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### Singapore Inflation Expectations: Expecting the Unexpected

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Knowledge Leadership

# Singapore Inflation Expectations: Expecting the Unexpected

by Aurobindo Ghosh and Jun Yu



MasterCard Worldwide Insights/SKBI Working Paper

1Q 2013

## Foreword from Singapore Management University

The study of inflation expectations of Singapore households is a multi-disciplinary industry-relevant research that comes out of a partnership between Singapore Management University (SMU), which prides itself to be a University for the world of business and management, and a truly iconic corporate institution — MasterCard. The research team for this MasterCard-SKBI Singapore Index of Inflation Expectations (SInDEX) project applied rigorous methods using current internet-based marketing survey tools for data-collection and advanced econometric techniques to analyse the data. The updates from the quarterly waves are keenly followed by policymakers, market watchers and the media because of the enormous importance of cost of living to individuals and businesses alike.

The inflation expectations measured are perceptions of future average rise in prices over a medium term of one year or a long term of five years. Policymakers in central banks around the world, while formulating their monetary policies, keep a keen eye on the inflation expectations, among other things. Even then, their projections are mostly based on the expected rise in prices of a fixed basket of goods and services at current or prevailing prices, popularly termed as 'Consumer Price Index Inflation' or 'CPI Inflation.' This usually proxies for the future rise in overall prices to enable policymakers to decide on their monetary policy to keep prices stable while at the same time encouraging growth and generating employment.

One of the biggest challenges for policymakers is to ascertain the inflation expectations of households before and after any policy statement is made. While the experts have access to vast levels of macroeconomic data to formulate informed opinions about inflation expectations, for the common man who has to make

purchasing decisions as unprecedented levels of global economic uncertainty unfolds, the reality can be quite different. Our research at SMU-SKBI brings out the nature and influences of such individuals' inflation expectations from cross sections of Singaporean households.

The early results are indeed fascinating in terms of both response and predictability which lay testament to how informed the Singaporean households are and how grounded they are in forming their inflation expectations. It also brings out the effectiveness of our methodology that is founded upon rigorous multi-disciplinary research expertise by SKBI researchers. Lastly, this would not have been possible without the generous support from MasterCard, and the constant efforts of MasterCard and SMU teams in disseminating the research results to the public-at-large through quarterly updates to the media.

I would like to take this opportunity to extend my sincere thanks and offer a toast to President Vicky Bindra and his team from MasterCard for their strong support towards this unique partnership that brings about the true spirit of a community in this cycle of knowledge creation.

Professor Arnoud De Meyer  
President  
Singapore Management University



## Foreword from MasterCard

It has been a year since MasterCard and the Singapore Management University (SMU) jointly launched the Singapore Index of Inflation Expectations. The objective of establishing the Index was to provide valuable insight into the behaviour and sentiments of household decision makers in Singapore. This collaboration affirms MasterCard's commitment to researching, understanding and forecasting consumer behaviour that will in turn contribute to more effective and successful monetary policy management in Singapore, with far-reaching benefits to the business and household sectors in the years to come.

This past year, MasterCard has developed a strong and collaborative partnership with the team at SMU as we worked closely to release this important piece of research on a quarterly basis. Owing to the relevance of this analysis to both businesses and individuals alike, we have been approached and referenced by multiple media, research analysts and other industry experts—a sure sign of the growing influence of this Index.

Looking back, 2012 presented a number of economic challenges and milestones, including the Eurozone crisis, rising inflationary conditions in China and persistent unemployment in western markets. All this and more led to a year characterised by global economic uncertainty.

Amidst such changes in the economic environment, the Singapore Index of Inflation Expectations remained an accurate barometer forecasting inflation expectation amongst consumers in Singapore. Notably, the Index provided a snapshot of how Singapore consumers are affected by both the domestic economy as well as changing global economic conditions. The Index showed us that Singaporean consumers were at times troubled by uncertainty in the

global economic environment, however, for the most part they remained cautiously optimistic in light of the resilience of Singapore's economy.

Over the years, MasterCard has dedicated significant resources to developing a deeper understanding of the business and economic dynamics that shape the region, as well as the fast-evolving Asian consumer market, through surveys and independent research studies. In the process, we have built a robust knowledge and insights platform, adding value through the continuation of cutting edge research but also through the sharing of knowledge in new areas.

As we enter 2013, we are excited to continue our fruitful relationship with Singapore Management University.

Vicky Bindra  
President  
Asia/Pacific, Middle East & Africa  
MasterCard Worldwide



# Singapore Inflation Expectations: Expecting the Unexpected

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**Sim Kee Boon Institute for Financial Economics**

**Singapore Management University**

**27 December 2012**

## **Abstract**

The slowdown in the post Global Financial Crisis (GFC) has meant soaring unemployment in the US and Eurozone periphery economies compared to historical standards. This in turn has sent warning signals to policymakers around the world. Having learnt hard lessons from prolonged periods of slump after the Great Depression, some central banks in the developed world adopted expansionary monetary policy and implemented several rounds of stimulus spending termed as Quantitative Easing to spur productive activities in a period of declining demand. While it had mixed successes in generating demand and lowering unemployment in the US and Eurozone, small open economies like Singapore became susceptible to inflationary pressures from different fronts.

First, with sound monetary and fiscal policy and a strong balance sheet, Singapore has become an investment for discerning investors and employment destination for talented and qualified professionals. Second, being a city-state with only urban population and limited space both real estate sector and private transportation cost have elevated. Finally, imported inflation and “hot money” have flown to Singapore with an ensuing upward pressure on prices. Consequently, policymakers have an unenviable task of balancing the dual mandate to maintain low unemployment and price stability.

Since September 2011, we have interviewed 400 randomly selected individuals quarterly across the cross section of the Singapore society to ascertain their expectations of inflation in both medium and long term. This is intended to help policymakers (a) to anchor inflation expectations in line with their adopted monetary policy through exchange rates, (b) to fathom the effectiveness of communications and (c) to influence informed decision making by Singaporean households.

We found that using an innovative internet based survey we can identify the inflation expectations of the individuals in the short duration. It turns out the one-year-ahead predicted quarterly Headline Inflation rate of 4.68% is closer to the realised CPI-All Items inflation rate of 4.2% than even the Survey of Professional Forecasters who predicted 2.8%. Currently, the one-year-ahead Headline Inflation rate of 4.37% (CPI All Items) is slightly lower than the composite weighted SKBI-MasterCard Singapore Index of Inflation Expectations (SInDEx1) of 4.4% collected in December 2012.

## **Inflation and the World**

Post Global Financial Crisis (GFC) the world economy has been going through a prolonged economic slump reminiscent of the phase of slow or no growth after the Great Depression in the 1930s. Western economies had to wait for the Second World War reconstruction in 1940s to get back on the fast track to recovery. The lessons learned from the past crises in Asia and the West prompted policymakers, particularly in the US Federal Reserve Board, the European Central Bank and the Bank of Japan, to be proactive. They have responded to an impending crisis in the best way they knew through prolonged periods of expansionary monetary policies. However, Federal Reserve Board Chairman Ben Bernanke (at the Monetary Economics Workshop of the National Bureau of Economic Research Summer Institute, Cambridge, Massachusetts, July 10, 2007) had reemphasised that most central banks work under the dual mandate of price stability and employment generation. So while expansionary monetary policy might be good for growth and lowering unemployment, the adverse impact on inflation is often a cause of concern.

With an ongoing slowdown in the Western economies or the so called G3 (US, Eurozone and Japan) and consequently, plummeting world demand, inflation is currently not rampant throughout the world but only some pockets, particularly in some sectors in the emerging world including China and India. In fact, inflation was at a very ebb in the US, Europe, China and India as recently as August 2012, recording the lowest levels in the post GFC period. Naturally, the policymakers had to shift their attention to other more serious part of their mandate vis-à-vis employment generation. In the same period, the embattled Euro-

zone periphery economies like Spain and Greece were looking down with nearly one out of every four of their employable population out of jobs and a staggering 50% youth unemployment. In the US, the country was facing unprecedented 8% unemployment nearly into their fourth year with a historic average of around 5.8% since 1948. The US unemployment number turned out to be pretty persistent despite near zero interest rate along with strong communication from the US Federal Reserve Boards' Federal Open Market Committee (FOMC) about their stance of holding the rates low in the foreseeable future until around middle of 2015.

With traditional monetary policy doing little to assuage the persistent unemployment rate, the US Federal Reserve Chairman Ben Bernanke decided for the most recent round of stimulus package termed as QE3 or quantitative easing to buy back Mortgage Backed Securities in the order of US\$40 billion per month. This would shore up the banks' balance sheets to enable them to lend more aggressively until unemployment reduces significantly below current rates. In the same note the European Central Bank (ECB) president Mario Draghi had previously announced the so called OMT (Outright Monetary Transactions) to enable the ECB to buy back unlimited quantities of troubled Eurozone Government bonds in the secondary market. This would reduce the cost of borrowing money for these governments which in turn is aimed at spurring growth to facilitate Eurozone's struggling economies to get out of the current economic quagmire. In the world's third largest economy, Bank of Japan facing an imminent slowdown in production and growth also contemplated further stimulus plans through aggressive easing of their monetary policy. Inflation was of little less concern than a possible cycle of deflation that plagued Japan, and the spectre of a lost decade of no growth might continue was definitely in the mind of the policymakers.

The effectiveness of such expansionary policies together with other macro-prudential measures is often mixed. On the positive side we have observed that current unemployment rate in the US has unexpectedly climbed down to around 7.7% in November 2012 while countries like Spain now face a lower interest rate in borrowing for the financial market. While on

the other hand, US was looking at a possible "fiscal cliff" (or a "fiscal slope" with 11th hour legislation) of US\$600 billion from government coffers in spending cuts and expiry of tax reductions which can drive the US economy from a fledging growth to recession. This is compounded by Eurozone economies already tottering near the brink of double or triple-dip recession with no end in sight to persistently high unemployment rates.

Such expansionary policies popularly termed as "printing money" meant for encouraging growth and hence reducing unemployment could have an adverse consequence on inflation. The inflation that such availability of the freshly minted so called "hot money" generates could have an unintended consequence across the globe, in particular, in small open economies like Singapore. Loose monetary policy would tend to reduce the value of that currency and make its exports more competitive to the outside world. At the same time such policies will also make the foreign goods more expensive hence spur the demand for domestically produced and sourced goods, giving the right fillip to the local economy. However, countries that are export-oriented and have to import a lot of their consumables have to face imported inflation in a world of "easy money" or excess liquidity. With capital mobility the world over and exceptionally low interest rates, policymakers have an arduous task to control inflation when the priority of unemployment has been addressed.

### **Impact of the Region**

Inflation has been a thorny issue until very recently in several economies in the region including the regional block ASEAN. Inflation rates in Vietnam are hovering around a historical average of about 7%. However, it has gone up slightly from a recent low of 5% but definitely much lower than near 20% inflation just around a year back. The fluctuation has been quite high over the last couple of years of turmoil in the banking sector. Australia has been quite resilient in terms of inflation and has hovered around 2%, of their two year high of 3.6% but definitely higher than near 1% in July this year. Indonesia has a stable 4.6 % latest in October 2012, off from its two year high of about 7%. China was at their historic low at 1.7% in October off from near 6.5% about 2 years back. Further with a



Flash PMI in China going over 50 in a recent survey by HSBC, they seem to show a positive outlook. US Inflation has also been a low of about 1.7% before a slight spike after the announcement of latest stimulus. The CPI-All Items Inflation Singapore has dropped to 3.6% in November 2012 from around 4% a month before.

### **Inflation in Singapore**

Singapore is unique in several different ways. In an increasingly globalised world, Singaporean policymakers also face an uphill task on one hand to ensure full employment and on the other hand to provide price stability. Singapore headline inflation could be attributed to both increase in real estate and private transportation, and structurally due to increase in rentals and wages affecting the cost of doing business. Such costs more often than not get passed through to the consumers. Since the inception of the Singapore Index of Inflation Expectations (SInDEx) launched in January 2012, there have been several quarterly updates that were released to the media and public that gave a unique insight to the psyche of the Singaporean household. It also helped the researchers to fine tune the questions to identify the source of uncertainties and expectations among the responding public.

The main challenge in a small open economy like Singapore with sound policy and economic base is imported inflation. Furthermore, a tight monetary policy to accommodate for the imported inflation coupled with worsening investment climate elsewhere has made Singapore a coveted investment destination with an appreciating currency. The policymakers have an unenviable job to maintain price stability given that they have already addressed unemployment issues remarkably well through a downturn in the global economy. In the short run, besides imported inflation increasing wages and rental costs and consequent increase cost of doing business will probably maintain an upward pressure on inflation. On a brighter side, this might ease somewhat with an improving consumer confidence and sentiment in the emerging markets, in particular China in 2013, and recovering conditions though nascent in developed markets like the US.

Investors are becoming savvier by the day with increasing access to information, financial services and advice. They are also wary of the unlimited horizon

easy monetary policy in the Western economies including comments and action by Ben Bernanke and Mario Draghi, to do whatever it takes to improve business conditions and growth. In fact, more recently Nobel laureate Paul Krugman, among others, termed it "QE Infinity" because of the unlimited horizon of the Fed's action (for excerpts of Paul Krugman delivering his SKBI Public Lecture visit <http://skbi.smu.edu.sg/events/2012/11/07/skbi-public-lecture-nobel-laureate-paulkrugman>). However, there could be two direct unintended consequences of the low interest rate regime into foreseeable future for open Asian economies like Singapore.

First, there could be flight to quality investment in Asia including Singapore. We would like to call this attracting "smart money" and not just "hot money" into the region. This will probably cause run up in real estate prices in the short run when housing supply cannot go up. Second, a more subtle but more damaging consequence is the decrease in purchasing power or to be precise, the real interest rate. The genesis of such a problem lies with the possibility of unhinged long term inflation expectations. A low nominal interest rate together with a moderate to high actual inflation rate might cause a decrease in purchasing power, and affect retirees or other investors particularly ones depending only on fixed income securities like long term bonds.

### **Cost of Living**

As a city state, Singapore is at a privileged position both geographically and historically. In fact, a recent forward looking if not a perfectly rigorous academic survey by the Economist Intelligence Unit (part of The Economist team) puts Singapore at no. 6 globally on its where-to-be-born in 2013 index. It highlights a comment made by world's best known investor Warren Buffet's claiming that he was born in the right country (US) and at the right time (1930s) when asked about why good things happened to him (The lottery of life: Where to be born in 2013, The Economist, Nov 21, 2012). Incidentally, Switzerland is ranked first while US and Germany are tied at 16th position in the same index (after being first and third respectively in the inaugural Where-to-be-born survey in The World in 1988) that takes into account not just wealth but life expectancy, civil society, safety and security as well. The



liveability coupled with investment and work destination of talented professionals possibly did come at a slight cost... the cost of living increase. It probably is likely to be in the eye of a perfect storm with a floundering global growth, unemployment spikes in the US and the Eurozone, and consequent regulations in the banking and financial sector. This might have led to a significant exodus from the Eurozone and the US. Furthermore, a growing and outward looking educated middle class in India and China and an attractive business and living environment in Singapore.

### **Singapore Inflation Expectations**

MasterCard-SKBI survey of Singapore Index of Inflation Expectations (SInDEx) started in September 2011 where approximately 400 participants were interviewed online with questions on their demographic details, household activities and perceptions on current and future economic and investment environments. The first two quarterly waves of the SInDEx Survey was analysed and presented at the official launch of the Singapore Index of Inflation Expectations (SInDEx) on January 10, 2012. The quarterly surveys reflected the adaptive expectations of various individuals in Singapore vis-à-vis their role as informed decision makers of the household. In particular, the initial surveys highlighted the nature of the characteristics that seem to influence the composite inflation expectations of individuals including economic awareness, long term horizon and exposure to media (cf. Singapore Consumers' Inflation Expectations and Creation of Singapore Index of Inflation Expectations by A. Ghosh and J. Yu, 2011).

We proposed two new index measures of inflation expectations, namely, the one-year-ahead SInDEx1 and the five-year-ahead SInDEx5. SInDEx1 is an equally weighted average of Headline (CPI-All Items) Inflation, Core Inflation (without Food and Energy related expenses) and finally, the Singapore Core (without the Accommodation and private transportation related costs). While the preliminary results were encouraging, the subsequent waves of the survey provided nothing short of a revelation. In particular, the Headline (closely related to the CPI-All Items, Figure 1 blue solid line with diamonds) Inflation and the composite one-year-ahead Singapore Index of Inflation Expectations (SInDEx1, Figure 1 purple dotted line with crosses) seem to closely track the movements of the prevailing 2012 Inflation forecast

(Figure 1 Orange broken line) better than the earlier consensus forecast of the MAS Survey of Professional Forecasters (Figure 1, red line with rectangles). In fact, the first release of one-year-ahead headline inflation expectations of September 2011 of 4.68 is almost oracle-like with an ultimate realisation of 4.7% year on year. However, upon closer scrutiny, the just released third quarter value of CPI-All Items inflation is at 4.2% which is indeed fairly close to the projected inflation expectations of 4.68%. In the same period, the consensus median forecast for 2012 by the MAS Survey Professional Forecasters in September 2011 was at 2.8% nearly 50% lower than the realised outcome.

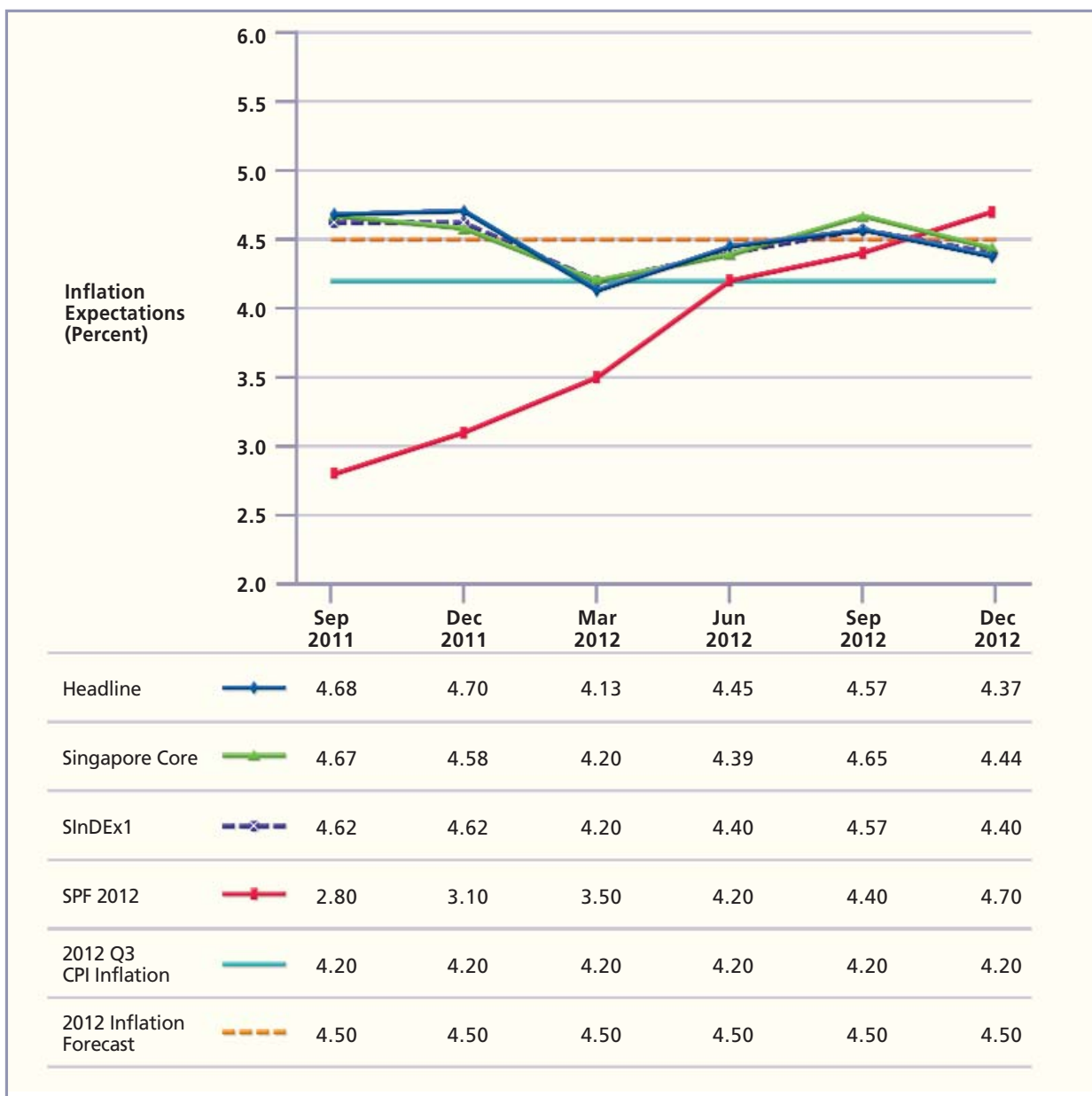
To the best of our knowledge, the MasterCard-SKBI SInDEx survey is the first of its kind in the region. Hence, unfortunately we do not have a good comparison benchmark. In order to compare, we cite the example of the Consumer Confidence Inflation Rate Expectations 12 Month Hence surveys conducted by The Conference Board in the US. The survey reported that the 12-month ahead rate dipped from a high of 6% in end August to 5.6% in end November 2012. These inflation expectations are consistently too high compared to the actual CPI inflation rate of 2.16% in October 2012 or for that matter, the actual CPI inflation of 1.7% recorded in August 2012. The Survey of Professional Forecasters published by the Federal Reserve Bank of Philadelphia calculated a consensus CPI Inflation forecast of 2.2% in the last quarter of 2012 which is substantially less than the 5.6% projected by current The Conference Board survey. It is a conventional wisdom that inflation expectations based on surveys reflect sentiment in the market and possibly overestimate the actual inflation rates unlike the inflation expectations backed out from the yield of Treasury Inflation Protected Securities (TIPS). (Source: 2012 Fourth Quarterly Survey of Professional Forecasters, Federal Reserve Board of Philadelphia, Aug 10, 2012, <http://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/2012/survq412.cfm> and The Conference Board Consumer Confidence Inflation Rate Expectations 12 Month Hence, Bloomberg, <http://www.bloomberg.com/quote/CONCINFL:IND>).

One-year-ahead SInDEx1 inflation expectations indices suggest that while it is quite responsive to communications by the policymakers, we find that the

inflation expectations did not react excessively to short term fluctuations in the external market including food and oil price supply shocks due to turmoil in the Middle East or short term food inflation. It did, however, react with a slight dip in response to a tightening of the monetary policy through a steeper slope of the band of trade weighted exchange rate announced by MAS. This implies that at least in the medium term the inflation expectations measured by the composite inflation index (SInDEx1, Figure 1: Purple dotted line with

crosses) seem to be fairly well “anchored” around the 4.5% mark, the upper end of the projected band communicated by MAS. It did, however, increase slightly with supply shortages of Certificates of Entitlements (COE) affecting private car prices and increase in demand for private accommodation. Consistent with such expectations in the current December 2012 issue of recent developments of the economy, MAS economists expect that for the year 2012 the inflation rate will come out to a little higher than 4.5%. In the latest

**Figure 1. One-Year-Ahead Inflation Expectations**

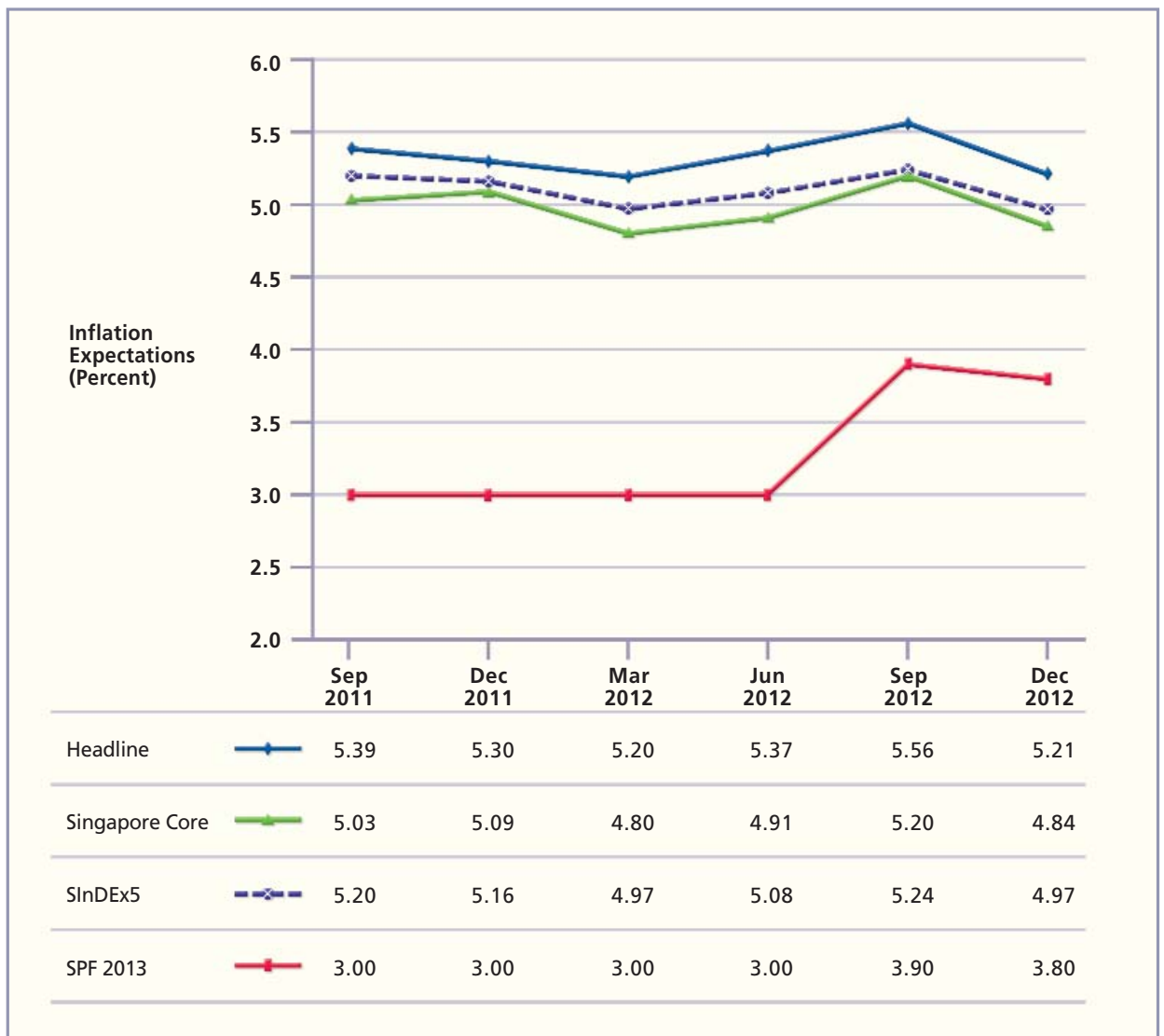


wave of the survey in December 2012, the one-year-ahead inflation expectations of the headline (or CPI-Inflation) rate is at 4.37% while the composite one-year-ahead inflation expectations index fell to 4.4%, down from the previous quarter's high of 4.57%.

While the one-year-ahead headline inflation expectations seem to be more or less anchored, the five-year-ahead one is still suffering from excessive uncertainty emanating from the bleak global macro-economic outlook where the risks of a global economic slowdown are described as "alarmingly high" (World Economic Outlook, IMF Publications, October 2012).

Although the five-year-ahead headline inflation rate elevated from 5.37 to 5.56% (Figure 2, in solid blue and blue diamonds) from the second to the third quarter of 2012, the weighted composite five-year-ahead Singapore Index of Inflation Expectations (SInDEx5, Figure 2, in dotted purple with crosses) only inched up from 5.08% to 5.24% indicating there is some level of stabilisation in the expectations even under severe global economic uncertainty. This is furthered bolstered by a substantial easing of the five-year-ahead headline inflation expectations of 5.21%, and a lowering of the composite five-year-ahead inflation expectations (SInDEx5) of 4.97% in the latest wave of the SInDEx Survey in December 2012.

**Figure 2. Five-Year-Ahead Inflation Expectations**



However, the level five-year-ahead inflation expectations might still be an object of concern for policymakers and needs some level of communication including a strong stance at putting controlling inflation in the forefront of the policy framework so as to anchor the long term inflation expectations along with the medium term one. In the absence of a benchmark we focus on the MAS Survey of Professional Forecasters projection for 2013, and observe that the five-year-ahead inflation expectations are indeed dominating the 2013 economic forecasts even though SPF inflation projects have an upward trajectory (Figure 2, red solid line with small boxes). Such future expectations of inflation in a period of record low fixed interest inevitably moves to the negative real rate of return on investment in such assets or in other words a steady erosion of purchasing power.

The one-year-ahead Singapore core inflation rate (Figure 1, green solid line with triangles) is, without accommodation and private transportation in the SInDEx survey 4.67% in September 2011. This is significantly higher than 2.4%, the actual figure published by MAS. While there is no obvious reason for such an overestimation, we can conjecture some contributing factors. First, it is possible that respondents might be biased by the price changes of frequently purchased items that they have made in the recent past and ignoring less frequent purchases like the big ticket items (sometimes termed as the “frequency bias”). This would mean that individuals might expect higher inflation rate even though general price levels (excluding accommodation and private transportation) have not increased as much but food items, which form a small portion of their budget, has increased substantially. Second, media might have had a role to play in highlighting price increases in real estate and private transportation, which in turn might have had a knock on effect on inflation perception. Finally, there might have been some expectations of imported inflation that in reality was dampened by an appreciating Singapore dollar. Similar effects might have also transpired in the five-year-ahead Singapore core inflation expectations (Figure 2, green line with triangles) that the survey indicates is at 5% annual rate. Having said that, a recalibration might be needed to compare the actual numbers but any systematic bias would potentially be attenuated for a

composite index obtained through weighting different indices, for example, the SInDEx1 and SInDEx5.

## Conclusion

There are three major challenges or pitfalls facing a central banker. First, one of the biggest challenges facing a policymaker is the possibility of “unhinged” inflation expectations that might be fuelled by mass hysteria or irrational exuberance. Second, the other policy challenge is the possibility of a deflationary cycle that engulfed a G3 country like Japan and meant a long period of recession or no growth as seen in the 1990s. Finally, the third one is a period of stagflation seen in the US in late '70s early '80s where the period is marked by both stagnation and inflation. Many of the western economies are suffering from prolonged period of high unemployment owing mainly to lack of demand or very low new job creation. This has put a downward pressure in inflation and the second scenario has become a real possibility. Hence policymakers have chosen the path of stimulating the economy at the expense of some level of inflation which might be beneficial to the growth of the economy.

Having gone through a significant period of restructuring themselves post the Asian Financial Crisis, the export driven Asian Economies outside Japan were less affected by rampant unemployment like the West but had a dip in the demand from the west and imported (or some pockets in domestic markets in India and China) inflation due to record low interest rates. Hence, many of the central banks could not adopt a very expansionary policy but a measured tightening to shore up consumer confidence and control inflation. This approach might also address the issue on stagflation in the absence of high inflation rates. The right balance in stimulus spending to reduce unemployment, monetary policy tightening and macro-prudential processes like changing reserve requirements by central bankers and the economic policy community might help the global economy to get back on track of growth.

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