more than essentially temporary, we would need to see these price surges feeding into wage demands. Persistent commodity price pressures affecting price setting and wage demand behavior, however, would be more of an issue. But I don't believe this point has been reached.

Certainly in many emerging markets there is a greater risk than in developed markets that rising inflation will become a problem. However, we do not believe this is a function of the fact that food and essential services have a greater proportional weighting in the "baskets" of goods and services used to calculate the rate of inflation. Rather, we believe the inflation risks facing emerging economies have much to do with the rapid growth of economic activity and money supply.

Fears of inflation have frequently coincided with a rise in demand for gold, but I believe the gold price should be viewed in the context of economic and political uncertainty, not necessarily inflation. As a store of value, the price of gold tends to be less volatile than those of financial assets during periods of uncertainty such as now. While rising inflation risk may be fuelling uncertainty, it is not inflation in its own right. Demand for gold is undeniably up, and that of course has boosted the price still further.

Exhibit 1 - World CPI



Source: Bloomberg as of March 31, 2011 (CPI data for Japan available only through February 2011).

Inflation in the Developed World

Richard Hoey, Chief Economist
BNY Mellon

We believe the inflation outlook is complex and should be analyzed over three distinct time frames (long-term secular, cyclical, subcyclical) in four key categories (commodity price trend, core inflation, headline inflation, inflation expectations) from several perspectives (output gap, monetary, currency).

One of our theses has been that both the secular downtrend in inflation and the secular downtrend in interest rates have ended, but both are more likely to begin cycling around a “secular neutral” long-term trend rather than to enter a persistent and ever-escalating uptrend.

From a long-term secular perspective, we believe that the three-decades-long disinflationary secular trend has ended. In our opinion, the secular inflation peak occurred in 1980 and the secular interest rate peak occurred in 1981. Because the painful cost of double-digit inflation was quite clear at that time, Federal Reserve Chairman Paul Volcker was able to raise interest rates in 1981 so much that 90-day Treasury bill yields hit 17%, 10-year Treasury bond yields hit 16%, 30-year Treasury bond yields hit 15.2% and the prime rate hit 21.5%.² In our view, high real yields (yields relative to inflation) in the early 1980s broke the back of inflation for the next three decades.

The situation is a mirror-image opposite today. The pain of disinflation and of collateral deflation (lower prices of residential and commercial real estate) is keenly felt. We expect this to influence public preferences. The recent pain has come from deflation not inflation. In response to the financial crisis and recession, many countries engineered low real yields (yields relative to inflation). With a fresh memory of the pain of real estate deflation in some countries, public opinion is likely to prove less supportive of painful monetary tightening. Fortunately, that may not prove necessary in most countries, since underlying consumer price inflationary pressures are not yet severe in many countries, especially those that experienced real estate deflation.

What is the long-term outlook for inflation? One of our theses has been that both the secular downtrend in inflation and the secular downtrend in interest rates have ended, but both are more likely to begin cycling around a “secular neutral” long-term trend rather than to enter a persistent and ever-escalating uptrend. We believe that there is some credibility to the inflation targeting regime of the central banks. This should raise the odds that secular disinflation will be followed by a “secular neutral” trend of inflation rather than a secularly escalating trend of inflation.

The combination of globalization and technological innovation has been powerfully disinflationary. However, there is a major demographic inflection point in the labor market of China, which is likely to mute but not eliminate the disinflationary effect of globalization. The supply of surplus labor from the countryside has already begun to slow, as the younger portion of the labor force has begun a demographic decline. The government in China appears supportive of wage inflation as the preferred route to an increase in the real exchange rate rather than a major revaluation of the RMB.

From a cyclical perspective, we believe that there is likely to be a gradual upward drift in core inflation in many countries, with the magnitude of this upward drift limited in many major countries by relatively well-anchored inflation expectations.

² Bloomberg historical data.

Those who are most worried about a major upsurge in inflation have a “dry tinder” view of the potential to quickly mobilize excess reserves into lending, spending and ultimately inflation. In contrast, we have a “damp firewood” view of the potential speed of the mobilization of excess reserves.

Policy has been stimulative; it acts with a lag and the output gap is tightening in most parts of the world. Because of the credibility of central bank inflation targeting, however, we expect a persistent upward drift in core inflation rather than any dramatic upsurge in core inflation.

There is an active debate about “core inflation” (inflation excluding food and energy). The concept was popularized by Federal Reserve Chairman Arthur Burns in the 1970s when he was arguing that rising headline inflation was not that worrisome. That did not prove to be a good call.

The Fed’s position has tended to be that current trends in core inflation are more helpful in forecasting the future trend of overall headline inflation than are current trends in headline inflation. The argument is that volatility in food and energy prices can create difficulties in separating a valid signal from the noise of short-term fluctuations. This concern about the noise-to-signal ratio in headline inflation is probably valid. However, energy prices do not seem to be volatile around a neutral trend. Rather, they have been volatile around a rising trend, having risen from about \$3 per barrel in the early 1970s to about \$120 per barrel today for Brent oil prices. Core inflation may be biased to be somewhat lower than headline inflation on average if the long-term trend of energy prices is upward rather than neutral. That does not undermine the thesis about the noise-to-signal ratio. Significant shifts in core inflation may still be a better indicator of major shifts in future headline inflation over the medium term even if there is a persistent bias for core inflation to be somewhat lower than headline inflation.

An upsurge in reported headline inflation is occurring this year, triggered by a combination of higher food and energy prices and bottlenecks from supply chain disruptions. This should prove more worrisome in emerging countries with tight capacity (especially those with undervalued currencies) than in those developed countries with substantial excess capacity.

We expect a “mid-2011 subcycle peak” in headline inflation, although the 12-month growth rates should tend to peak a few months later than the three-month and six-month growth rates.

We expect that reported inflation should slow somewhat by late 2011 and early 2012 as commodity prices stall at high levels and supply chain bottlenecks ease. This should occur well prior to the ultimate cyclical peak in inflation, which we do not expect for several years.

There is a major debate about whether the Fed’s easy monetary policy is likely to generate unacceptable inflation either in the U.S. or overseas. There is no question that the Fed has created a huge pool of excess reserves. However, the transmission mechanism from excess reserves to spending and nominal GDP growth has been relatively inefficient due to (1) the collateral deflation in real estate and (2) weakness in both the demand for credit and the supply of credit. Financial regulation has been procyclical: first it was very loose and now it is very tight. With the sharp rise in bank capital requirements, we believe that the prospects of a rapid upsurge in lending are limited. Those who are most worried about a major upsurge in inflation have a “dry tinder” view of the potential to quickly mobilize excess reserves into lending, spending and ultimately inflation. In contrast, we have a “damp firewood” view of the potential speed of the mobilization of excess reserves.

The effect of procyclical financial regulation is likely to be a gradual saucer-shaped pattern in loan growth, a pattern unlikely to contribute to a strong upsurge in overall demand or the underlying trend of inflation. Even if the damp firewood eventually becomes dry firewood as the financial system heals, it is clear that the central bank has the technical tools to remove excess liquidity when it decides that it is necessary to do so. The issue is whether it will have the political flexibility to do so. The more dampened the transmission mechanism of monetary ease, the more gradual the U.S. central bank can afford to be in removing liquidity. We are hopeful that this can occur prior to the emergence of unacceptably high trend inflation.

Our proprietary dynamic macroeconomic models point to modest 2-2.5% inflation in developed nations for the next 12 months.

***Lex Huberts, CFA, President, Investments & Finance and
Karsten Jeske, PhD, CFA, Vice President, Asset Allocation Research
Mellon Capital Management Corporation***

At Mellon Capital, we believe that economic fundamentals ultimately drive asset prices towards fair value. Thus, global economic expectations underpin our investment views. Our forecasting methodology generates not just a point forecast but also estimates the distribution around the forecast. This allows us to assess the probability of GDP and CPI falling within certain ranges. This perspective is based on the forecasting capabilities of our model.

Our proprietary dynamic macroeconomic models point to modest 2-2.5% inflation in developed nations for the next 12 months. We currently forecast that in the U.S. inflation will average approximately 2.3% in the next 12 months. In our view, the fundamental trends observed before the Japanese tragedies and the unrest in North Africa remain in place. Specifically, the second round of quantitative easing has successfully raised expectations for inflation and potentially even real growth.

Furthermore, relative to 2010, the uncertainty around our inflation forecast has moderated significantly even after accounting for the uncertainty in the wake of the events in Japan. We currently forecast a 17% probability that US headline CPI will be over 3% in the next 12 months and a 5% probability that inflation comes in below 1%. In the spring of 2010, our probabilities of those two scenarios were 40% and 16%, respectively. Perhaps the key risks to our outlook are the unintended consequences from the unrest in the Middle East, which may include a spike to new highs in oil prices.

Our Eurozone inflation forecasts are about 2%, while we expect the U.K. to experience the highest inflation of 3.6% over the next 12 months, driven by surging energy costs and an increase in the sales tax. High commodity prices have also pushed Japanese inflation to slightly above 0%. The impact of the recent Japanese earthquake on future Japanese inflation is still rather uncertain, but on balance we expect it to be close to neutral. In Australia, our inflation expectations are around 3%, fueled by a tight labor market and continued strength in household consumption. Among emerging economies, we expect BRICs inflation to be 6.8%, driven primarily by rising food prices and strong economic growth.

Tom Higgins, Global Macro Strategist
Standish Mellon Asset Management Company, LLC

We are always closely monitoring rising inflationary pressures as they are negative for government bonds in both developed and emerging economies. Inflation eats away at the purchasing power of bond investors' principal, leading them to insist on higher interest income to compensate.

Economic slack in both product and labor markets suggests a rapid acceleration in inflation in the near term is unlikely.

In the U.S., we're waiting for a great deal of excess industrial capacity utilization to be absorbed before we worry too much about inflation. There is also still a rather large output gap (the difference between an economy's potential and actual GDP). But it is striking that some U.S. retailers have recently said they are not feeling the need to discount as heavily as previously in order to shift stock. Meanwhile, following the housing bubble, home ownership levels are now in decline and home rentals are increasing. This is putting upward pressure on rents as measured by "owner-equivalent rents" (OER), which feeds into the inflation basket. The OER measure had turned negative for the first time in history in the wake of the financial crisis (it had historically grown at an average of 3% per annum)³ but is now back in positive territory. The OER component accounts for roughly 25% of headline CPI and 30% of core CPI in the U.S.⁴ Moreover, our in-house inflation diffusion index suggests the percentage of goods and services experiencing rising prices has begun to increase. Nevertheless, economic slack in both product and labor markets suggests a rapid acceleration in inflation in the near term is unlikely.

U.S. inflation is currently lower than in Europe. Inflation in the eurozone is also above the central bank's 2% target, but fiscal consolidation across the continent is likely to lower current inflation later this year. Nevertheless, the European Central Bank is already discussing a normalization of monetary policy. In Europe, I believe inflation is largely being driven by domestic pressures, because services have such a significant weighting in their basket. This contrasts with the popular view that most European inflation is imported.

U.K. inflation has been stickier and pressures are broader than in the U.S. However, I believe much of that is based on one-off events such as the hike in the value-added tax (VAT) this year, which will ultimately drop out of the 12-month figure. Given the U.K. GDP correction from the fourth quarter of 2010, and a recent deterioration in employment figures even before fiscal consolidation effects have kicked in, we are not overly concerned about U.K. inflation. In the UK and Germany, global markets affect inflation to a greater extent than in most of the rest of Europe.

³ U.S. Bureau of Labor Statistics

⁴ *Ibid.*

Inflation in Asia-Pacific

Hugh Simon, Chief Executive Officer
Hamon⁵

Unlike in developed market countries, emerging Asian corporate and household balance sheets have lower debt levels, allowing a panoply of macroeconomic measures to alleviate inflation.

We maintain that current inflation concerns are only transient headwinds to equity markets, and that those concerns will do little to derail the long-term growth dynamic of emerging Asian economies. Most Asian equity markets saw something of a correction in the first part of the year, as investors became concerned about the implications of tighter monetary policies across the region, particularly in China and India, but we expect the worries over inflation to decrease by the second half of the year. Markets are responding to headline inflation readings where rates have been pushed higher due to rising food and commodities costs, in contrast to developed markets like the United States, where housing and rental costs are the main components.

Overall, core inflation readings in emerging Asian countries remain stable, although there have been recent signs of a slight pick-up, reflecting steadied economic growth and activity. Unlike in developed market countries, emerging Asian corporate and household balance sheets have lower debt levels, allowing a panoply of macroeconomic measures to alleviate inflation.

These tools include foreign exchange reforms (notably allowing currency appreciation), and domestic macroeconomic policies (such as increasing reserve requirement ratios for domestic banks or permitting moderate capital control measures). Given the availability of these mechanisms to exert control over inflationary pressures, we believe that in many emerging Asian countries, interest rates hikes are unlikely to occur at a rapid or aggressive pace, or to derail the secular economic growth story.

While rising food prices may affect certain countries in emerging Asia, they are unlikely to negatively influence the entire region, given that several countries are already self-sufficient in the production of grain and other staples. We believe strongly that both core and headline inflation rates in emerging Asian countries will alleviate after the first quarter of 2011 in response to front-loaded monetary policies. We also expect prices to fall as corporate capital expenditure begins to invest, and add capacity.

⁵ Please see disclosures at the end.

We believe Asian inflation fears have largely been priced into equity markets. At the same time, we think investors are right to be cautious about the effects of inflation on Asia and understand concerns about policy measures potentially stalling the Asian growth story.

**Jason Pidcock
Newton⁶**

We believe Asian inflation fears have largely been priced into equity markets. At the same time, we think investors are right to be cautious about the effects of inflation on Asia and understand concerns about policy measures potentially stalling the Asian growth story. However, investors should remember that Asian economies have extensive experience fighting inflation and that current levels of headline inflation in Asia are nowhere near the highs of 2008. Furthermore, Asian central banks have other means of reducing inflationary pressures, such as currency appreciation to combat some of the effects of rising import costs, thanks to healthy trade surpluses.

Although food and commodity prices have been rising, wage increases across Asia are helping to offset some of these pressures for the consumer. China, for example, has been seeing wage increases of around 15-20%. Moreover, Asian central banks have been tightening for some time, but interest rate increases have put little pressure on households or corporates so far because of low levels of leverage. While we believe more tightening is needed in Asia, we do not expect the consequences for growth to be as dramatic as the effects of normalizing interest rates in the West.

General inflation has been stoked by demand-side pressures as economic activity continues to strengthen. But local inflation has been exacerbated by more temporary and transient supply-side problems, such as the recent adverse weather conditions in China that caused widespread crop losses, and an outbreak of foot-and-mouth disease in Korea, which wiped out 20% of the cattle stock. These events resulted in double-digit food price inflation for many countries across Asia. In Indonesia, inflation problems are exacerbated by the archipelago's poor infrastructure and high transportation costs. Food inflation remains stubbornly high, driven by price increases in fuel oil, cooking oil and flour. We believe the Indonesian central bank has been behind the curve dealing with its inflation problem.

⁶ Please see disclosures at the end.

China has long battled with its inflation versus growth problem, and last year started to focus its attention on stamping out inflation, raising the reserve requirement ratio five times by 2.5% to 19% and the interest rate three times in 0.25% increments in an attempt to withdraw liquidity from the system.

Among Asia's more developed economies, several have warned that inflation is likely to persist in the coming year. Singapore recently raised its inflation forecast, taking it to 4.5% for 2011 from 3.7% previously, while Singaporean authorities have begun to implement tightening measures in an effort to cool the property market. Meanwhile, inflation figures have also continued to surprise to the upside in Hong Kong, driven mainly by food and housing costs, and in Malaysia, where rising food and transportation costs have increased the cost of living. By contrast, Taiwan's annualized CPI stood at just 1.3% in February. Taiwan faces structurally weaker domestic demand and so has less of an inflation problem than other areas of Asia, though property prices have been rising.

Some authorities have been quicker to take action than others. China has long battled with its inflation versus growth problem, and last year started to focus its attention on stamping out inflation, raising the reserve requirement ratio five times by 2.5% to 19% and the interest rate three times in 0.25% increments in an attempt to withdraw liquidity from the system. Korea has hiked rates four times in 0.25% increments to 3%, but we believe the authorities are again behind the curve, using currency and administrative measures to temper inflation instead. Measures included cutting excise taxes on gasoline as well as removing the tariffs on certain imported food. Some countries, such as Korea and Singapore, may allow their currencies to appreciate against the U.S. dollar in order to mitigate inflationary pressures. This stands in contrast to Hong Kong, where the currency and monetary policy is tied to the U.S. dollar.

Elsewhere in the Asia-Pacific region, Australia is in an unusual and potentially difficult situation because of structural inflation created by the high upfront costs in the mining sector, which plays a very important role in the economy of this resource-rich country. This has much to do with the relatively high wages commanded by workers in the sector, where the average weekly wage in November 2010 was AU\$2,070, versus the national average of AU\$1,274; it is not unusual, for example, for a driver of a mining truck to earn AU\$150,000 per year. Against this backdrop, the monetary authorities in Australia have been tightening policy for some time now. However, most Australian workers are not seeing any wage growth comparable to that of the mining sector, so there are concerns that the Reserve Bank of Australia may have over tightened.

Inflation Concerns in Latin America

Solange Srour

BNY Mellon ARX

Latin America, countries have a high weighting of food in their CPI baskets so that the ongoing shock feeds faster and more directly into inflation expectations.

Recent CPI figures across Latin America have reinforced our concerns about inflation in the region. In the five economies in the region where the monetary authorities have an inflation targeting remit, headline inflation surprised on the upside in December and accelerated for a third consecutive month to 4.9% year-on-year, the fastest pace since May 2009. The pass-through from high agricultural commodity prices into local food prices is one of the primary drivers of inflation in the region. Other pressures are most visible in Brazil, where core inflation started to pick up steam several months ago. Elsewhere in the region, core inflation has only recently begun to creep higher, and with the exception of Mexico, all countries have seen an increase, marginally in Peru but more meaningfully in Chile. We expect 2011 inflation to stay above the mid-point of targets in Brazil, Colombia, Mexico and Peru, and that it will exceed the target range in Chile, with risks around our forecasts remaining to the upside.

Even if the current agricultural commodity price shock is only temporary, it is important not to underestimate the relationship between spiraling food costs and core inflation in Latin America, considering in particular the length of the food shock and its magnitude. Latin American countries have a high weighting of food in their CPI baskets so that the ongoing shock feeds faster and more directly into inflation expectations. In Brazil, the increases in wages and key administered prices are often tied implicitly or explicitly to headline inflation.

Brazil saw its output gap close earlier and faster than in other Latin American countries. The output gaps in Mexico and Colombia are expected to close in a few more quarters. Labor markets are becoming tighter and in some cases, unemployment rates are at or near historic lows. Real wages are growing briskly in Brazil, for example. On the positive side, the upswing of the credit cycle and the recovery in global growth add more channels to Latin America's strong demand story.

At the moment, central bank authorities do not appear inclined to allow currency appreciation to help them to meet inflation objectives, adding a further inflationary bias to existing pressures.

We believe some central banks in the region have tended to be insufficiently responsive, given the size of current inflationary threats. Given the level of real interest rates, we think that central banks have fallen behind the curve in tightening monetary policy. At the moment, central bank authorities do not appear inclined to allow currency appreciation to help them to meet inflation objectives, adding a further inflationary bias to existing pressures. Latin American countries are increasingly adopting complementary tightening measures, including raising reserve requirements for commercial banks and introducing regulations to curb credit expansion. In doing so, central banks hope to contain inflationary pressures by restricting liquidity and credit without having to rely as much on increasing policy rates, which would attract more capital inflows and add fuel to currency appreciation pressures. We believe inflation is currently at its peak level, and likely to start gradually coming down over the course of 2011 and 2012. The central bank in Brazil has undertaken convincing measures to cool inflation, raising its key interest rate to 11.75% in March. Brazil has also voted to limit the increase in the country's minimum wage, helping to curb government spending on pension and welfare payments that are linked to the minimum wage. The vote was considered important, since in rejecting calls to raise the minimum wage, the government reinforced its plan to reduce the budget agreed in late 2010 by 50 billion reais, or approximately 1.2% of GDP.

Conclusion

As the developed world negotiates a delicate balance between sustaining growth and normalizing monetary policy, a sustained pick-up in core inflation over the next year or so seems unlikely in the view of our investment experts. More worrying to them is the challenge facing emerging countries like China to keep growth-induced inflation under control. This is an even more daunting task for as long as the country continues to peg its currency to the U.S. dollar and to the Fed's loose monetary policy as well. As our experts have indicated, there are many moving parts in the global economy that will affect growth rates, interest rates and rates of inflation. Given the devastating effect inflation can have on the value of assets and the interdependencies in the global economy, monitoring inflationary pressures around the world will continue to be a key part of risk management for our investment managers.

BNY Mellon Asset Management is the umbrella organization for BNY Mellon's affiliated investment management firms and global distribution companies. BNY Mellon is the corporate brand of The Bank of New York Mellon Corporation. • The statements and opinions expressed in this article are those of the authors as of the date of the article, are subject to change as economic and market conditions dictate, and do not necessarily represent the views of BNY Mellon, BNY Mellon Asset Management International or any of their respective affiliates. This article does not constitute investment advice, is not predictive of future performance, and should not be construed as an offer to sell or a solicitation to buy any security or make an offer where otherwise unlawful. BNY Mellon Asset Management International Limited and its affiliates are not responsible for any subsequent investment advice given based on the information supplied.

Past performance is not a guide to future performance. The value of investments and the income from them is not guaranteed and can fall as well as rise due to stock market and currency movements. When you sell your investment you may get back less than you originally invested. • While the information in this document is not intended to be investment advice, it may be deemed a financial promotion in non-U.S. jurisdictions. Accordingly, where this document is used or distributed in any non-U.S. jurisdiction, the information provided is for use by professional investors only and not for onward distribution to, or to be relied upon by, retail investors. • Products or services described in this document are provided by BNY Mellon, its subsidiaries, affiliates or related companies and may be provided in various countries by one or more of these companies where authorized and regulated as required within each jurisdiction. However, this material is not intended, and should not be construed, as an offer or solicitation of services or products or an endorsement thereof in any jurisdiction or in any circumstance that is otherwise unlawful or unauthorized. **The investment products and services mentioned here are not insured by the FDIC (or any other state or federal agency), are not deposits of or guaranteed by any bank, and may lose value.** • This document should not be published in hard copy, electronic form, via the web or in any other medium accessible to the public, unless authorized by BNY Mellon Asset Management International Limited.

In Australia, this document is issued by BNY Mellon Asset Management Australia Limited (ABN 56 102 482 815, AFS License No. 227865) located at Level 6, 7 Macquarie Place, Sydney, NSW 2000. Authorized and regulated by the Australian Securities & Investments Commission. • In Brazil, this document is issued by BNY Mellon Serviços Financeiros DTVM S.A., Av. Presidente Wilson, 231, 11th floor, Rio de Janeiro, RJ, Brazil, CEP 20030-905. BNY Mellon Serviços Financeiros DTVM S.A. is a Financial Institution, duly authorized by the Brazilian Central Bank to provide securities distribution and by the Brazilian Securities and Exchange Commission (CVM) to provide securities portfolio managing services under Declaratory Act No. 4.620, issued on December 19, 1997. • Investment vehicles may be offered and sold in Canada through BNY Mellon Asset Management Ltd., a Portfolio Manager and Exempt Market Dealer. • In Dubai, United Arab Emirates, this document is issued by the Dubai branch of The Bank of New York Mellon, which is regulated by the Dubai Financial Services Authority. • In Germany, this document is issued by WestLB Mellon Asset Management Kapitalanlagegesellschaft mbH, which is regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht. WestLB Mellon Asset Management Holdings Limited is a 50:50 joint venture between BNY Mellon and WestLB AG. WestLB Mellon Asset Management Kapitalanlagegesellschaft mbH is a wholly owned subsidiary of this joint venture. • If this document is used or distributed in Hong Kong, it is issued by BNY Mellon Asset Management Hong Kong Limited, whose business address is Level 14, Three Pacific Place, 1 Queen's Road East, Hong Kong. BNY Mellon Asset Management Hong Kong Limited is regulated by the Hong Kong Securities and Futures Commission and its registered office is at 6th floor, Alexandra House, 18 Chater Road, Central, Hong Kong. • In Japan, this document is issued by BNY Mellon Asset Management Japan Limited, Meiji Seimei Kan 6F, 2-1-1 Marunouchi Chiyoda-ku, Tokyo 100-0005, Japan. BNY Mellon Asset Management Japan Limited is a Financial Instruments Business Operator with license no 406 (Kinsho) at the Commissioner of Kanto Local Finance Bureau and is a Member of the Investment Trusts Association, Japan and Japan Securities Investment Advisers Association. • In Korea, this document is issued by BNY Mellon AM Korea Limited for presentation to professional investors. BNY Mellon AM Korea Limited, 21/F Seoul Finance Center, 84 Taepyeongro 1-ga, Jung-gu, Seoul, Korea. Regulated by the Financial Supervisory Service. • In Singapore, this document is issued by The Bank of New York Mellon, Singapore Branch for presentation to professional investors. The Bank of New York Mellon, Singapore Branch, One Temasek Avenue, #02-01 Millenia Tower, Singapore 039192. Regulated by the Monetary Authority of Singapore. • This document is issued in the UK and in mainland Europe (excluding Germany), by BNY Mellon Asset Management International Limited. BNY Mellon Asset Management International Limited, 160 Queen Victoria Street, London EC4V 4LA. Registered in England No. 1118580. Authorized and regulated by the Financial Services Authority. • This document is issued in the United States by BNY Mellon Asset Management.



BNY MELLON ASSET MANAGEMENT

The Alcentra Group
Ankura Capital Pty Limited
Blackfriars Asset Management Limited
BNY Mellon ARX
BNY Mellon Beta Management
BNY Mellon Cash Investment Strategies
The Boston Company Asset Management, LLC
The Dreyfus Corporation
EACM Advisors LLC
Hamon Investment Group
Insight Investment
Mellon Capital Management Corporation
The Newton Group
Pareto Investment Management Limited
Siguler Guff & Company LP
Standish Mellon Asset Management Company LLC
Urdang Capital Management, Inc.
Urdang Securities Management, Inc.
Walter Scott & Partners Limited
WestLB Mellon Asset Management

BNY Mellon holds over 90% of the parent holding company of The Alcentra Group. The Group refers to these affiliated companies: Alcentra, Ltd and Alcentra NY, LLC. Only Alcentra NY, LLC offers services in the U.S. • Ankura, Insight Investment and WestLB Mellon Asset Management do not offer services in the U.S. This presentation does not constitute an offer to sell, or a solicitation of an offer to purchase, any of the firms' services or funds to any U.S. investor, or where otherwise unlawful. • BNY Mellon holds a 20% interest in Siguler Guff & Company, LP and certain related entities (including Siguler Guff Advisers LLC). • BNY Mellon Beta Management is a division of The Bank of New York Mellon, a wholly-owned banking subsidiary of BNY Mellon. • BNY Mellon Cash Investment Strategies is a division of The Dreyfus Corporation. • Hamon's services are offered in the U.S. by Hamon U.S. Investment Advisors Limited. BNY Mellon holds a 19.9% interest in Hamon Investment Group Pte Limited, which is the parent of Hamon U.S. Investment Advisors Limited. • The Newton Group refers to the following group of companies: Newton Investment Management Limited, Newton Capital Management Limited, Newton International Investment Management Limited, Newton Capital Management LLC, and Newton Fund Managers (CI) Limited. Except for Newton Capital Management LLC and Newton Capital Management Limited, none of the other Newton companies offers services in the U.S. • BNY Mellon Asset Management International Limited and any other BNY Mellon entity mentioned above are all ultimately owned by BNY Mellon.