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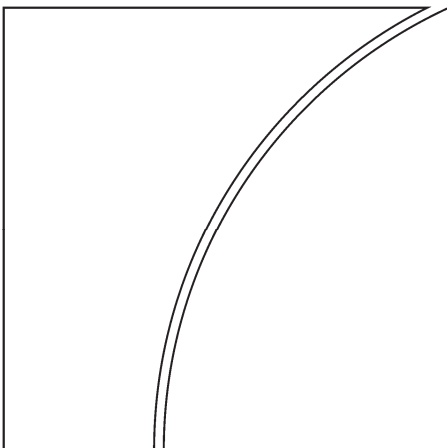
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Ensuring price stability in post-crisis Asia: lessons from the recovery

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Monetary and Economic Department

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Keywords: Central banking, international financial crisis, monetary policy frameworks in Asia, commodity prices, financial stability and monetary policy

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Ensuring price stability in post-crisis Asia: lessons from the recovery¹

Andrew Filardo

Abstract

Asian central banks have adopted monetary policy frameworks over the past decade that have, by and large, worked well both to ensure price stability during the pre-crisis period and to navigate the shoals during the recent international financial crisis. Inflation concerns in recent years nonetheless raise the possibility that existing monetary policy frameworks in Asia may be contributing to procyclical inflation swings. Three particular aspects of the policy environment are highlighted. They include the approach of monetary policy to commodity price cycles, to the uneven global recovery and to the new financial stability mandates.

Keywords: Central banking, international financial crisis, monetary policy frameworks in Asia, commodity prices, financial stability and monetary policy

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I. Introduction

The international financial crisis that began in 2007 tested the integrity of monetary policy frameworks in Asia. The region was hit hard by the financial storms originating outside the region, especially in late 2008 and early 2009. Macroeconomic performance and Asian financial markets suffered. One important question to consider is the role domestic monetary policy played in Asia during this period. This paper attempts to assess this role, arguing that, on the whole, monetary frameworks adopted prior to the crisis served the region well. However, the recovery period has presented a number of price stability challenges which suggest a need to refine existing frameworks.

The paper starts with some observations about how the region fared during the crisis and the v-shaped recovery. One clear lesson from the crisis is the critical importance of taking actions to strengthen economic and financial fundamentals during the good times so as to be prepared for the bad times. For monetary policy frameworks, this means committing to the goal of price stability, and consistently and credibly delivering on it. What is remarkable about this region is that credibility for price stability has not been tied exclusively to one type of policy regime. The region's monetary policy frameworks are quite diverse operationally (Annex Table 1). Some central banks closely control their exchange rates, some have explicit inflation targets and others have chosen eclectic regimes which focus on a range of policy goals. Nonetheless, the region has achieved a good record for price stability.

The Asian record during the crisis also highlights the importance of flexibly responding to economic and financial developments. Asian monetary policymakers could not completely shield themselves from the consequences of the problems in the West. At various points in the crisis, volatility spiked in the region and uncertainties about the future multiplied. The experience of the crisis illustrated that the Asian policy approach needs to change given the circumstances. During normal times, Asian monetary policy focused on price stability. During crisis times, however, the priorities of central banks were more varied, and required some flexibility in assigning weight to these priorities. This experience underscores the importance of putting more weight on financial stability when worrisome tail risks become immediate, at the cost of somewhat higher short-term inflation stability. One way to characterise this pattern of responses is to say that Asian monetary policy frameworks allow a fair amount of state dependence. In other words, what works well in normal times may not be best in periods of turmoil.

Operationally, the record also illustrates that, in periods of great uncertainty, Asian monetary authorities have not focused simply on the mean forecasts of key macroeconomic variables but have also responded to external tail risks. While this may seem obvious to many, the implications for monetary policy frameworks are significant and potentially far-reaching. When significant tail risks arise, a more aggressive monetary policy stance may be required, and central banks may need to show more tolerance for slippage in short-term inflation control.

Such unavoidable complexities make clear communication a priority. This means explaining why short-term deviations from (implicit and explicit) inflation targets may be appropriate, if not optimal, during a crisis and when coming out of a crisis. Questions remain about whether such a strategy should be formally incorporated in monetary policy frameworks, especially for central banks with formal mandates for financial stability.

The putative success in navigating the crisis does not mean to suggest that monetary policy frameworks in Asia are perfect. Indeed, the recovery period has presented a number of price stability challenges which I will address in this paper. These include significant questions about how central banks should respond to gyrations in commodity prices, how central banks should prioritise mandates for financial stability, and how central banks should deal with the likelihood of a persistently unbalanced global economy.

The paper proceeds as follows. Section II reviews Asia’s experience during the recent international financial crisis, highlighting the role monetary policy played. Section III then discusses several key price stability challenges now facing Asia’s central bankers, especially the concern that existing policy frameworks are inherently procyclical. Section IV offers some conclusions.

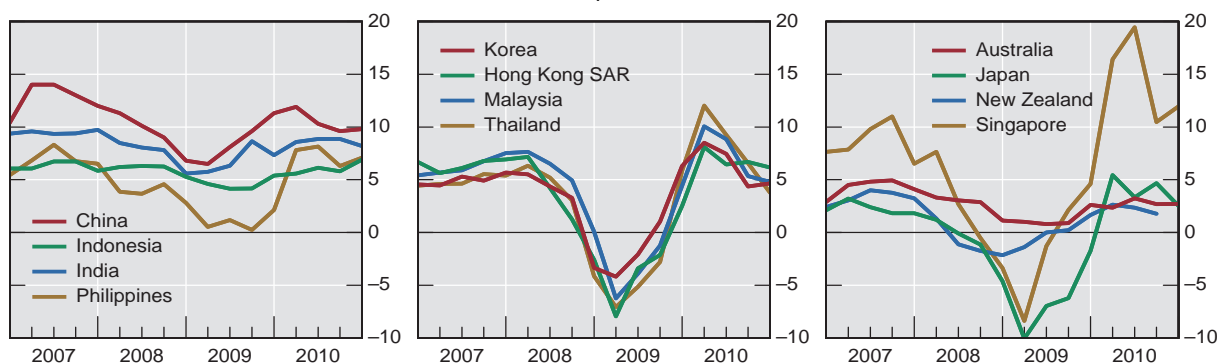
II. The value of strong fundamentals – a perspective from Asia

The v-shaped cyclical recovery in Asia points to both the underlying strength of the economies and financial systems in Asia, and the success of the policy responses. The main lesson learned from the crisis is the importance of building up economic and financial resilience during the good times as the best defence for the bad times. The impact of the crisis also highlights the fact that, no matter to what extent one’s house is in order, economies are still susceptible to adverse spillovers from distant shores. In an increasingly globalised world, these vulnerabilities are only going to grow.

Brief timeline of the international financial crisis

Often, the international financial crisis is portrayed as a singular event. When taking a broad-brush perspective, this may be reasonable. However, to better understand the challenges that were faced in Asia, it is important to remember that the international financial crisis in Asia had its own tempo. There were periods of tumult and periods of relative calm. At the risk of oversimplifying the complexities of such a large, diverse region, this paper highlights the policy successes and challenges with a chronology of the crisis in Asia that can be succinctly characterised in five phases: (i) the initial headwinds blowing from the West in 2007–08; (ii) the financial tsunami that hit the shores in late 2008; (iii) the immediate aftermath – dealing with the impact; (iv) the v-shaped recovery; and (v) the long and winding road to full normalisation.²

Graph 1
Real GDP growth¹
In per cent



¹ Annual changes.

Source: National data.

In many respects, it is important to begin with a snapshot of the economic cycle. After nearly a decade of robust growth and considerable gains in standards of living, Asian economies

² For a more detailed description, see Filardo (2011).

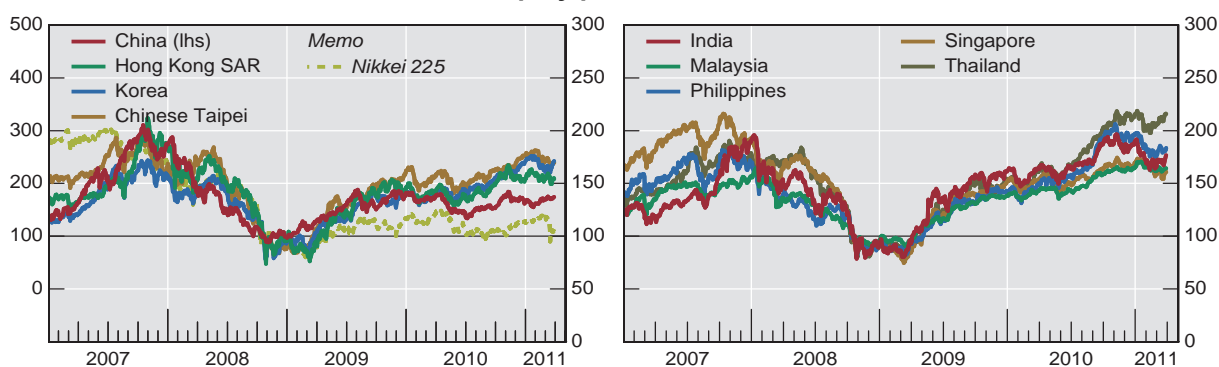
experienced an abrupt slowdown in late 2008. This was followed by a sharp recession and a strong recovery, beginning in some economies in early 2009. The downturn exhibited itself in various ways. Some economies saw a sharp contraction in output while others experienced a growth cycle recession (Graph 1).

(i) The headwinds (mid-2007 to mid-2008)

In this initial stage of the international financial crisis, Asia demonstrated the value of keeping one’s own house in order. Strong economic and financial fundamentals kept the region relatively resilient to the virulent stresses developing overseas. To be sure, some of the turmoil did create some dislocations in the region during this period. But on the whole, policymakers faced more urgent challenges from domestic overheating pressures than from external risks.

Graph 2

Equity prices in Asia¹



¹ In local currency; December 2008 = 100.
Source: Bloomberg.

The initial financial dislocations in the region reflected the particular stresses emerging in global financial markets. The pricing problems in global markets that developed early in the crisis were largely limited to certain classes of risky assets, as exemplified by the difficulties at BNP Paribas and later at Bear Stearns. The stresses in interbank markets in some advanced economies also led to large temporary liquidity injections being required to restore more orderly financial conditions in some Asian economies. These early rumblings, however, paled in comparison – economically and financially – with the seismic event that occurred in September 2008.

In Asia, it is important to remember that the direct spillovers during this phase were relatively modest financially and did not significantly alter the macroeconomic trajectories for output and inflation. The Asian exposures to the so-called toxic assets were rather limited. But, as we have seen time and again, the region was not immune from the more generalised decline in risk appetites of global investors. During these waves of global investor pessimism, low-grade borrowers in India, Indonesia and the Philippines lost access to markets for a while. And even high-grade borrowers faced higher financing rates, which were a burden for those economies with large external financing needs. Equity prices came off highs achieved late in 2007 (Graph 2).

Despite these sporadic problems in the region, the impact of these initial financial headwinds on the prospects for economic growth in Asian economies was modest. GDP growth was still expected to grow 4–5% in 2008 and 2009, according to forecast surveys at the time. Indeed, the relatively strong Asian growth performance fed increasingly popular views that the region had become sufficiently resilient to shocks from the rest of the world that it could be characterised as effectively decoupling from the West. While this view eventually would be disproven in the next phase of the crisis, the robust Asian economic activity in 2007 and 2008 was leading to overheating and concerns about price stability. Rising inflation

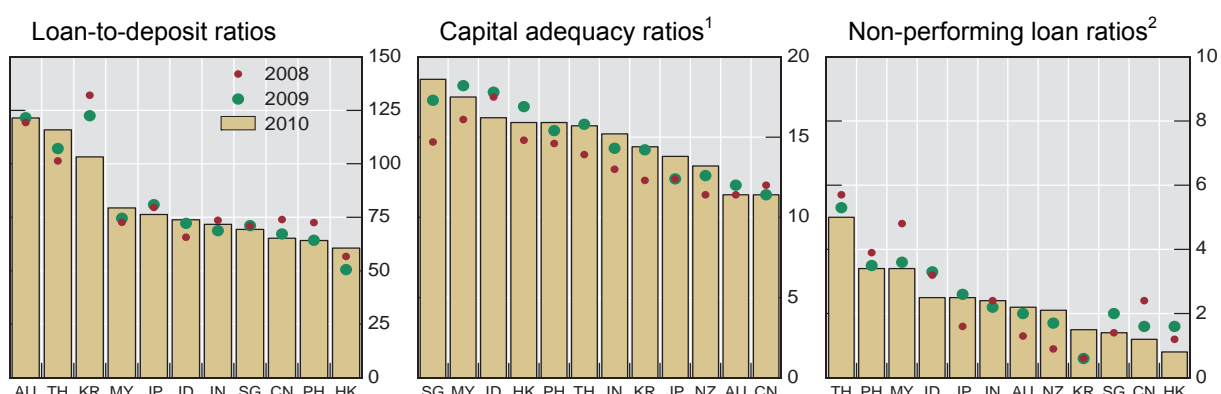
pressures in Asia came from energy and food prices. For commodity-producing economies, the higher prices also helped to offset the financial headwinds from the West.

It is also important to note the performance of banks during this phase of the financial crisis. Asian banks weathered this period rather well, continuing to report positive earnings and experiencing only modest losses. Capital adequacy ratios remained high throughout the period, non-performing loans were low and loan-to-deposit ratios were at a comfortable level (Graph 3). In part, the health and resilience of Asian banking systems stemmed from the relatively traditional bank business models. On the liabilities side, the banks rely heavily on retail deposits; Korea, though, relied on wholesale funding more extensively than the others. On the assets side, banks generally adopted the traditional originate-and-hold approach, and investments in complex financial instruments remained limited.

Graph 3

Bank soundness indicators

In per cent



AU = Australia; CN = China; HK = Hong Kong SAR; ID = Indonesia; IN = India; JP = Japan; KR = Korea; MY = Malaysia; NZ = New Zealand; PH = Philippines; SG = Singapore; TH = Thailand.

¹ Total capital as a percentage of total risk-weighted assets. ² Definitions may vary across countries.

Sources: IMF, *International Financial Statistics*; Bloomberg; CEIC; national data.

In part, the Asian banking model reflected the relatively conservative regulatory regime adopted in the 2000s, which itself reflected the lessons learned during the Asian financial crisis of the late 1990s. During the Asian crisis, weak banking regulatory systems contributed to financial system weaknesses. In the aftermath, regulators took a relatively conservative approach towards financial stability issues. Maybe more importantly, the regulated sector also took a conservative approach towards risk management, generally adopting practices that provided a high degree of resilience during the recent international financial crisis.

Asia also learned important lessons from its 1990s crisis about the value of fiscal discipline and the merits of possessing a war chest of foreign reserves. Fiscal authorities strengthened their policy frameworks in the 2000s, leaving them with considerable fiscal room for manoeuvre at the time of the international financial crisis. Fiscal surpluses were the rule rather than the exception, and government debt was relatively low by international standards; Japan has been a notable exception to this trend.

The region had accumulated massive quantities of foreign reserves throughout the past decade. Early on, central banks and finance ministries focused on building buffer stocks, motivated primarily by achieving reserve adequacy levels using various metrics (eg reserves as a share of GDP, as a share of three months of imports and of one year of short-term debt). Later in the decade, prolonged exchange rate intervention, which added further to reserve holdings, turned out to be a by-product of the exchange rate regime. As economies in the region resisted nominal exchange rate pressures, foreign reserves reached unprecedented levels. It should be noted, though, that some of these reserves and forward FX positions that were built before 2007 helped protect the region from credit rating

downgrades as the headwinds from the West picked up. And some economies used the stock of reserves to help provide dollar liquidity and stabilise their currencies.

In addition to all these strong fundamentals, monetary policy frameworks in Asia were built on a strong foundation of price stability. In the decade prior to the start of the international financial crisis, the region gained a reputation for low and stable inflation. Filardo and Genberg (2010a) find that it is very difficult to detect systemic differences in inflation performance across the region. The authors concluded that Asia has demonstrated that there is more than one way to achieve price stability.

Despite the differences in the monetary policy frameworks, the initial monetary policy response to the crisis was rather similar across central banks. In the early phase of the international financial crisis, monetary policy throughout much of the region was tightened, especially in India and Indonesia, where inflation rates reached double digits. Japan was a stark exception as it kept its policy rate at 0.5%, as its incipient recovery after a very long period of subpar performance seemed particularly vulnerable to the adverse developments in North America and Europe. Malaysia also kept policy rates relatively low as it expressed concerns about the downside tail risks brewing on the other side of the Pacific Ocean.

In sum, during this initial phase of the international financial crisis, Asia faced negative financial spillovers but, on the whole, domestic macroeconomic conditions dominated the policy environment. Rising inflation pressures were the focus of monetary policy.

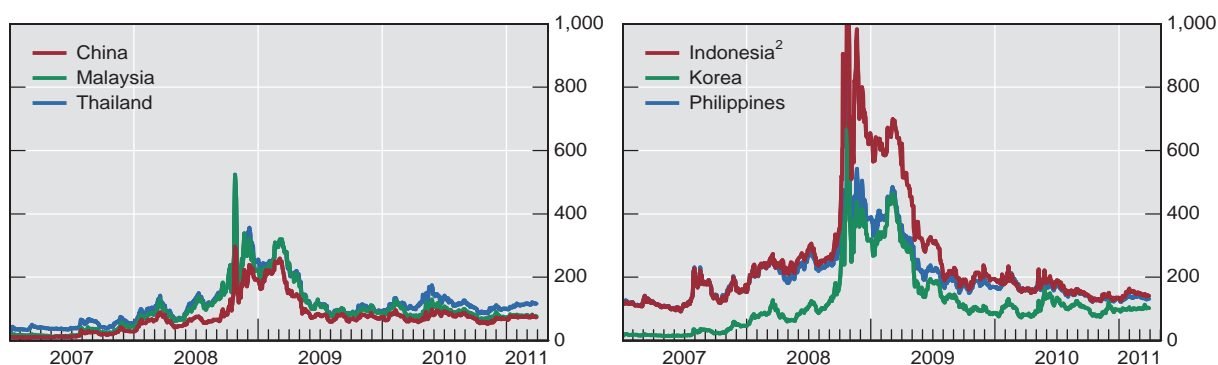
(ii) The financial tsunami in late 2008

Despite the strong economic and financial fundamentals in Asia going into the crisis, the region was not immune to the sharp intensification of the international financial crisis after the collapse of Lehman Brothers in September 2008. The arrival of the financial tsunami on the shores of Asia was fast and occurred with great intensity. The initial impact was felt in the financial markets as market confidence and risk appetite collapsed. Asia's equity indices fell sharply by the end of 2008, even after prices drifted down from the highs in 2007 through most of the year. Housing prices also faced downward pressures.

Possibly more revealing was the sharp spike in sovereign credit default swap (CDS) spreads in the region (Graph 4). Indonesia, Korea and the Philippines experienced the worst of it, but all were affected to varying degrees. The skyrocketing CDS spreads represented massive reassessments of risks. This provides solid evidence that gyrations in the pricing of risk are an important channel through which problems overseas can affect Asia. In this case, risk preferences of international investors swung from a large underpricing of risk before the crisis to a significant overpricing of risks after the Lehman bankruptcy.

Graph 4

Sovereign debt CDS premia¹



¹ CMA five-year CDS premia; in basis points. ² Indonesia's premia exceeded 1,000 on 22 December 2008, reaching a peak of 1,256.7 on 23 December 2008.

Source: Markit.

The change in risk appetite had significant consequences for the real economy. Along with a rapid reversal of commodity prices, there was a multiplication of downside risks to the economic outlook and a genuine concern about the consequences for financial stability in the region.

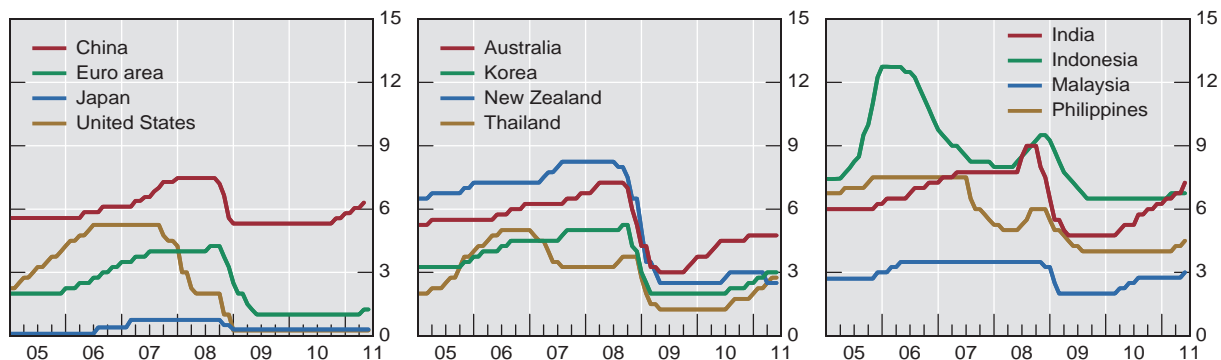
One interesting feature of the international financial crisis is the severe disruption in international, especially US dollar-denominated, money and capital markets. The disruptions rapidly pushed up financing costs faced by borrowers in Asia. Huge gross US dollar-denominated exposures in economies such as Korea proved very costly as Asian currencies depreciated. The disruptions happened in three ways: by directly reducing the availability of offshore credit to Asia-Pacific residents; by increasing demand from non-residents to borrow in Asia-Pacific markets; and by leading market-makers to scale back their activities. All this underscores the argument for more cooperation in ensuring a global financial safety net, with central banks playing a key role.

The freezing-up of short-term markets for US dollars in September and October 2008 led to serious repercussions for Asia. Offshore credit was collapsing, as were exports. These conditions forced firms needing to refinance dollar-denominated debts and derivative exposures to sell local currency assets and to seek US dollar borrowing from locals. Banks in India and Korea offered exceptionally high interest rates in October 2008 to raise US dollars from local sources. In other Asian markets, demand for US dollars led to some stress, but not severely so. A second way in which the disruptions in US dollar markets caused local financing conditions to tighten was that non-residents sought to tap Asia's markets and swap the proceeds for US dollars or other foreign currencies, pushing up local yields and credit spreads in the process. Third, international banks responded to the difficulties that they themselves faced in securing financing by scaling back their activities. As a result, Asian securities became more expensive to trade. International banks were important dealers not only for foreign currency securities issued by Asian borrowers but also for local securities and derivatives. Their retrenchment caused transaction costs to increase and liquidity to drop for a wide range of instruments.

Against this backdrop, monetary authorities cut policy interest rates across the board (Graph 5). A number of economies also cut their reserve requirement ratios. With trade collapsing, in part because of the expected drying-up of the supply of trade finance, special trade finance programmes were announced. The US dollar squeeze was also addressed by tapping the ample foreign exchange reserves that Asian central banks had amassed in the previous decade.

Graph 5
Monetary policy rates¹

In per cent



¹ Policy target rates or their proxies. For Australia, Reserve Bank of Australia cash target rate; for China, one-year lending rate; for Euro area, ECB minimum bid refinancing 1 week rate; for India, reverse repo rate; for Indonesia, one-month Bank Indonesia Certificate (SBI) rate; for Japan, uncollateralized overnight call rate; for Korea, overnight call rate; for Malaysia, overnight policy rate; for New Zealand, official cash daily rate; for Philippines, overnight reverse repo rate; for Thailand, 14-day repo rate before 17 January 2007; overnight repo rate thereafter; for US, federal funds rate.

Sources: Bloomberg, Datastream.

The lack of liquidity in various markets also complicated the monetary transmission mechanism; local currency liquidity supports were provided, including extending maturities of the borrowing and broadening of collateral eligibility for the borrowing. In addition, liquidity assistance in foreign currency was provided by the swap facility at the Federal Reserve with various central banks, which was in turn recirculated in markets.³ Reinforcing the thrust of the monetary actions, fiscal authorities announced plans for massive emergency fiscal stimulus.

(iii) The immediate aftermath – dealing with the impact

By late 2008, it became increasingly evident to policymakers that this financial tsunami that had hit the shores of Asia was quickly morphing into a full-blown macroeconomic meltdown. Exports fell sharply, with small, open economies being severely hit. Industrial production was collapsing as inventory liquidation accelerated the descent. At the time, it was not clear just how deep the bottom of the cycle would be and when it would come. As GDP contracted in most Asian economies, the prospects for growth in 2009 and 2010 were also marked down significantly. Hong Kong, Japan, Singapore and Thailand were the hardest-hit economies, with real GDP falling by more than 9%.

There were some silver linings in the dark clouds. China, India and Indonesia – the three largest emerging market economies in Asia – were able to grow at a rate of more than 5%. This helped to support economic activity throughout the region owing to the extensive regional supply chains. The associated boost to aggregate demand sustained relatively high commodity prices, which was important for the commodity-exporting economies. Moreover, the ability of these three large Asian economies to weather the storm laid the foundation for the eventual global recovery.

One lesson learned during the crisis is that those economies most vulnerable to a shock to external demand suffered heavily. Large economies with substantial domestic demand sectors and limited financial linkages globally weathered the storm relatively better than the small, open economies. It is important not to draw far-reaching inferences from this observation. These hard-hit economies also recovered quickly, and had benefited during the past decade from this external orientation. However, it does suggest that open economies may have to be more vigilant with respect to external spillovers and put in place more resilient economic and financial safeguards.

The credit crunch in the region compounded the macroeconomic decline. International banks retreated from the region, leaving fewer lenders, at the same time as risk appetite fell. Those economies with less highly-rated financial systems suffered more as risk spreads ballooned and, consequently, borrowers faced much higher external funding costs. Cross-border capital outflows aggravated the situation for those economies with fairly liquid and open equity markets, such as Korea. The retreat of international banks also precipitated cross-border banking outflows, especially in the financial centres of Hong Kong and Singapore.

One of the big surprises was the vulnerability of trade finance during the crisis. Trade credit in Asia-Pacific is typically denominated in US dollars and is short-term in nature; hence, it is thought of as being low-risk. However, as dollar liquidity dried up at the height of the crisis, and the FX swap market became dysfunctional, exporters found it difficult to roll over this form of credit. Domestic and regional banks partially filled the gap left by the international banks, and new guarantees from governments and international agencies helped too.

In the end, however, the containment of the downside risks can be attributed in large part to the confidence-restoring actions of the governments in the region. In addition to further

³ Australia, Japan and Korea drew on the swap lines while New Zealand and Singapore did not.

easing of monetary policy, large supplementary fiscal packages were arranged, in some cases complementing earlier packages.

A range of unconventional policy actions supplemented the conventional macroeconomic tools and further strengthened the monetary transmission channels. They included liquidity assistance in local currency, lending of foreign exchange, expansion of blanket deposit insurance, guarantees of non-deposit liabilities, bank capital injections, short-sale restrictions, relaxation of the mark-to-market rules and the purchase of assets. Explicit and implicit government guarantees also helped to restore the rather fragile market confidence during this period. As market fears receded and counterparty risks diminished, market sentiment turned around and became buoyant by March 2009. As mentioned above, foreign liquidity availability played a critical role in calming markets, especially when they became concerned about adequate US dollar liquidity. The large foreign reserve positions in the region released during the crisis augmented the Fed's bilateral swap arrangements in several key Asian economies. The renewed interest in ensuring foreign reserve adequacy in the future prompted the expansion of intra-regional bilateral swap arrangements and spurred progress towards the \$120 billion multilateral reserve pooling arrangement under the Chiang Mai Initiative.

(iv) The v-shaped recovery

By mid to late 2009, however, the success in the region started to shift the balance of risks from the downside to the upside risks of overheating. Accommodative monetary policy remained largely in place as much of the fiscal stimulus continued. Financial markets were on the mend. Another issue that arose during this time for regional policymakers was the prospects of disruptive capital flows. Capital flows returned to Asia, with varying intensities across time and economies. These included foreign direct investment, bond and equity portfolio flows, and cross-border bank lending.

One complicating factor during this period was the flare-up of sovereign debt concerns in Europe. This sent another wave of international investor pessimism across the globe, with global risk aversion reversing course for a while. Early on, regional asset prices were impacted in a manner consistent with the high correlation between Asian financial markets and global financial markets. By year-end, however, investors appeared to be fairly discriminating, at least geographically, in their appetite for risk; Asian fundamentals were sound and risk spreads reflected this.

Nonetheless, monetary policymakers faced difficult trade-offs. On the one hand, higher policy rates would attract more capital flows as international interest rate differentials widened. And, for those resisting currency appreciations, this meant a build-up of one-sided currency bets and the potential for carry trade dynamics. On the other hand, low policy rates and the associated prolonged stance of accommodative monetary policy would contribute to excessive credit creation and asset price bubbles.

The evidence during this period supports both of these concerns. Asia's equity prices rose rapidly above pre-crisis highs, and property prices in particular jurisdictions saw meteoric rises consistent with bubble behaviour; this was particularly the case in Hong Kong, Singapore and certain cities in China. The reluctance to rely on policy interest rates to stabilise macroeconomic forces saw policymakers experimenting with the use of administrative measures such as capital controls and macroprudential tools to rein in capital flow pressures and rapid credit expansion.

(v) The long road to full normalisation (2010 to the present)

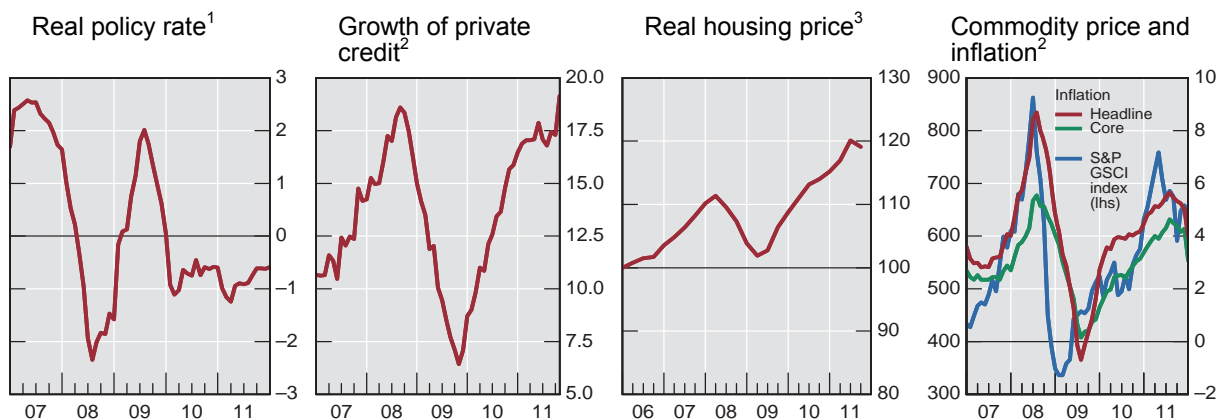
Despite the brisk recovery so far, the stance of monetary policy in Asia has remained rather accommodative. Indeed, by measures of the real policy interest rate, the stance of monetary policy has been extremely loose (Graph 6). As well, this assessment remains accurate even when accounting for the state of the business cycle and inflation pressures (Graph 7). This

evidence raises concerns that central banks in the region have kept policy rates too low for too long. The surge in credit growth, the re-emergence of asset price bubbles and pickup in inflation in the past year all support this conclusion.

Graph 6

Monetary policy, credit growth, housing prices and inflation in Asia

In per cent



¹ Policy target rates or their proxies corrected by forward- and backward-looking inflation components (equally weighted 12-month backward-looking CPI inflation and 12-month forward-looking consensus expectations); average of China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines and Thailand. ² Annual change; average of China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. ³ End 2005 = 100; average of China (three tier-one cities), Hong Kong SAR, Indonesia, Korea, Malaysia, Singapore and Thailand.

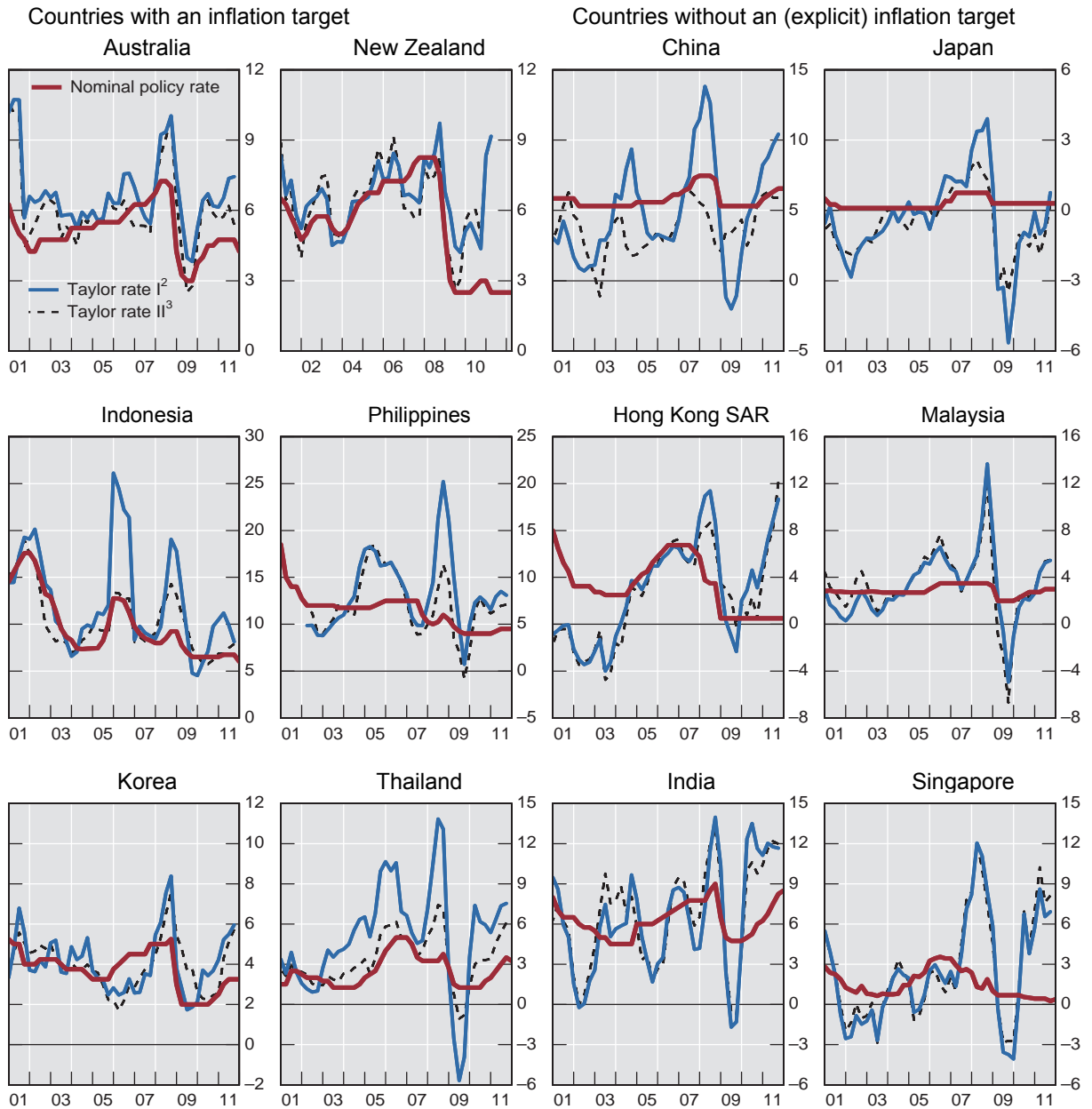
Source: IMF, *International Financial Statistics*; CEIC; national data.

This view would also suggest that the eventual inflation fight will be quite difficult. Given the lags of monetary policy, a sharp increase in nominal policy interest rates will be required to raise real policy rates sufficiently to rein in inflationary pressures already in the pipeline. If too aggressive, the monetary policy reaction could be disruptive and precipitate a dramatic slowdown, which would open up another set of policy challenges. This view would emphasise the point that monetary policy in the recent past has been too procyclical, thereby promoting boom-bust dynamics with respect to goods and services prices as well as asset prices.

It is important to note that one justification for the accommodative monetary policy has been the opening-up of downside tail risks associated with a fragile global economy. Sovereign risk concerns in Europe and balance sheet adjustments – for governments, corporations and households – needed in the West, more generally, represent significant tail risks obscuring an otherwise fairly bright outlook in emerging Asia over the medium term. Concerns persist that Asian economies are particularly vulnerable to these risks as long as prospects of a sustained recovery in the West remain shaky. Proponents of this tail risk view would highlight the point that easy monetary policies have helped to boost confidence by providing tailwinds behind the regional recovery – helping it deepen and broaden – and thereby improving its resilience in case of another negative shock emanating from overseas.

But this tail risk justification for keeping monetary policy accommodative is likely to weaken over time. As the global economy achieves a surer footing, the economic and financial tail risks from overseas will fade and it is important for the Asian policy stance to adjust accordingly. Even if the global economy were to remain mired in subpar performance, the balance of risks may nonetheless shift as concerns about the external risks are supplanted by domestic risks of overheating and boom-bust dynamics.

Graph 7
Policy rates¹ and those implied by the Taylor rule
 In per cent



¹ For Australia, Reserve Bank of Australia cash target rate; for China, one-year lending rate; for Hong Kong SAR, discount window base rate; for India, reverse repo rate; for Indonesia, one-month SBI rate; for Japan, overnight call rate; for Korea, overnight call rate; for Malaysia, overnight policy rate; for New Zealand, official cash daily rate; for the Philippines, overnight reverse repo rate; for Singapore, three-month interbank rate; for Thailand, 14-day repo rate before 17 January 2007, overnight repo thereafter. ² Calculated using $i(t) = r + \pi(t) + 0.5(\pi(t) - \pi^*) + 0.5y(t)$, with r the average ex post real policy rate over the sample; $\pi(t)$ the headline inflation rate; π^* the inflation target for six inflation targeting countries, 1% for Japan, five-year moving average of headline inflation for other economies; and $y(t)$ the output gap indicator. The real policy rate is the nominal policy rate minus annual core inflation. ³ Calculated using the equation in footnote 2, with $\pi(t)$ the core inflation; π^* the inflation target for six inflation targeting countries, five-year moving average of core inflation for other economies. Core inflation is the headline inflation excluding food and energy.

Sources: IMF, *International Financial Statistics*; CEIC; Datastream; national data; BIS.

Drawing some tentative conclusions about the design of monetary policy frameworks – revising the pre-crisis consensus

The policy responses in the crisis have highlighted the differences between policy priorities in normal times and those during periods of financial stress. Prior to the crisis, a consensus was forming about how central banks should respond. Central banks were expected to respond gradually over time to inflation deviations from their implicit or explicit targets and the state of the business cycle. This behaviour was exhibited in both advanced and emerging market economies in the decade before the crisis. As economies overheated and inflation pressures grew, central banks moved policy interest rates gradually upwards over an extended period. Often the policy moves were in 25 basis point increments. Overall, monetary policy responses appeared to be rule-based, gradual and signalled in advance.

What is remarkable is that the policy responses to the crisis were at such odds with the pre-crisis consensus. The monetary policy responses were bold and front-loaded, often including big moves in policy interest rates. In addition, unconventional measures were taken simultaneously to address particular stresses in financial markets that were adversely affecting the monetary transmission mechanism.

This approach demonstrated the importance of state-contingent monetary policy strategies. During normal times, monetary policy can be gradual and pre-announced. During periods of extreme stress, policy needs to be much more discretionary, front-loaded and bold.

These strategies, however, leave many questions open. To what extent should such state dependence be explicitly incorporated in existing policy frameworks? To what extent should this be rule-based rather than being left to the discretion of the policymakers? Is there a moral hazard associated with pre-authorising monetary policy tools to deal with unconventional situations? How does one weigh the moral hazard risks with the critical need for a quick response at the onset of a crisis? The answer to such questions may vary from economy to economy.

III. Three price stability challenges in Asia

So far, this is a success story for the region's central banks. Asian central banks adopted monetary policy frameworks over the past decade that have, by and large, worked well both to ensure price stability during the pre-crisis period and to navigate the shoals during the international financial crisis. This, of course, does not mean that there is no room for improvement.

Indeed, the inflation challenges seen in 2011 raise concerns that existing monetary policy frameworks in Asia may be prone to procyclicality. In this section, I highlight three key aspects of the policy environment that may promote inflation volatility and hence deserve attention:

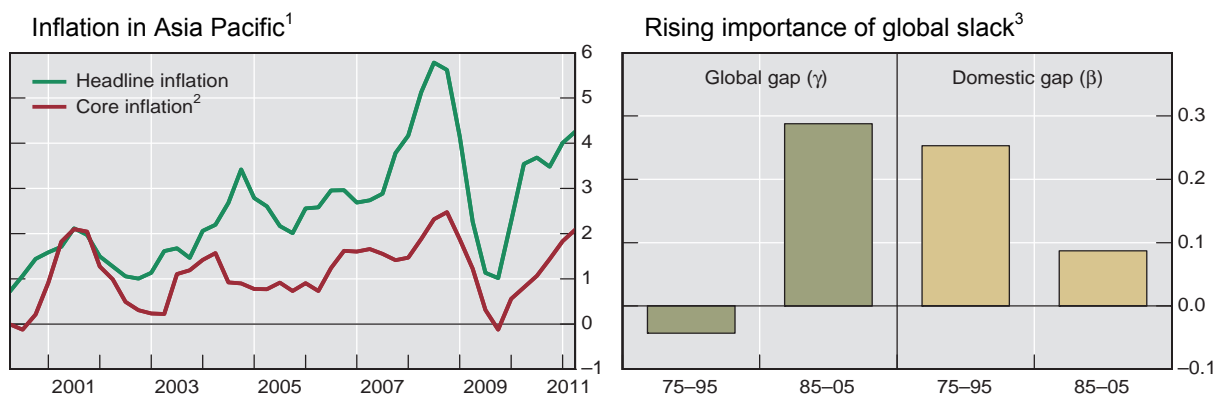
- How should Asian central banks deal with commodity price booms?
- How should Asian central banks operationalise their financial stability mandates without jeopardising price stability?
- How should Asian central banks address growing imbalances arising from the uneven global recovery?

1. Dealing with commodity prices

In the past five years, Asia has experienced two rounds of soaring commodity prices. This has raised a range of domestic policy challenges, especially with headline inflation persistently exceeding core inflation (Graph 8). Should central banks focus primarily on core

or headline inflation? More generally, how should central banks respond to commodity prices?

Graph 8
Inflation and global slack



¹ Annual change in consumer price index; in per cent; weighted average of Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand based on 2005 GDP and PPP exchange rates. ² Headline inflation excluding food and energy. ³ Regression coefficients γ and β for $IGAP(t) = c + \beta DGAP(t-1) + \gamma GGAP(t-1) + \varepsilon(t)$, where IGAP is the inflation gap, DGAP the domestic output gap and GGAP the import-weighted global output gap; the bars represent simple averages of the advanced industrial countries. See BIS (2006) for further discussion of the issues.

Sources: IMF *International Financial Statistics*; OECD; CEIC; Datastream; national statistics; BIS estimates.

One operational approach is to tighten monetary policy sharply at the first sight of a commodity price boom. Ideally, this would curb rising headline inflation pressures and, thereby, forestall second-round inflation effects (ie a wage-price spiral).

Another possible approach is to look through the commodity price gyrations, as they are relative price shifts and should only have a transitory impact on inflation. This would argue for greater weight being given to core inflation and medium-term inflation expectations.

Both approaches have their pros and cons. For example, responding aggressively to headline inflation can lead to volatility in policy rate changes, which could prove too disruptive. Prior to the crisis, central banks in the region tended to move policy rates incrementally over prolonged periods – on both the upside and the downside. This would suggest that central banks were responding to a less volatile inflation guide, such as core inflation.

However, responding to core inflation may lead to a delay in responding to incipient inflation pressures before they become embedded in factor market prices, especially when headline inflation exceeds core inflation for extended periods of time, as has been the case in emerging market economies.

One difficulty in drawing strong conclusions at this time is that both commodity price booms in the past five years ended because of an unexpectedly sharp economic slump in the advanced economies. In 2008, the financial crisis eventually took its toll on global growth and commodity prices; in the recent run-up in prices, sovereign debt risks and a pronounced softening of the global recovery cooled commodity markets.

These large exogenous external shocks that ended the commodity price booms have left us wondering what might have happened if these adverse international spillovers did not come along and act as a powerful headwind against the inflation pressures. What would Asian central banks have had to do? What would have been the consequences?

The experience in India may offer some insights worth considering. Its economy and financial markets are relatively closed when compared with other emerging Asian economies from a

globalisation perspective. So, the adverse international spillovers have been more muted. From this perspective, it may not be such a surprise that the country had a much bigger deterioration in its inflation picture in 2011 than other emerging Asian economies.

Moreover, in light of the fact that the two commodity price booms occurred in such a short period of time raises questions as to whether the region will remain particularly prone to swings in the future. For policymakers, it is also important to consider the possibility that existing monetary policy frameworks may have contributed to the amplitude of the boom-bust commodity cycles. The evidence so far suggests the answer might be yes.

The evidence indicates that the recent commodity booms have been driven by strong growth performance in the emerging markets. The growth shifted global commodity demand out on an increasingly steeply sloped commodity supply curve. Two key arguments support this view (Inamura et al (2011)). First, a greater share of global demand is accounted for by emerging market economies. Second, emerging market demand tends to be more commodity-intensive than the demand in the advanced economies. This partly reflects the relatively high demand for goods over services in the emerging markets.⁴ The bottom line is that, in the past two commodity cycles, strong global demand led to the surge in prices.

How should Asian central bankers respond? The answer to this question depends crucially on the source of the shocks driving commodity prices. If a surge in commodity prices is driven by a supply shock, the lesson learned during the experiences in the 1970s and 1980s applies: central bankers must focus on the impact of the rise in commodity prices on inflation expectations. There have been numerous examples of central banks that have looked through the gyrations of commodity price shocks, as long as the increase in prices did not appear to feed an increase in medium-term inflation expectations – the so-called second-round effects.

However, as noted above, soaring commodity prices in recent years do not appear to have been the result of a supply shock, but of a persistent global demand shock. In other words, the higher prices have been the result of a shift in global demand along a more steeply sloped aggregate supply curve. One telltale sign that it was mainly demand, and not supply, driving up commodity prices is that output grew robustly, even as prices of all types of commodities rose.

The following thought experiment highlights the nature of the policy trade-offs in this case of a positive global demand shock. Consider the existence of a hypothetical global monetary authority. The policy prescription is straightforward when the commodity price increases are signalling strong global aggregate demand. This hypothetical global monetary authority would tighten monetary policy by raising the real policy rate sufficiently to counteract the underlying shift in aggregate demand. And, if calibrated correctly, non-inflationary sustainable growth would be achieved and commodity price pressures would abate. However, this prescription arguably stands in sharp contrast to the way in which many central banks addressed the run-up in commodity prices in 2006–08 and in 2011.

What might account for this discrepancy between theory and practice? One difficulty in operationalising this theoretical policy prescription at the national level is that a global

⁴ What is not addressed when analysts suggest that “emerging market economies are responsible for the run-up in commodity prices” is the allocative efficiency of commodities. If emerging market economies are much more productive than the advanced industrial economies, should commodities not naturally flow to the emerging market economies? Put another way, could the run-up in prices not be seen as an insufficient reduction in demand by the advanced economies?

demand shock may look like an external supply shock to policymakers.⁵ This would be particularly the case when an economy is a large net importer of commodities.

In this situation, there is a temptation for central banks to dwell on the external nature of the shock. For a small, open economy, it might be difficult to see how its policy response alone would materially influence global demand. As a result, without some common understanding that leads to a simultaneous tightening of monetary policy across many economies, a domestic monetary authority would have the incentive to wait until surging commodity prices were showing up domestically in inflation expectations.

Of course, if every central bank were to follow this prescription, monetary policy settings would tend to be too accommodative during the upswing in commodity prices. In other words, without better central bank cooperation, there would be a tendency for central banks to delay in tightening policy and, as a result, fall behind the inflation curve in the way a global monetary authority would not.

This highlights the need for greater central bank cooperation to ensure that narrow domestic monetary policy incentives do not foster an environment of boom-bust cycles at the global level. How can we achieve such an outcome? Policy coordination would be one option. But, given the reluctance to closely coordinate policy responses in the region, this option may be unrealistic. So, in the absence of overt monetary policy coordination, a key question is whether there is a cooperative strategy, which, if generally agreed to, would minimise this procyclical tendency.

One possibility is to come to a common understanding that central banks should put more weight on headline inflation when commodity prices appear to be driven by global demand than on measures of inflation that abstract from food and energy prices. The benefits of this approach are that it can easily be incorporated into existing policy frameworks and that it would help to reduce the procyclical nature of policy response to commodity prices.

Naturally, there are factors other than global demand shocks affecting commodity prices that would need to be considered when redesigning monetary policy frameworks. A surge in commodity prices might reflect a supply shock or price frothiness due to speculation associated with commodity market financialisation.

In the supply shock scenario, policymakers may want to heed the monetary policy lessons of the 1970s and 1980s. For instance, the experience with oil price shocks in the 1970s and 1980s taught monetary policymakers a key lesson: it is important to take strong policy actions to prevent second-round inflation effects, but otherwise ignore the gyrations in prices. When this focus on second-round effects was applied during the second oil crisis, central banks such as the Deutsche Bundesbank, the Bank of Japan and the Swiss National Bank achieved much better inflation performance.

In the case of a growing financialisation of commodity prices, the appropriate policy response seems consistent with this supply shock approach. Namely, the monetary authority with a credible medium-term inflation anchor can follow a strategy of constrained discretion, ie “looking through” the transitory price shocks when setting monetary policy. As long as inflation expectations remain well anchored, the argument goes, relative price movements would lead to some volatility of headline inflation but underlying (eg core) inflation would remain on target without unnecessary gyrations in nominal policy rates.

⁵ This may sound like pure semantics, but it is also an important distinction in terms of communicating to the public the accurate conceptual framework being used by central banks; this may also be valuable for internal deliberations inside the central bank.

These alternative interpretations of the drivers of commodity prices underscore the importance of identifying the nature of the shocks when determining the appropriate monetary policy response and especially when communicating the reason for the monetary policy decision to the public. Raising policy rates when inflation expectations appear to be well-anchored is never an easy situation for central bankers to find themselves in. This is more likely to be the case when global demand shocks look like supply shocks from a domestic perspective.

Of course, the extent to which all these factors matter will differ between net commodity importers and net commodity exporters. For commodity exporters, a rise in commodity prices would result in an increase in incomes and in incentives to boost production through more investment and hiring. This would argue for a more aggressive tightening response of monetary policy than in the case of central banks in commodity-importing economies. In the latter case, higher prices would tend to have a less expansionary effect.

Taking all these considerations into account, what might this analysis suggest now? Commodity prices have come off their highs established in 2011. This suggests that there is less urgency to normalise policy rates. If, however, accommodative monetary policies in emerging economies and the advanced economies eventually revive global economic growth, it is possible that this break in commodity prices may end up being transitory. Staying vigilant to such a possibility is important for policymakers to stay ahead of the inflation curve.

2. Dealing with financial stability mandates

Financial stability issues have taken on an increased importance in Asia since the international financial crisis. This is not to say that Asian central banks ignored them in the past. Quite the contrary. Asian central banks and regulators have had a long history of using tools which are now often referred to as macroprudential tools. Nonetheless, there has been renewed interest in the appropriate role that Asian central banks should take with respect to financial stability concerns.

How should financial stability concerns factor into existing monetary policy frameworks? It is also important to consider the appropriate conceptual frameworks within which to consider the trade-offs between price stability and financial stability. In particular, how should we think about the priorities for both price stability and financial stability, what tools are most effective, and how do these multiple mandates present communication challenges? I will now turn to each one of these questions.

General issues

To agree that central banks have a financial stability mandate is a starting point, not an ending point, in a discussion of monetary policy frameworks. To operationalise the financial stability mandate, there needs to be an understanding of the central bank's responsibilities and the governance rules that assign particular tasks to the central bank relative to other governmental bodies. In every case that I know of, financial stability is not the sole responsibility of the central bank. Regulators and supervisors of banks, insurance companies, financial markets, etc all have roles to play.

It should not seem odd that central banks naturally have some responsibility for financial stability. Price stability – a central bank's primary mandate – is not only an important objective independent of financial stability concerns but is also a precondition for financial stability. Therefore, at a certain level, there is no inherent contradiction between a central bank's role in maintaining price stability and its role in contributing to financial stability. In the best of all worlds, the goals of price and financial stability are self-reinforcing in a positive way.

It is also the case that financial instability has implications for price stability. Financial instability can result in entrenched deflation which, in turn, can lead to further financial

instability as real debt servicing costs build. And there have been experiences where financial instability has led to runaway inflation expectations. This has been the case when markets saw no alternative other than monetisation of the problems. In either case, financial instability and price instability can generate a vicious circle. Such linkages provide a clear justification for a pivotal role for central banks in ensuring financial stability.

A key question is what should central banks – using their policy tools and central bank balance sheets – do, above and beyond ensuring price stability, to contribute to financial stability?

It is important to understand that addressing financial stability concerns with central bank tools can lead to some compromise on short-term inflation objectives. Keeping policy interest rates below the level justified by inflation and output concerns alone for too long and expanding the balance sheet too much raises inflation risks. This policy dilemma highlights the need for central banks to prioritise their mandates for both price stability and financial stability.

Assuming a social, economic and political consensus for increased central bank responsibility for financial stability, a number of operational issues need to be addressed. In this short space, I will highlight only three key issues relevant to Asian central banks. First, what priority should a central bank attach to financial stability vis-à-vis price stability? Second, what tools should be used? Third, does a greater role for financial stability significantly elevate communication and accountability challenges?

Preferences for price stability and financial stability – taking on the trade-offs

What priority should a central bank ascribe to financial stability? This comes down to the specification of preferences for financial stability in monetary policy frameworks. Conceptually, these preferences summarise the governance arrangements that the government (implicitly or explicitly) agrees to with the central bank. To illustrate the importance of getting the preference ordering right, it is useful to consider a few alternatives.

At one extreme is a view that price stability takes primacy over all other objectives. This is sometimes referred to as a lexicographical approach (Fischer (2008)). In this view, central banks focus exclusively on inflation control, as long as inflation falls outside the preferred target range. If in the target range, however, then central banks would use their tools countercyclically to nudge economic activity towards its sustainable growth path. And only if inflation and output were sufficiently close to their objectives would central banks then turn to financial stability concerns (and other issues such as exchange rate volatility).

This prioritisation scheme has some appeal for central banks that see the inflation objective as paramount. If a credible framework, it would go a long way towards building central bank credibility for price stability. But some might be tempted to refer to such preferences as those belonging to "inflation nutters". To disregard the state of the business cycle and the extent to which there are financial stability risks when inflation is a bit too high or a bit too low seems to be at odds with the traditions of Asian central banks.

Alternatively, central bank preferences may reflect a smoother trade-off between price stability and financial stability, even if they were state-contingent. Such preferences might capture the notion that central bankers may, by and large, ignore financial stability issues during normal times but elevate the issues during turbulent times.⁶ During times when financial instability threatens to severely impact output and inflation dynamics beyond the

⁶ One way of being more precise about the preferences is to derive them from a microfounded macroeconomics model (eg Disyatat (2010)).

conventional forecast horizons, central banks would factor such considerations into their decisions about the appropriate monetary policy stance. Operationalising this approach is still quite fraught with difficulties. To formalise such monetary policy responses, we need a much better understanding of crisis dynamics (Nakornthab and Rungcharoenkitkul (2010)) and some understanding of the governance arrangements that arise when financial regulators fail to achieve their goals and crisis management largely falls to the central bank (Filardo and Genberg (2010b)).

Finally, when addressing the tail risks of financial instability, it is important that central banks act symmetrically on the way down as well as on the way up. We have seen central banks in the region act aggressively as the international financial crisis intensified and spilled over geographical borders. To prevent a systematic procyclical bias during the recovery phase, central banks need to tighten policy pre-emptively as the tail risks fade. The evidence to date, however, suggests that the policy response may be asymmetric, ie easing aggressively on the way down and tightening very cautiously on the way up. If sufficiently asymmetric, the accommodative monetary policy may sow the seeds for financial instability in the future.

Monetary policy tools – complements or substitutes. The desire of a central bank to promote both price stability and financial stability may also be limited by the number of effective tools at its disposal. In this section, I focus first on the use of policy interest rates and then on the use of macroprudential tools.

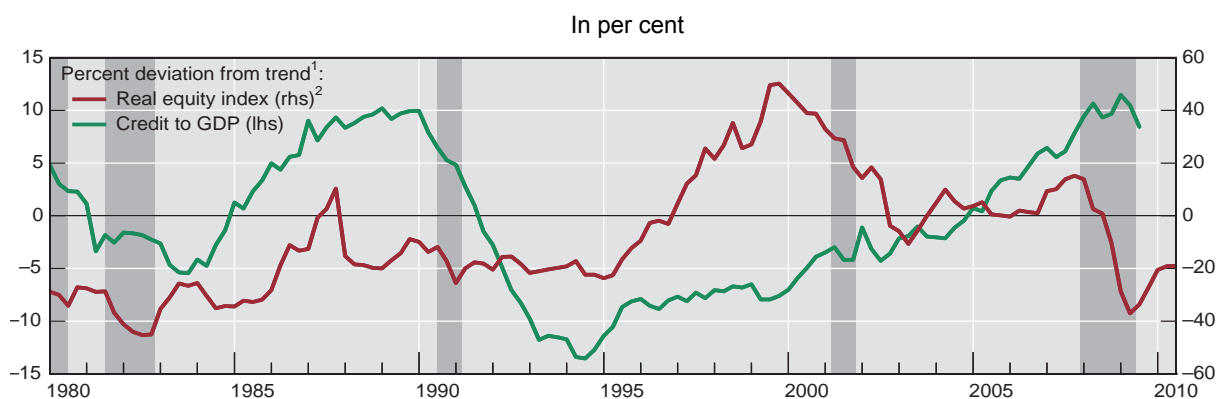
The conventional argument against using a single monetary policy tool to pursue multiple goals is embodied in the classic assignment problem – which emphasises the need for one independent tool for each independent goal. The origin of this advice comes from the operations control literature. While the logic behind this proposition is mathematically precise, the applicability to practical central banking is less than perfect for two important reasons. First, as argued above, the multiple goals of central banks sometimes are not completely independent. Take, for example, the goals of financial stability and price stability. Achieving price stability is rather difficult if the economy is suffering financial instability. Second, time horizons matter. While acute financial turmoil may require aggressive monetary accommodation in the very short run, this does not mean that medium-run price stability goals have to be jettisoned. It means that some of the discretion used to address near-term problems will be constrained, as time goes by, as to how much the central bank can do while preserving price stability.

But central banks need to be careful not to conclude that policy interest rates can do it all. While low policy interest rates can help support financial stability in periods of turmoil, there are inherent limits to their usefulness. When business cycles and financial cycles are synchronous, policy interest rates may be effective in, metaphorically, killing two birds with one stone. While there are times when the two cycles move together, we have to remember that the cycles empirically can have very different paths over the longer run (Graph 9).

More recently, the desire to keep policy interest rates in Asia low despite the robust recovery has introduced another dimension to the policy mix: the interest in macroprudential tools as the first line of defence to restrain credit growth, and hence economic activity, without having to resort to the raising of policy interest rates. This approach is based on the conceptual view that macroprudential tools and policy instruments are substitutes. While there is some evidence over short periods of time to support this view, the nature of the tools and the nature of the business and financial cycles argue against this conclusion as a general proposition.

In addition to the macroprudential tools, several central banks (eg China and the Philippines) have been relying on reserve requirement ratios more heavily than in the past to lock up liquidity in the financial system. This tool can be useful in liquidity control, but it also acts as a tax on the banking system. High reserve requirement ratios provide incentives for savers to circumvent the implicit tax on deposits held in banks by moving into non-bank financial institutions.

Graph 9
Business, credit and equity price cycles



¹ The trend component for the two series are calculated with the HP filter lambda set at 400,000. Vertical shading represents periods between National Bureau of Economic Research's peak and trough dates. ² Real equity prices calculated by deflating national stock index with the consumer price index.

Source: IMF, International Financial Statistics.

The evidence from Asia indicates that persistent macroeconomic imbalances require time-tested macroeconomic tools in order for central banks to be confident of achieving lasting relief – ie appropriate settings of policy interest rates, sustainable fiscal policies and flexible exchange rates. Financial imbalances require sound micro- and macroprudential tools that are well-calibrated. It is important to rely on the right policy tools for the right problems. Over time, macroeconomic tools and macroprudential tools are complements, not substitutes.

Communication and accountability challenges. Clear communication and accountability for actions are two important elements of credible monetary policy frameworks. Multiple mandates can make this a challenge, especially if actions taken to address one mandate compromise the effectiveness of achieving the second.

In the case of overheating when asset prices are soaring and inflation pressures are surging, a tighter monetary policy addresses both concerns simultaneously. Communicating these reasons for tightening monetary policy can still be a challenge, but it is clear that economic overheating and the feeding of financial stability risks call for higher policy interest rates.

The challenges are much greater if the tail risks of financial instability are flaring up as inflation pressures rise – as has been the case over the past year in Asia. With sovereign risk concerns reaching an acute stage in Europe and renewed prospects of a double-dip recession in the United States, another pessimistic wave of global risk aversion could not be ruled out in 2011. At the same time, emerging Asian economies continued to experience a fairly robust recovery, especially the largest economies. The tail risks of global contagion called for a somewhat easier stance of monetary policy; the inflation picture, in contrast, called for a continued pace of policy rate normalisation.

For explicit inflation targeters, this challenge may raise issues of credibility. As tail risks rise, central banks may want to take out some insurance against such tail risks. In terms of the stance of monetary policy, that typically means that policy interest rates would be kept below what they would have been based solely on price stability concerns. Moreover, there is also the issue of tail risks and accountability of inflation performance. Conceptually, taking out insurance against these tail risks means that if these risks do not materialise, the ex post stance of monetary policy would have been too accommodative; of course, it is important to recognise that ex ante it might have been set appropriately.

Even though financial market participants may understand this distinction between ex ante and ex post, it may be more difficult to explain this to the general public, especially when inflation surges above target. The ex post justifications may be seen as a convenient way to rationalise a mistake. This possibility calls for clear communication ex ante, ie either at the

time that tail risks are rising or when designing monetary policy frameworks that explicitly incorporate such contingencies. The past decade or so is replete with examples of well-anchored long-term inflation expectations, even when inflation targeters persistently missed their targets. Clear communication has been the key to the success. Over time, however, credible monetary policy frameworks are more likely to develop in an environment where word and deed are consistent.

The communication challenges, daunting as they may be at times, also put a premium on central banks refraining from promising too much with respect to financial stability. Not only are there natural trade-offs between financial stability and price stability at times, but also other government policymakers may have a comparative advantage in dealing with financial stability issues. These policymakers include the financial regulators and supervisors. Ideally, financial stability issues would fall into their purview, freeing central banks to focus exclusively on price stability. However, experiences in the past few decades have made it clear that other authorities may not always take sufficient actions to ensure financial stability.

In periods of financial instability, central banks naturally will be called on to play a pivotal role in crisis management. Clarity about the role of the central bank in advance of a crisis period can clarify the action plan during a crisis. Some of this clarity, of course, has to be judged against the risks of moral hazard. Promising to prop up markets may create incentives for private investors to take one-sided bets in financial markets which, in turn, may increase the odds of financial turmoil. An alternative approach is to engage in “constructive ambiguity”. The costs and benefits of constructive ambiguity are still debated.

The possibility of boom-bust financial cycles and the enhanced responsibilities of central banks with respect to financial stability both indicate that existing monetary policy frameworks in Asia may need to build in more flexibility. Strict inflation-targeting frameworks may be too constraining to address the full range of relevant policy risks, as discussed in Filardo and Genberg (2010b). The risks that typically apply to output and inflation are fairly well understood by central banks and researchers – these are in the category of the known unknowns. Those risks associated with fragile financial systems are less well understood – these are largely in the category of the unknown unknowns; it should be noted, though, that in the post-crisis period considerable progress is being made to clarify the nature of these types of uncertainty.

These two different types of risk might call for some refinements of monetary policy frameworks in emerging Asia in the direction of the multi-pillar approach of the ECB and the Bank of Japan. Of course, one size does not fit all. This general approach would have to be tailored to each central bank’s particular economic and financial environment. To the extent that such frameworks fit the needs of Asian central banks, explicit adoption could raise accountability during times of financial stress and ultimately add to central bank credibility.

3. Dealing with an uneven global recovery

Strong forces are preventing a speedy and balanced global recovery. The uneven nature of the global recovery is likely to persist for some time and presents considerable challenges to emerging market economies in general and emerging Asia in particular. So far, emerging Asia has recovered despite lingering problems in the United States and Europe. And most forecasts now suggest that the United States and Europe will continue to log subpar growth for years to come, with fiscal and financial system problems threatening to scuttle any signs of a nascent sustained recovery. Emerging Asia, on the other hand, is expected to grow robustly, especially if the region is able to encourage an orderly rotation of demand from an export orientation to sources of domestic demand.

Let me briefly describe four policy challenges that arise from the uneven global recovery.

(i) Easy money, fear of floating and capital flows. As noted above, the region has pursued an accommodative monetary policy stance for quite a while, with real policy rates either low or

even negative. This conclusion is also consistent with evidence from estimated Taylor-type rules. To some extent, the accommodative policy is explained by the tail risks brewing offshore, especially in Europe and the United States. Part of the explanation reflects a fear of floating.⁷ The region has kept interest rates low to prevent a widening of international interest rates that would naturally promote capital flows to the region. So far, however, capital flows into the region have been, on the whole, much less disruptive than expected earlier.

One reason capital flows to the region have been more moderate than expected has been the relatively high level of global risk aversion (Forbes and Warnock (2011)). This does not suggest that the fears of disruptive capital flows have truly dissipated. Given the strong medium-term fundamentals in the region, it is still possible that a veritable wall of liquidity could hit the shores of Asia. This might be the case if the global recovery proved to be much stronger than currently envisioned and global risk aversion declined markedly.

One approach to slowing strong capital inflows is to keep policy interest rates low enough to dissuade international investors from shifting their portfolios towards Asia. But low interest rates promote rapid credit growth, frothy asset prices and overheating in the region. In such an environment, a risk-taking channel (ie one that leads to a rapid build-up in leverage) could be activated (Borio and Zhu (2008)). Another approach is to change the monetary-fiscal mix. Tighter fiscal policy could help mitigate the impact on the longer end of the yield curve of an increase in short-term interest rates. Finally, more flexible exchange rates discourage carry trade capital flows to the region for any given stance of monetary policy. Of course, the adoption of a more flexible exchange rate regime has to be weighed against the associated costs of greater exchange rate volatility.⁸

(ii) External threats still worrisome. At the present time, risks brewing outside Asia remain elevated. The housing-related problems in the United States and issues of fiscal sustainability and sovereign risk concerns in the G3 do not seem to be reaching a quick resolution. There certainly is a chance of a surprise on the upside, but much of the concern is on the downside. The prospects for a double dip, a jump in global risk aversion and considerable volatility cannot be ruled out. In such an environment, policy frameworks in Asia may need to become more defensive and respond more symmetrically to tail risks as they rise and fall. As noted above, responding to tail risks may complicate central bank communication with the public, especially for inflation targeters. If the tail risks do not materialise, inflation is likely to exceed the central bank's target, at least in the near term.

(iii) Further rounds of quantitative easing (QE). Recent research by Chen et al (2012) finds evidence of significant spillovers of QE programmes in the United States to emerging Asia (Table 1). One interpretation of this research is that as long as existing exchange rate regimes remain in place, further rounds of QE and very easy monetary policy in the West will have important implications for the policy environment in Asia. At the same time, official Asian purchases of US Treasuries drive down long-term yields and tend to strengthen the dollar (Warnock and Warnock (2009)). Foreign official holdings of US Treasuries run around \$2.5–3 trillion (Turner (2011)).

As long as policy interest rates in emerging Asia track the low rates in the West and long-term rates are kept low, the threat of excessive domestic credit growth and asset price boom-bust dynamics will be ever-present. Of course, if Asian central banks pursue the option to raise policy rates, this would lead to less domestic credit creation. But such an approach would attract more capital inflows. This suggests that Asian central banks responding to

⁷ This behaviour is consistent with the fear-of-floating hypothesis. For issues in SEACEN economies, see Pontines and Siregar (2010).

⁸ See eg CGFS (2009) and Engel (2010).

future QE programmes in the West, using the policy interest rates alone, cannot choose the size of the resulting credit boom; they can choose only the source of the credit creation. The lower the domestic policy interest rate, the greater the domestic share of credit creation relative to external capital inflows.

Table 1

Cumulative two-day change around announcement days of QE for Asia¹

	Announcement period	Total amounts (billions)	Gov't 2-year yields (bps)	Gov't 10-year yields (bps)	Corp' bond yields ² (bps)	Sov'gn CDS premia ³ (bps)	Equity prices (%)	FX against USD ⁴ (%)	Commodity prices ⁵ (%)
US QE1	Nov 08 to Nov 09	\$1,400	–45.37	–79.70	–52.90	–46.92	10.75	4.49	–2.57
QE2	Aug 10 to Nov 10	\$600	–9.06	–9.16	–14.84	–4.80	1.53	–0.36	–2.95

¹ Simple averages of China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. ² Excluding Indonesia. ³ Excluding India and Singapore. ⁴ A positive change indicates an appreciation against the US dollar. ⁵ S&P GSCI composite index, in US dollar terms. ⁶ Due to data availability, two- and 10-year yields exclude China, Indonesia and Malaysia; for sovereign CDS premia, data unavailable.

Sources: Bloomberg; Datastream; Markit; national data; BIS calculations. From Chen et al (2012).

In addition, QE programmes also raise the risk of excessive offshore USD credit creation. To date, the data have shown a sharp increase in cross-border USD lending to Asians (Graph 10). At the same time, USD liabilities have not risen. This suggests that there could be a growing currency mismatch being taken on the books of banks. It also suggests that even though there is only modest evidence that QE in the United States has led to massive carry trades from US-domiciled banks, there appears to be a spillover channel through offshore US dollar credit creation (Borio et al (2011)). This channel exists because of the internationalised nature of the US dollar and needs to be closely monitored.

As noted above, Asia has been relying on macroprudential tools to control credit growth, credit quality and economic activity for a while now. From a macroprudential perspective, this is sensible. But over time, as long as real lending rates are low, the financial system may find it easier and easier to evade some of these administered measures. This suggests that monetary authorities will eventually have to rely more on policy interest rates – and allowing currency appreciation – to prevent macroeconomic imbalances from growing. Letting regional policy interest rates track those in the West, especially in the case of future rounds of QE, may become a more risky strategy going forward. Macroprudential policies cannot effectively substitute for macroeconomic rigour.

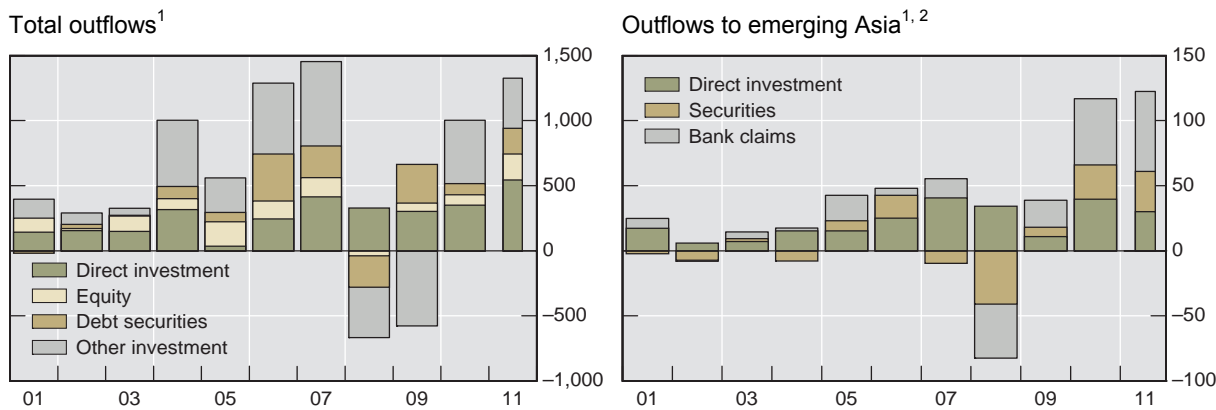
(iv) Foreign exchange asset accumulation, central bank balance sheets and financial stability risks. Finally, there are the challenges arising from the exchange rate regimes in Asia and their implications for central bank balance sheets. In the past decade, the region has been accumulating massive foreign reserve assets (Graph 11).⁹ Instead of reflecting the need to build up more precautionary reserves, much of the build-up in recent years has been a by-product of exchange rate regimes. Policymakers have chosen regimes that lean against

⁹ See also Caruana (2011) for a discussion of various risks posed by expanding central bank balance sheets.

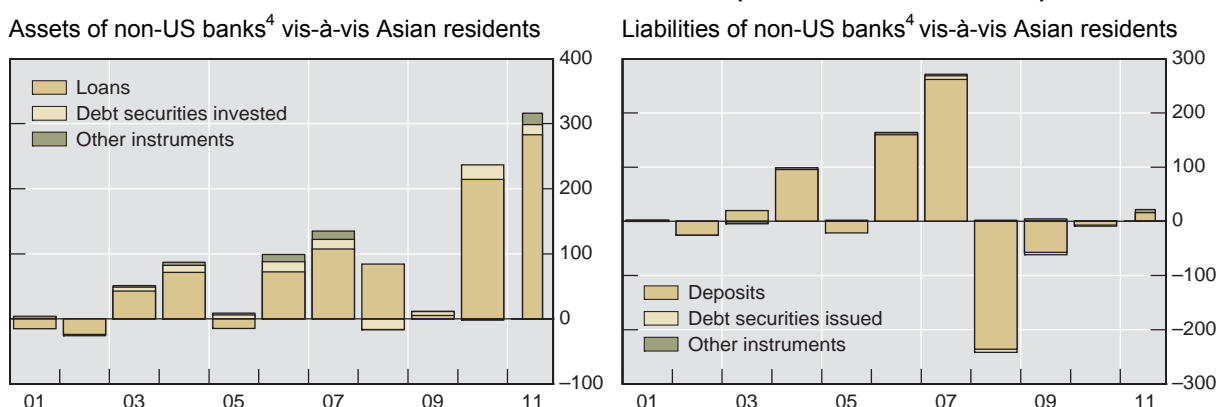
exchange rate pressures – building up reserves during periods of appreciation pressures. Ideally, reserves would move up and down over time assuming symmetric foreign exchange rate pressures on the upside and the downside.

Graph 10

US capital outflows (in billions of US dollars)



US dollar flows outside the United States^{1,3} (in billions of US dollars)



¹ 2011 figure based on annualised Q1 data. ² US-owned private assets vis-à-vis emerging Asia-Pacific. ³ Estimated exchange rate adjusted changes of total positions of BIS reporting banks outside the US vis-à-vis all sectors in emerging Asia-Pacific. ⁴ The term "non-US banks" refer to banks outside the United States.

Sources: IMF, *International Financial Statistics*; US Bureau of Economic Analysis; BIS *Locational Banking Statistics*.

Given the current prospects for an uneven global recovery, one-sided exchange rate pressures may persist for quite a while. In addition to the increasing carrying costs of these huge foreign reserve assets, subtle financial stability risks may also be building in emerging Asian financial systems (Filardo and Grenville (2011)).¹⁰ For example, as central banks sterilise the impact of the purchase of foreign reserve assets, central banks create *lazy assets* in the form of sterilisation bonds, required reserves and excess reserves, which sit on the balance sheets of the private sector. As these low-yielding lazy assets grow, the financial system has an increasing incentive to transform them into productive ones. Unless the

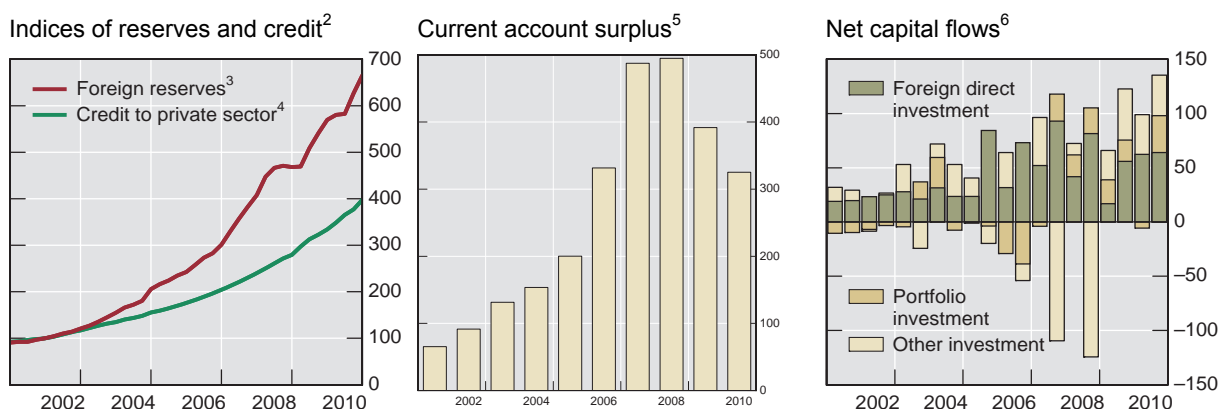
¹⁰ Filardo and Grenville (2011) coin the phrase "lazy assets" to emphasise the special importance of central bank and private sector balance sheets in the credit creation process in emerging market economies. In many respects, this lazy asset channel is the balance sheet counterpart to the risk-taking channel of Borio and Zhu (2008). A surfeit of low-yielding assets on private sector bank balance sheets contributes, under certain conditions, to a desire of banks to leverage up and seek increasingly risky investments as a means to boost the average return of assets during good times. The amount of lazy assets as well as the price of risk will determine the extent of the incentives to overextend credit from a macroprudential perspective.

central bank has complete control over them and can truly lock them up, these assets may contribute to the activation of a significant risk-taking channel, especially when global risk aversion returns to more normal levels. These forces could compromise the effectiveness of monetary policy in reining in future credit growth.

In sum, the uneven global recovery presents considerable challenges to Asian central banks and to emerging market economies more generally. While some of the policy measures taken to date appear to have worked well, there is a risk that some of the administered measures will lose their effectiveness over time. This suggests that more traditional macroeconomic tools – policy rates and flexible exchange rates – will have to play a much bigger role going forward.

Graph 11

Foreign reserves, credit and capital flows in Asia¹



¹ China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. ² End 2001 = 100. ³ In US dollar terms; sum of the economies listed. ⁴ Weighted average based on 2005 GDP and PPP exchange rates. ⁵ In billions of US dollars; sum of economies listed. ⁶ Positive (negative) indicates inflows (outflows).

Source: IMF *International Financial Statistics*.

IV. Conclusions

The main conclusion of this paper is that Asia has adopted monetary policy frameworks that have been successful in delivering credible price stability. Of course, there will be setbacks from time to time. Short-run inflation will rise above implicit or explicit targets. But the preference for low, stable inflation over the medium term has been clearly demonstrated in the region again and again.

The main challenges now arise mainly from the external environment. And these external developments are largely out of the control of the Asian central banks, as the international financial crisis revealed. The advanced economies have yet to show clear evidence of a robust recovery. Global risk aversion remains high and has been rather volatile. QE and other unconventional policies in the West that are still in the pipeline will have implications for the policy trade-offs faced by monetary authorities in the region.

There is a temptation to call for much more flexible exchange rate regimes. Greater flexibility in the medium term is needed to meet some of the challenges currently being faced in the region. But volatile exchange rates have costs, especially in low-income economies (CGFS (2009)). Major distortions could develop over time. Each country would have to assess these associated costs and benefits to determine the desirability of such a change.

One might be also tempted to argue for more rules in policy frameworks and less reliance on discretion. However, upon reflection, this choice is only partially captured by the traditional rules versus discretion debate. Arguing for more rules-based policy frameworks assumes

that (i) one knows the best rules and (ii) the domestic monetary authorities have the power to implement such rules. The former calls for more research to better understand the policy trade-offs and for more concrete efforts to operationalise the research. The latter assumes that domestic policy decisions are largely determinant – or, at least, that the level of international cooperation is sufficient to ensure the preferred outcome.

Notwithstanding these concerns, this paper has highlighted three important challenges now facing regional central bankers which may be made somewhat easier if more explicit rules were adopted: (i) the monetary policy-induced procyclicality of commodity price dynamics; (ii) the operationalisation of financial stability mandates; (iii) and the uneven global recovery. What types of rules might these be? The paper points in particular directions that deserve some consideration.

With regard to commodity prices, central banks may be able to overcome some of the inherent procyclicality at this time by adopting monetary policy frameworks that call for a more aggressive monetary policy response when soaring commodity prices are being driven by unsustainably strong global demand. Greater central bank cooperation may be needed to achieve the favourable outcome in this increasingly globalised world.

With regard to financial stability, considerable efforts have been made in the region to incorporate such concerns in policy frameworks. But more needs to be done. In particular, central banks may be able to realise greater benefits by clarifying to the public their likely operational responses to tail risks of financial instability. Of course, this is easier said than done. In part, we need more research on the nature of financial instability and the interactions with monetary policy. In Asia, the international financial crisis and the recent growth in offshore US dollar credit underscore the point that we also need to have a better understanding of the interactions between the financial systems here and the international role of the US dollar.

Finally, with regard to the uneven global recovery, the sustained increase in foreign reserve assets on the balance sheets of emerging market central banks is a signal that there may have been excessive resistance to exchange rate appreciation pressures over the past decade. A reorientation of the existing exchange rate regimes may be needed. As discussed in Filardo and Grenville (2011), this does not necessarily imply that the best alternative is a fully free-floating exchange rate. Various options are possible. For example, intervention could be based on an assessment of the fundamental equilibrium exchange rate (FEER).¹¹ This, of course, would need to reflect views about sustainable current account positions and capital flows which are the counterpart of this position. Given the uncertainty in measuring the FEER, it might best be seen as a band or range, perhaps quite wide if the uncertainties are great. In this case, foreign reserve accumulation would then be more rules-based and exhibit more symmetry than is currently the case in a number of economies. Operationally, when the exchange rate approaches the edges of the band, central banks would intervene. If the band is centred on the FEER, over time such interventions would be two-way and roughly symmetric.

All these options provide some food for thought about how to refine existing policy frameworks in emerging Asia and deserve some thoughtful consideration. There are certainly other options and other challenges. But these highlighted options would all help to preserve price stability and foster conditions that would contribute to more balanced and sustainable global economic growth going forward.

¹¹ See Williamson's BBC (basket, band, crawl) proposals (Williamson (2000)).

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Annex Table 1

Institutional frameworks for monetary policy

	IT?	Targeting arrangement	Key policy rate	Operating target
Australia	Yes, 1993	Target for headline CPI consumer price inflation of 2–3% per annum on average over the business cycle	Target cash rate (= O/N rate target)	O/N cash rate
China	No	Reference to money growth targets	One-year deposit and loan reference rates	Excess reserves as a tool for reference
Hong Kong	No	Currency board: target range HKD 7.75–7.85 per USD; centred on HKD 7.8 per USD	USD/HKD spot rate	USD/HKD spot rate within Convertibility Zone
India	No	Multiple objectives: price stability understanding – containing the perception of inflation in the range of 4.0–4.5% so that an inflation rate of 3.0% becomes the medium term objective	One-day repo rate; reverse repo rate is pegged to repo rate as 100 bp lower	Weighted average overnight call money rate
Indonesia	Yes, 2000	Inflation targeting: target range of 5±1% (2008), 4.5±1% (2009), 5±1% (2010) and 5±1% (2011) for year-on-year CPI inflation	BI rate (= target rate for one-month SBI)	One-month SBI rate
Japan	No	Medium- to long-term price stability expressed in terms of year-on-year rate of change in the CPI (approximately between 0 and 2%, centred around 1%)	Uncollateralised O/N call rate target	O/N call rate
Korea	Yes, 1998	Inflation targeting: target range of 3±1% for 2010–12 in terms of 12-month change in CPI	Bank of Korea base rate	O/N call rate
Malaysia	No	Macroeconomic stability six to eight quarters ahead	Overnight policy rate	Average O/N interbank rate
New Zealand	Yes, 1990	Inflation targeting: target range of 1–3% on average, over the medium term, defined in terms of the All Groups CPI	Official cash rate (= O/N rate target)	O/N cash rate
Philippines	Yes, 2002	Inflation targeting: target range of 3.5±1% (2009), 4.5±1% (2010) and 4±1% (2011) for year-on-year CPI inflation over the calendar year	O/N repo and reverse repo rates	O/N repo and reverse repo rates
Singapore	No	Since April 2010, the MAS has shifted the undisclosed SGD NEER policy band from that of a 0% appreciation to one of modest and gradual appreciation. Since October 2010, the policy stance has remained supportive of economic growth while seeking to cap CPI inflation at 2–3% in 2011 from 2.5–3.0% in 2010	Policy band for SGD NEER	SGD NEER
Thailand	Yes, 2000	Inflation targeting: target range of 0.5–3.0% for year-on-year percentage change of core inflation in 2009, 2010 and 2011	One-day bilateral RP rate	One-day bilateral RP rate

Source: National central banks.