

# What have central banks from emerging market economies learnt about the international transmission of monetary policy in recent years?

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## Abstract

Since 1981, monetary policy in Singapore has been centred on managing the trade-weighted nominal effective exchange rate, which has a powerful and predictable influence on domestic prices in a small, open economy. However, given Singapore's exchange rate-based monetary policy framework and financial openness, domestic interest rates have fallen in line with those in the world's advanced economies. With lending rates depressed, growth in credit to the domestic non-bank sector has accelerated, contributing to the fairly strong run-up in transaction volumes and prices in the housing market over 2010–12. In addition to posing risks to financial stability, this has exacerbated price pressures stemming from restructuring in the Singapore economy. In response, the MAS has calibrated its monetary policy stance and augmented the exchange rate framework with macroprudential tools and other targeted administrative measures, with a view to securing overall price and financial stability in the economy.

Keywords: Monetary policy, exchange-rate framework, price and financial stability, macroprudential policy

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The views expressed here are solely those of the author and should not be attributed to the MAS.

## 1. Introduction

This note highlights the challenges to the conduct of Singapore's exchange-rate-centred monetary policy following the global financial crisis. The outline of the note is as follows. Section 2 outlines Singapore's exchange-rate-centred monetary policy framework. Section 3 highlights the channels through which advanced economies' monetary policies are transmitted to Singapore, as well as the associated challenges to the conduct of the country's monetary policy. Section 4 discusses the Monetary Authority of Singapore's (MAS) policy responses, while Section 5 concludes.

## 2. The exchange rate as the instrument of monetary policy

Since 1981, monetary policy in Singapore has been centred on managing the Singapore dollar nominal effective exchange rate (S\$NEER). The MAS manages the S\$NEER within a policy band. The slope and width of the exchange rate band, as well as the level at which the band is centred, are calibrated to attain the optimal monetary policy stance for the Singapore economy to ensure low and stable inflation over the medium term. The exchange rate represents an ideal intermediate target of monetary policy as Singapore is a small, open economy, and is highly dependent on imports for all its needs, including necessities such as food and energy. The economy's openness means that the exchange rate exhibits a stable and predictable relationship with price stability.

### How the exchange rate affects the economy

- First, the exchange rate acts *directly* to dampen imported inflation. The import content of domestic consumption is high, with nearly 40 cents out of every dollar spent going to imports. Hence, domestic prices are very sensitive to world prices and exchange rate movements.
- Second, the exchange rate acts *indirectly* to tackle domestic sources of inflation. A stronger currency moderates the external demand for Singapore's goods and services, and hence the demand for domestic factor inputs. As a result, factor incomes would rise more modestly, which in turn reduces the domestic demand for goods and services and puts *downward* pressure on prices.

However, the choice of the exchange rate as the instrument of monetary policy implies that the MAS cedes control over domestic interest rates and the money supply, in the context of an open capital account. Singapore dollar interest rates are largely determined by foreign interest rates and investor expectations of the future movement in the Singapore dollar. The MAS monitors interest rates and the money supply closely to ensure sufficient liquidity in the system for regulatory and settlement purposes rather than for monetary policy objectives.

### 3. International transmission of monetary policy in the post-GFC environment

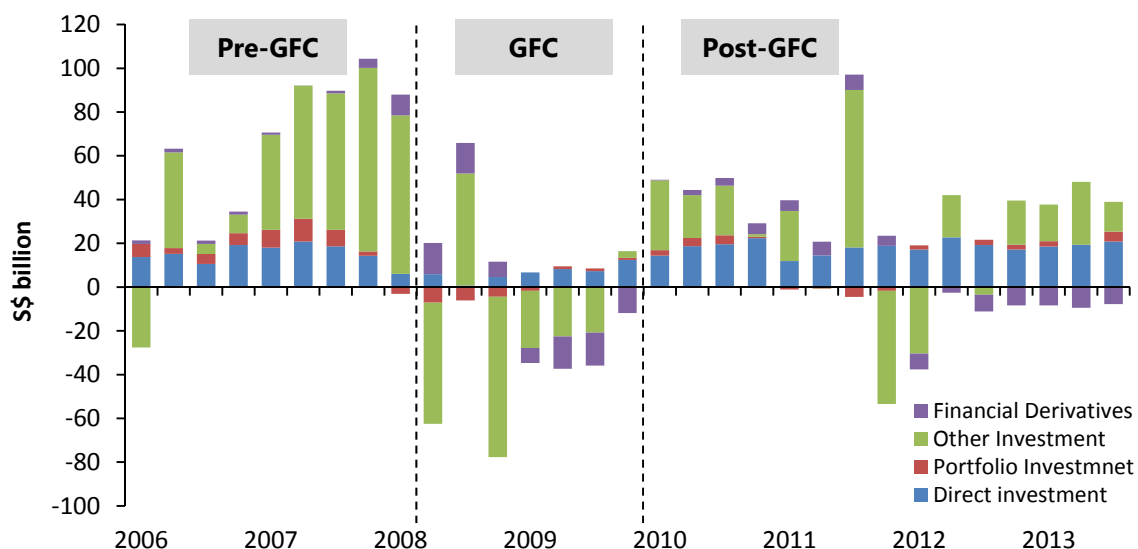
#### Post-crisis monetary policy and global capital flows

From the outset of the global financial crisis (GFC), policymakers in the advanced economies reduced policy rates to near zero and implemented successive rounds of unconventional monetary policies – initially to restore confidence in the financial markets, and later to support the still-fragile economic recovery. Near-zero policy rates and unconventional monetary policies have lowered returns on interest-bearing assets in the advanced economies and reduced global risk aversion. Consequently, this has encouraged portfolio rebalancing among global investors towards riskier assets, with capital flowing to emerging economies in the search for yield. Indeed, the global risk premium has shown to be a significant variable in predicting surges and stops in capital inflows (Forbes and Warnock 2011).

In developing Asia, after a sharp but short retrenchment during the GFC, gross capital inflows rebounded at a record pace, averaging some USD 212 billion per quarter between Q1 2010 and Q3 2013. The level of capital inflows slightly exceeded that seen in the pre-GFC period (USD 208 billion a quarter). In Singapore’s case, capital inflows also recovered during the post-GFC period but were smaller, on average, than in the run-up to the GFC. This relatively smaller volume of flows was largely due to reduced gross “other investment” inflows, which are primarily flows into the banking sector (Chart 1 and Table 1). It is noteworthy that Singapore’s banking system has ample liquidity domestically, and does not rely on foreign funding to support domestic lending.<sup>2</sup>

Gross capital inflows to Singapore

Chart 1



Source: Singapore Department of Statistics.

<sup>2</sup> MAS (2012): “Banking System Trends: Pre- and Post-Lehman,” Box E, *Financial Stability Review*, pp. 39–42.

## Gross capital inflows (quarterly average)

Table 1

Pre-GFC (Q2 2006-Q1 2008 avg.)	GFC (Q2 2008-Q4 2009 avg.)	Post-GFC (Q1 2010-Q3 2013 avg.)
S\$70 billion	-\$17 billion	S\$37 billion

Source: Singapore Department of Statistics.

## Transmission to domestic credit and asset prices

In addition, deepening integration of the global financial system has amplified the international transmission of advanced economies' monetary policies through feedback loops, as banks and institutional investors increase leverage rapidly in response to an initial monetary policy impulse or changes in risk appetite<sup>3</sup> (Bruno and Shin 2012). Research by Helene Rey (2013) has also highlighted that advanced economies' monetary policies are part of a "common global financial factor" that can trigger excessive credit growth during periods of exuberance and, conversely, excessive retrenchment during the downswing. This can take place irrespective of the exchange rate regime. (Rey 2013)

Given Singapore's exchange rate policy regime and financial openness, domestic interest rates such as the S\$ interbank offered rate (S\$ SIBOR) have moved in tandem with foreign interest rates such as US\$ LIBOR. (Chart 2a) In the post-GFC period, domestic interest rates have fallen in line with those in the advanced economies. The three-month S\$ SIBOR declined from 3.4% at end-2006 to a historical low of around 0.4% following the GFC, and has remained almost unchanged since December 2011.

Loans in Singapore tend to be priced off short-term interest rates such as the S\$ SIBOR and swap rates with tenors of less than one year. With short-term lending rates depressed, growth in credit to the domestic non-bank sector accelerated, from 4.5% year on year at the start of 2010 to 30% in December 2011 (Chart 2b). This was due in part to strong business lending, which rose by 41% in 2011 as economic activity across a broad swath of sectors recovered following the GFC. At the same time, consumer credit growth was also robust, as mortgage loan growth remained firm throughout the GFC and thereafter.

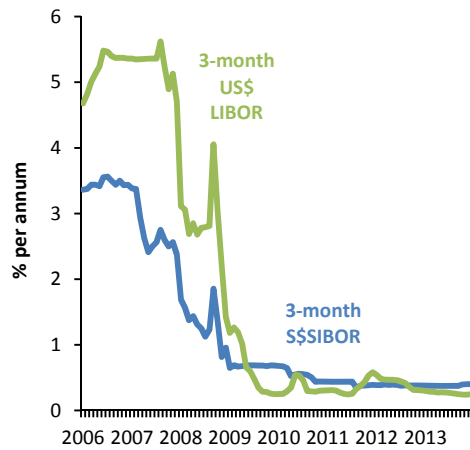
There were concerns that easy financing conditions would cause property prices to rise rapidly. This could destabilise the domestic housing market and compromise financial stability if sustained for an extended period. Housing loan growth rose from 14% year on year in Q1 2010 to 20% in Q2 2011, and, alongside these developments, the property market experienced a fairly strong run-up in transaction volumes and prices. For example, private property prices were

<sup>3</sup> Bruno and Shin (2012) constructed a theoretical model to explain how global banks transmit financial conditions across borders. For example, a decrease in the Fed Funds rate would lower global banks' funding costs. This provides an initial impetus for greater risk-taking in cross-border lending, resulting in capital inflows and an initial appreciation of the local currency. In turn, this strengthens the balance sheet position of the borrowers, relaxing the funding constraints for global banks to lend even more to them. Thus, the initial monetary policy impulse is amplified through this feedback loop.

16% higher in Q2 2011 compared to the beginning of 2010, and had risen by more than 50% since their trough in Q2 2009. Nevertheless, following several rounds of property-cooling measures, property-related indicators, including housing loan growth, have moderated. The overall growth in credit to the domestic non-bank sector has also eased to 17% year on year as at end-2013.

Interest rates

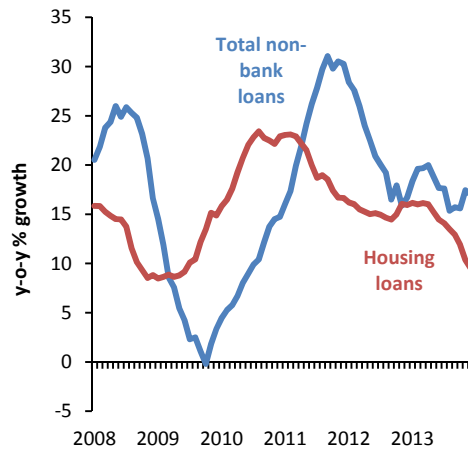
Chart 2a



Source: Bloomberg.

Domestic credit growth

Chart 2b



Source: Monetary Authority of Singapore.

## 4. Singapore's monetary policy response given the new international financial landscape and domestic restructuring<sup>4</sup>

Post-GFC, the MAS's conduct of monetary policy has been conditioned by an unprecedented confluence of factors, in particular the persistently low global interest rate environment described above, and restructuring in the domestic economy.

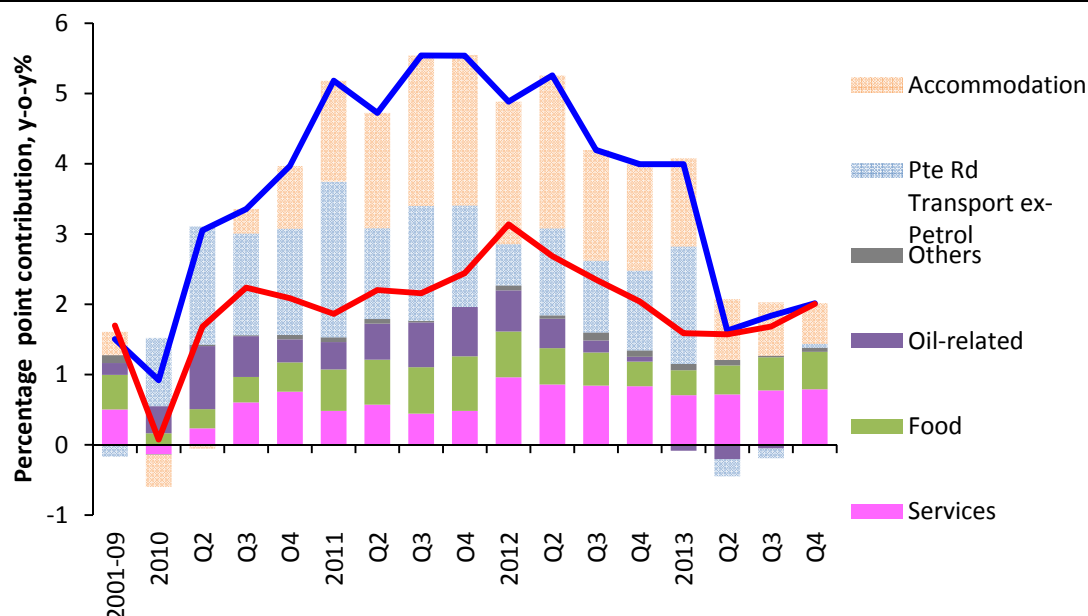
The Singapore economy has been undergoing restructuring against the backdrop of supply constraints, especially in the labour market. Singapore is facing a demographic challenge: the effects of low birth rates over the last two decades and the entry into retirement of the baby boom generation. In addition, it is not sustainable to continue to grow the foreign workforce at historical rates, given Singapore's physical land constraints. Over the longer term, growth in the Singapore economy will therefore have to rely less on increases in the labour force and more on productivity growth. Meanwhile, economic restructuring will result in some transitional costs. For example, the government has implemented labour force tightening measures, such as increasing the levy paid on foreign workers and reducing the dependency ratio ceilings, which cap the proportion of foreign to resident workers in different sectors. These tightening measures aim to reduce firms' reliance on low-cost foreign labour and prompt shifts in production and investment by inducing relative factor price adjustments. In the short term, however, wages and therefore price pressures will rise, as productivity-enhancing measures take time to bear fruit.

Taken together, this has meant strong credit growth and domestic demand at a time when supply is temporarily tight. Consequently, inflation has picked up, averaging 4.9% over 2011–12. This has been driven by increases in the cost of cars and accommodation in the CPI basket, as well as wage-cost pressures arising from a tight labour market feeding through to higher services fees (Chart 3).

These developments have presented several issues for the formulation and conduct of Singapore's monetary policy in the recent period:

1. With the increase in importance of domestic sources of inflation, to what extent is the exchange rate still relevant as the instrument of monetary policy?
2. How should monetary policy be calibrated, given the interaction of global and domestic cyclical and structural factors?
3. What other instruments can the central bank use to secure overall macroeconomic stability?

<sup>4</sup> This section draws on a speech by MAS Managing Director, Mr Ravi Menon, at the Opening Gala Dinner for the Asian Bureau of Financial and Economic Research on 21 May 2013, entitled "Securing Price Stability as Singapore Restructures".



Note: MAS Core inflation excludes the cost of private road transport and accommodation.

Source: Singapore Department of Statistics.

### Continued relevance of the exchange rate as the instrument of monetary policy

On the first issue, the MAS has emphasised that the exchange rate-based framework remains relevant and effective even during this period of low global interest rates and rising domestic sources of inflation stemming from economic restructuring.

The importance of the exchange rate in restraining price increases has not been undermined as the fundamental structure of the Singapore economy has not changed: external-oriented manufacturing and services sectors together account for about half of Singapore's GDP, while imports make up almost 40% of domestic consumption. As such, the exchange rate remains a key nominal anchor in household and business decisions. Since April 2010, the MAS has set monetary policy on a tightening path by allowing the S\$NEER to appreciate at a modest and gradual pace. Up to December 2013, the S\$NEER had appreciated by 11%. The appreciating bias of the trade-weighted exchange rate has dampened imported inflation and reduced the upward pressure on core inflation, which has moderated from a peak of 3.5% at the start of 2012 to 2% at end-2013.

### Formulation of monetary policy responses

As regards the second issue, the MAS has had to establish the optimal monetary policy response under the extraordinary circumstances in the global and domestic economy. Restructuring will tend to generate temporary inflationary pressures if the supply-side adjustments take place amid sustained but modest growth in aggregate

demand. If monetary policy settings were insufficiently tight, inflation expectations could become unhinged. This could arise if firms pass on wage increases to consumer prices in the near term, given that productivity gains would only bear fruit in the medium term. The resetting of a range of services fees could cause medium-term expectations of inflation to drift upwards.

Further, while property prices do not directly enter the computation of the CPI, their “visibility” implies that such prices are an important part of the information set on which expectations are formed. Monetary policy is primarily directed at ensuring price stability for the whole economy and, in many circumstances, is too blunt an instrument to directly temper increases in specific asset prices or to cool interest-rate-sensitive segments of the economy. While a tighter monetary policy could dampen asset prices, it would inflict significant collateral damage on the broader economy, leading to considerable output volatility. In addition, an excessively strong Singapore dollar could drive firms to exit the economy rather than make the necessary adjustments to their usage of capital and labour. This would hinder rather than facilitate the relative price changes that would stimulate the necessary resource reallocation in the economy.

Accordingly, the formulation of monetary policy has been guided by a number of practical considerations.

### Calibrated response to temporary price increases

First, one of the guiding principles of monetary policy adopted by the MAS is to “temper, but not fully offset” price pressures in the economy. In the short term, higher labour costs due to permanent supply-side shifts are necessary to signal optimal resource reallocation – monetary policy should not (fully) offset these relative price adjustments. However, monetary policy must also react to guard against an increase in inflation expectations due to second-round effects on prices. Accordingly, the MAS has taken a judicious approach towards monetary policy formulation, targeting a modest and gradual appreciation path for the policy band of the S\$NEER since April 2010. In effect, the MAS allowed a temporary increase in core inflation to accommodate some of the increases in relative prices, so as to signal the scarcity of resources and encourage the necessary behavioural shifts. Appendix 1 provides a graphical summary of the MAS’s monetary policy responses since 2004.

### Flexible implementation of monetary policy stance

Second, the MAS has also exercised flexibility in adjusting the parameters of the basket, band, and crawl system. For example, the MAS adjusted two policy levers in the tightening moves in April and October 2010, which is relatively rare.<sup>5</sup> These moves, deemed “pre-emptive” by the market, were necessary as the economy was recovering very rapidly from the GFC, and the negative output gap had turned positive and was widening. In April 2011, the MAS re-centred the policy band upward but “below [its] prevailing level”, whereas it had previously always

<sup>5</sup> Typically, when monetary policy is in its tightening phase, only the slope of the policy band or the level at which it is centred is adjusted.



re-centred the band to the prevailing level. This calibration of the exchange rate policy band allowed the MAS to tighten monetary policy to anchor inflation expectations, while signalling that the pace of S\$NEER appreciation should not be so rapid as to hinder restructuring.

### Expanding policy toolkit to include macroprudential policies

Third, the MAS has always taken the position that asset prices matter for both economic and financial stability. In response to the potential risks associated with an environment of sustained low interest rates, the MAS has adopted an approach that augments the exchange rate-centred monetary policy framework with macroprudential tools and other targeted administrative measures. While monetary policy continues to be formulated on the basis of growth and inflation considerations, the use of macroprudential instruments is targeted at the specific areas of financial stability risks.

Although macroprudential tools have been used in Singapore as early as 1996 to help cool an overheated property market, they have been applied in a more concerted fashion since 2009.<sup>6</sup> Unlike monetary policy, there is no single macroprudential instrument that has a stable relationship with financial or asset price stability. Macroprudential policy has thus relied on a range of policy instruments, and has involved a coordinated approach across different government agencies including the MAS, the Ministry of Finance (MOF), and the Ministry of National Development (MND). For example, the MAS has progressively lowered the loan-to-value ratios on property loans and capped mortgage tenures at a maximum of 35 years. The MOF has successively raised taxes on property transactions, in the form of the Seller's Stamp Duty and the Additional Buyer's Stamp Duty. The MND has ramped up land sales for residential property developments, taking into account the medium-term housing needs of the population.

## 5. Summary

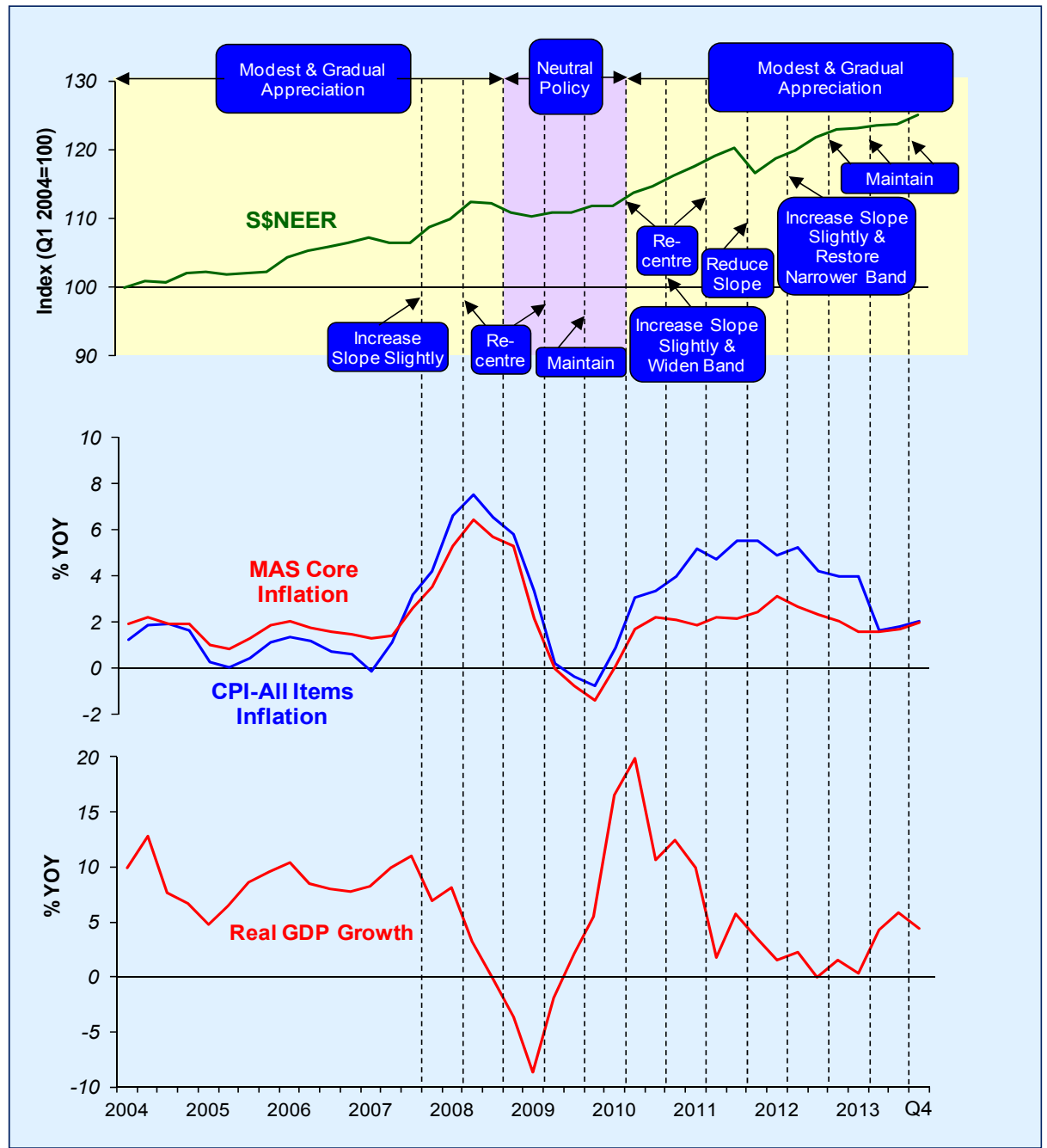
Since the GFC, Singapore's macroeconomic landscape has become more complex. Externally, exceptionally loose monetary policy in advanced economies had led to easy money with inflationary consequences for Singapore, exacerbating price pressures that stemmed from restructuring in the domestic economy. Singapore's monetary policy stance since 2010 has been calibrated and has begun to yield results: it has dampened imported inflation, restrained aggregate demand, and tempered domestic sources of inflation. Indeed, CPI-All Items inflation came in at 2.4% in 2013, a step-down from 5.2% in 2011 and 4.6% in 2012. MAS Core Inflation has also moderated, from 2.5% in 2012 to 1.7% in 2013. In addition, the coordinated series of macroprudential measures has succeeded in cooling the property market.

<sup>6</sup> The MAS has introduced seven rounds of macroprudential policies since September 2009 to cool the property market and promote sustainable asset prices. In June 2013, the MAS also introduced a total debt-servicing ratio (TDSR) framework for all property loans granted by financial institutions to individuals. The TDSR framework is structural in nature and will help strengthen credit underwriting practices and serve to encourage financial prudence among borrowers.

Property transaction volumes have eased, while the prices of private residential properties rose by 1.1% in 2013 from an average of 8.7% in 2010-12. The MAS continues to ensure that monetary policy is focused on keeping the economy on an even keel by bringing the path of GDP closer to its potential during this period of restructuring, even while specific areas of strong credit and asset price growth are dampened through targeted measures.

# Appendix 1

## Key macroeconomic variables and changes in the monetary policy stance



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