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NUS Business School

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From East to West, Inflation is Back!

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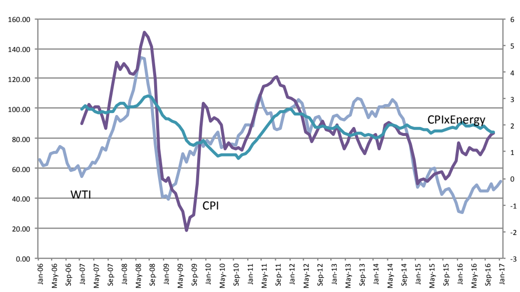
Price indexes are advancing everywhere

Inflation is increasing in the US and across many other economic regions of the developed world. Last year the major fear of central bankers and economic theorists was deflation. It followed on the back of worrisome predictions of future decades of secular stagnation.

US: CPI Moving up with oil prices



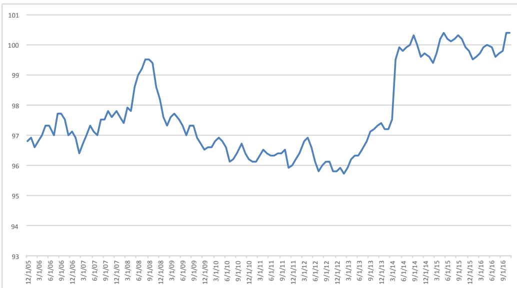
The confluence of slower economic growth, the failed rapid economic emergence from the great depression, plunging commodity prices, and China's attempt to rebalance its economy, all converged upon the world at the beginning of 2016. That led many renowned pundits to forecast years of secular stagnation.

While declining population growth and shrinking productivity growth in the developed world economies continues to lend support to the theory of slowing economic growth, the theory of secular stagnation needs to be amended with regard to inflation.

Inflation is resuming in other developed economies

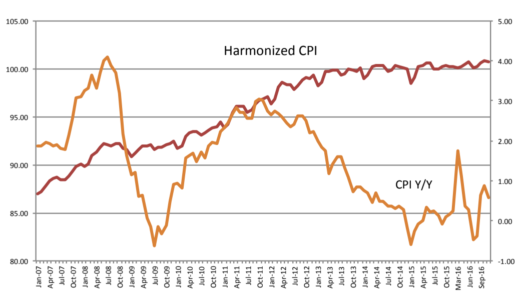
Inflation has begun to climb in most of the developed economies. Perhaps most striking is the recent jump in inflation in Japan. A combination of aggressive Abenomics, and the Bank of Japan's willingness to expand its balance sheet, has finally turned inflation upward. Overall, inflation in Japan would have been higher in the past two years had it not been for the plunge in oil prices during 2015. Japan must purchase over 90% of its energy needs.

Japan CPI jumped in 2014 and is rising again



Inflation in the Euro zone and in most emerging economies are also moving higher, but at a snail's pace. Large pools of under utilized labor in many European countries have held down wage increases, and therefore, the harmonized price index in Europe. In contrast, the December year-over-year change in inflation in Germany jumped to 1.7%, up from an earlier 0.8%. Germany's tight labor market conditions suggest higher inflation in its future. Since Germany is the Eurozone's biggest economy, it should set the trend towards higher inflation for that area.

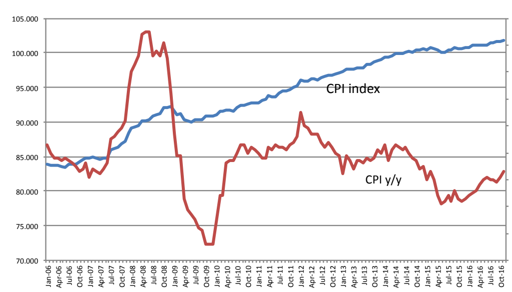
Euro Area CPI Spring growth shoots



In Asia, China's economy is picking up steam

Shrinking economic growth in China during 2016 contributed to the overall deceleration in Singapore's economic growth. As aggregate demand growth decelerated, pressure on prices evaporated. Recent data from China, however, suggests that the deceleration in their economic growth has ended and a turnaround in industrial activity seems to be forthcoming. One result of this shift in activity is a sudden improvement in producer prices. They leapt up by 5.5% in the year ended December 2016. Rising prices in China and depreciating currencies throughout ASEAN imply that inflation in most ASEAN economies should start creeping higher in 2017.

Singapore CPI is grinding higher

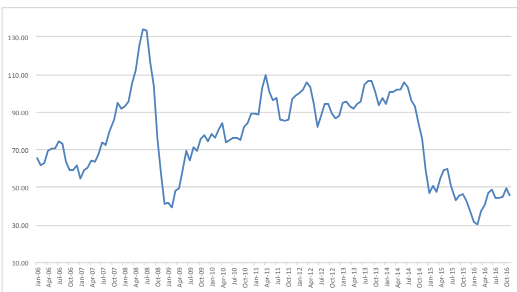


Energy prices are recovering

One of the most prominent causes of falling inflation in 2015 and early 2016 was the plunge in crude oil prices. It immediately led to a drop in energy costs and this contributed to the decline in headline inflation rates around the world. The 71%

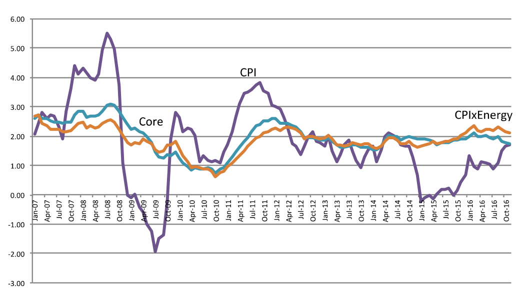
plunge in crude oil prices led to a 34% decline in energy prices in the US during 2016. Energy prices have partially recovered, improving by 11% from their mid-year lows. The ebb and flow of oil prices also seriously influenced inflation expectations reinforcing their decline during the period.

WTI crude oil prices recovering



Oil prices bottomed at the beginning of 2016 and began climbing up slowly since then. Brewing infrastructure plans in the US imply faster economic growth and greater demands for energy and labor. Consequently, energy prices will probably increase irregularly over the next few years.

US: Core CPI and CPI xEnergy have been relatively constant (Y/Y)



In contrast, core prices and the CPI less energy index have been remarkably stable over the past several years. They have consistently increased by approximately 2%, conforming with the Fed's stated 2% inflation target and less volatile than inflation expectations, which have been influenced more by fluctuations in oil prices.

Rising inflation expectations: were the central bankers successful?

Central bankers at the Federal Reserve, the European Central Bank, and Bank of Japan concocted many public assurances that they would tolerate above target inflation for some time into the future to guard against deflation and to promote higher inflation expectations.

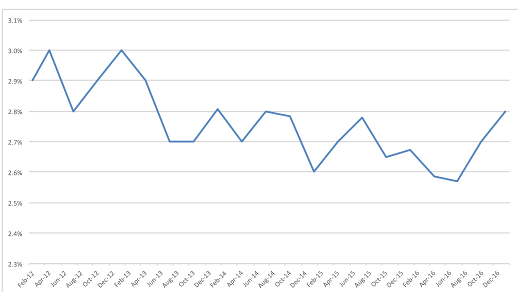
Treasury 5Yr. 5 Yr. Forward Inflation Rate Rising

The financial markets have begun to accept the Fed's commitment to tolerate higher inflation. As shown in the 5 year forward chart inflation expectations have soared over the past several months. The consumer and businessmen surveys are less reassuring. The survey of business inflation expectations conducted by the Atlanta

Federal Reserve Bank is a good indicator. It does point to an increase over the past few months, but not a significant bounce.

Inflation expectations also depend upon past rates of inflation. Thus, if inflation continues to slowly increase it will influence people's expectations for greater inflation in the future. Once inflation accelerates it becomes an open question as to how the Federal Reserve and other prominent central banks, who have promised higher inflation in the future, cope with higher inflation expectations.

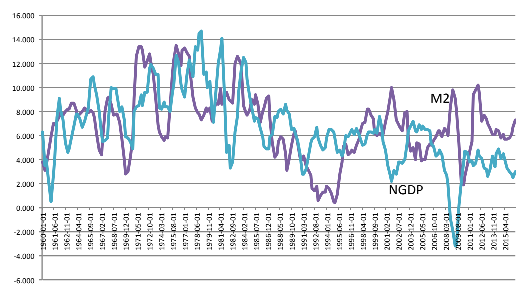
FRB of Atlanta survey of businessmen inflation expectations



The role of money in inflation's future

In the past most eminent economists spoke about the role of 'too much money chasing too few goods' as the prime evil behind the rise in the general price level**.** The piles of money have exploded in recent years as central banks greatly expanded their balance sheets in order to stimulate economic growth and forestall secular stagnation. With the widely anticipated prospects for global economic growth to accelerate and with inflation starting to creep higher, central banks will have to carefully remove some of the money that has been sloshing around the global market place without sending developed economies back into secular stagnation and possible recession.

In recent years M2 has Grown more rapidly than NGDP (Y/Y)



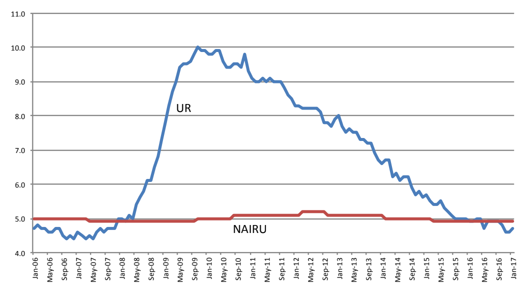
In the US M2 has recently been growing at an annual rate of 7.6%, well in excess of nominal GDP growth. Throughout the first 16 years of this century M2 has grown on average 2.5 percentage points in excess of nominal GDP. Naturally this indicates that the velocity of money has declined. The material question for central bankers to confront is what happens when it increases.

Banks, particularly those in the US and Japan, have prodigious amounts of liquidity. The banks could and will convert their liquid assets into longer-term credit once business leaders are convinced that the promised fiscal stimulus is certain and businesses begin to expand their operations. They will willingly finance their new expansion through relatively cheap bank leverage. As innocent liquidity is finally converted into practical business loans, central bankers will have to tread very carefully so as not to be behind another credit-fueled bubble.

Full employment portends rising wages

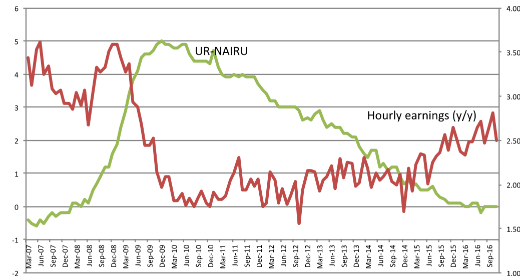
As 2017 unfolds several key developed economies are perched on the brink of full employment; among them are the US, Japan and Germany. As the business cycle slowly unwound over the past several years, excess labor was finally absorbed. The unemployment rate in the US has fallen below 5% and in December it slipped below its NAIRU. (See chart.)

US: At full Employment



If fiscal stimulus does materialize, as President Trump promises that it will, then growth in aggregate demand will accelerate and raise the demand for labor. In a stretched labor market, this will boost the demand for relatively scarce available labor and drive wages significantly higher, particularly in the short run. Since labor costs generally account for 80% to 90% of final prices, their expected increase will inevitably cause higher inflation.

US: As Labor market tightens wages rise



If some of the new President's other proposals encourage more business investment, then the new investment may improve productivity growth in future years and limit the boosting effect from advancing labor costs on inflation in the future.

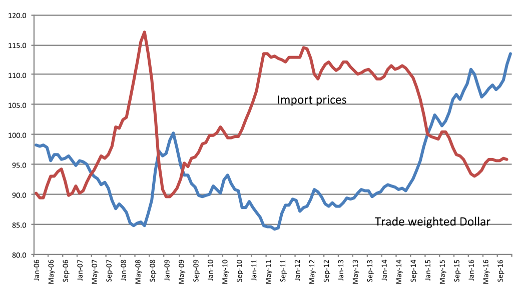
The appreciating dollar

One partially mitigating factor to the expected acceleration in inflation is the appreciation of the dollar. The trade-weighted dollar has appreciated by 25 percent over the past 8 months. This should curb the jump in imported goods prices and therefore moderate the general rise in inflation in the US.

Imports, however, represent approximately 14% of GDP. Therefore, its mitigating effect on the expected acceleration in inflation will be small.

Moreover, the cost of US exports will also climb, thus reducing the demand for US goods abroad. This too could have a moderating effect on US domestic inflation since smaller international demands for US goods will shrink aggregate demand and partially offset the upswing in domestic prices coming from strengthening aggregate demand.

US: The appreciating dollar is causing import prices to decline



Conclusion: Inflation is Back

Inflation has made a comeback. While it isn't the economic scurge that it was in past decades, it is on the way up in most of the developed world. Headline inflation will almost certainly surge above previous central bank targets in 2017 on the back of the increase in oil prices. If energy prices rise more gradually in 2017 than they did in 2016, then the headline increase will moderate in 2018. Summarizing all these shifting and diversing factors leads me to forecast that headline inflation will rise above the standard 2% central bank target for the next several years.

Core price indexes will move more slowly than the headline indexes. However, they will inevitably follow as labor market conditions in all the largest developed economies has tightened significantly after 7 years of constant economic growth. The highly expansive economic proposals by the new US president will lead to more economic growth in the US and it will spill over into most of the rest of the world's economies, tightening global labor market conditions further.

Inflation expectations will also climb following the predicted increase in headline inflation. Eventually this escalation in inflation expectations will guide the world's central bankers to rein in the surfeit of liquidity they created and to harness the advance in inflation expectations.

Finally, there is one thing that we can conclude: the specter of deflation is probably behind us.

For more information, please contact
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	KEY INDICATORS TABLE (AS OF 30 DECEMBER 2016)							
INDEX	**LEVEL (LC)**	**%1MO (LC)**	**%1MO (USD)**	**%1YR (LC)**	**%1YR (USD)**	**INDEX**	**LEVEL**	**%1YR**
S&P500	2238.83	1.97%	1.97%	10.90%	10.90%	3MO LIBOR	1.00	63.00
FTSE	7142.83	5.37%	4.08%	18.56%	-1.28%	10YR UST	2.44	6.54
NIKKEI	19114.37	4.53%	2.28%	2.35%	5.83%	10YR BUND	0.21	-66.99
HANG SENG	22000.56	-3.45%	-3.42%	4.43%	4.39%	10YR SPG	1.38	-21.86
STI	2880.76	-0.60%	-1.54%	3.68%	1.43%	10YR SGS	2.47	-3.71
EUR	1.05	-0.68%		-3.81%		US ISM	54.70	9.92
YEN	116.96	2.18%		-2.95%		EU PMI	54.90	1.70
CMCI	1159.21	1.76%		23.53%		JP TANKAN	7.00	-37.50
Oil	53.72	8.66%		46.78%		CHINA IP	6.20	0.00

Source: Bloomberg

APPENDIX

GLOSSARY OF KEY TERMS (Source: Bloomberg, with tickers in parenthesis. In US$ where applicable)
S&P500: capitalization-weighted index of the prices of 500 US large-cap stocks (SPX)
FTSE: capitalization-weighted index of the prices of the 100 largest LSE-listed stocks (UKX)
NIKKEI: capitalization-weighted index of the largest 225 stocks of the Tokyo Stock Exchange (NKY)
HANG SENG: capitalization-weighted index of companies from the Hong Kong Stock Exchange (HSI)
STI: cap-weighted index of the top 30 companies listed on the Singapore Exchange (FSSTI)
EUR: USD/EUR exchange rate: 1 EUR = xx USD (EUR)
YEN: YEN/USD exchange rate: 1 USD = xx YEN (JPY)
CMCI: Constant Maturity Commodity Index (CMCIPI)
Oil: West Texas Intermediate prices, $ per barrel (CLK1)
3MO LIBOR: interbank lending rate for 3-month US dollar loans (US0003M)
10YR UST: 10-year US Treasury yield (IYC8 – Sovereigns)
10YR BUND: 10-year German government bond yield (IYC8 – Sovereigns)
10YR SPG: 10-year Spanish government bond yield, proxy for EU funding problems (IYC8 – Sovereigns)
10YR SGS: 10-year Singapore government bond yield (IYC8 – Sovereigns)
US ISM: US business survey of more than 300 manufacturing firms by the Institute of Supply Management that monitors employment, production inventories, new orders, etc. (NAPMPMI)
EU PMI: Purchasing Managers' index for the 17 country EU region (PMITMEZ)
JP TANKAN: Bank of Japan business survey on the outlook of Japanese capital expenditures, employment and the overall economy, quarterly index (JNTGALLI)
CHINA IP: China's Industrial Production index, with 1-month lag (CHVAIOY)
LC: Local Currency