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**Monetary Policy Frameworks in Asia:
Experience, Lessons, and Issues**

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Abstract

This paper analyzes the evolution of East Asian monetary policy frameworks over the past two decades, chiefly in response to shocks from the Asian financial crisis of 1997–1998 and the global financial crisis (GFC) of 2007–2009. The Asian financial crisis showed the importance of exchange rate flexibility and credible policy frameworks, leading to increased central bank independence, greater focus on inflation policy and more flexible exchange rates. A key lesson of the GFC was the importance of containing systemic financial risk and the need for a "macroprudential" approach to surveillance and regulation that can identify system-wide risks and take appropriate actions to maintain financial stability. Emerging economies face particular challenges because of their underdeveloped financial systems and vulnerability to volatile international capital flows, especially "sudden stops" or reversals of capital inflows.

The paper reviews the history of East Asian monetary policy frameworks since 1990; describes current monetary policy frameworks, including issue of price versus financial stability for a central bank and the policies a central bank can use to manage financial stability; the monetary policy transmission mechanism based on financial linkages and financial deepening; assesses policy outcomes including inflation targeting and responses to the "Impossible Trinity"; and makes overall conclusions. The paper finds that East Asian central banks have generally managed inflation and growth well over the past decade, but the difficulties faced by central banks of advanced countries in the aftermath of the GFC suggests that not all problems have been solved yet.

JEL Classification: E52, E58, F31, F32, G18

Contents

1. INTRODUCTION

East Asian monetary policy frameworks have evolved substantially over the past two decades, chiefly in response to shocks from the Asian financial crisis of 1997–1998 and the global financial crisis (GFC) of 2007–2009. The Asian financial crisis showed the importance of exchange rate flexibility and credible policy frameworks, leading to increased central bank independence, greater focus on inflation policy and more flexible exchange rates. A key lesson of the GFC was the importance of containing systemic financial risk and the need for a "macroprudential" approach to surveillance and regulation that can identify system-wide risks and take appropriate actions to maintain financial stability. Emerging economies face particular challenges because of their underdeveloped financial systems and vulnerability to volatile international capital flows, especially "sudden stops" or reversals of capital inflows.

The paper is organized as follows. Section two reviews the history of monetary policy frameworks since 1990.[1] Section three describes current monetary policy frameworks, including issue of price versus financial stability for a central bank and the policies a central bank can use to manage financial stability. Section four examines the monetary policy transmission mechanism based on financial linkages and financial deepening. Section five provides assessments of policy outcomes including inflation targeting and responses to the "Impossible Trinity," and Section 6 concludes the paper.

2. HISTORY OF POLICY FRAMEWORKS SINCE 1990

Monetary policy is to a large extent constrained by the exchange rate regime. Prior to the Asian financial crisis, most East Asian economies aside from Japan had their exchange rates relatively fixed relative to the US dollar, and tended to focus on controlling monetary aggregates. In the absence of foreign exchange controls, this implied no independence of monetary policy, and, indeed, the easing of capital controls during the period created the conditions leading up to the Asian financial crisis. Table 1 shows the classification of Asian monetary policy regimes in Stone and Bhundia (2004) for the period spanning the pre-Asian-crisis and post-crisis period. In the pre-crisis period, only the People's Republic of China (PRC), the Philippines, and Thailand were classified as having fixed exchange rates, but those of Indonesia, Republic of Korea (henceforth Korea), and Malaysia were not far off. Hong Kong, China's monetary regime, although not included in the table clearly remained an exchange rate peg (XRP) over the period. Taipei,China's monetary regime is not included either, but may be regarded as being a monetary aggregate anchor (MoA).

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[1] This paper covers the monetary policy frameworks of the People's Republic of China; Hong Kong, China; Indonesia; Japan; the Republic of Korea; Malaysia; the Philippines; Singapore; Taipei,China; and Thailand.

Table 1: Monetary Rule Classification in East Asia

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003
People's Republic of China	XRP	XRP	XRP	XRP	XRP	XRP	XRP	XRP	XRP
Indonesia	ITL	ITL	ITL	ITL	ITL	ITL	ITL	ITL	ITL
Japan	IIT	IIT	IIT	IIT	IIT	IIT	IIT	IIT	IIT
Republic of Korea	MoA	MoA	ITL	ITL	ITL	ITL	FFIT	FFIT	FFIT
Malaysia	ITL	ITL	ITL	XRP	XRP	XRP	XRP	XRP	XRP
Philippines	XRP	XRP	ITL	ITL	ITL	ITL	ITL	FFIT	FFIT
Singapore	IIT	IIT	IIT	IIT	IIT	IIT	IIT	IIT	IIT
Thailand	XRP	XRP	ITL	ITL	ITL	FFIT	FFIT	FFIT	FFIT

XRP = exchange rate peg; MoA = monetary aggregate anchor; ITL = inflation targeting lite; FFIT = fully fledged inflation targeting; IIT = implicit price stability anchor; CPI = consumer price index.

Source: Stone and Bhundia (2004).

Singapore managed the exchange rate as an intermediate target, a monetary policy framework that had been in place since the early 1980s. Singapore's high import rate and its role as a price-taker in international markets made the country highly susceptible to imported inflation. Thus, Singapore considers the exchange rate to be a more effective tool than the interest rate for stabilizing inflation. Its monetary policy framework, however, can be considered a variant of inflation targeting.

As most emerging Asian economies moved toward more flexible exchange rate regimes after the crisis, most monetary policy frameworks in the region have changed accordingly to allow more monetary autonomy, with inflation-targeting policies becoming a popular option. Table 1 shows that, after the crisis, the number of East Asian countries using fixed exchange rate regimes decreased while the number of countries using the inflation-targeting (IT) monetary policy frameworks increased. The PRC also moved away from the exchange rate peg beginning in 2005, although it was temporarily reinstated during the GFC, so its regime probably can be regarded as implicit price stability anchor (IIT). Japan's regime, which is characterized as implied inflation targeting, did not change a lot, although the Bank of Japan has made the link of policy with inflation more explicit over time.

Along with this development, many central bank in the region gained increased independence so that they could focus on controlling inflation. Ahsan et al (2008) constructed indices of central bank governance and independence (CBGI) using 27 variables to capture different aspects of governance and independence, including legal independence, political independence, independence to focus on price stability, independence of exchange rate policy, freedom from requirements to finance government debt and transparency and accountability. Figure 1 shows the overall indices in 1996 and 2005. The CBGI indices in 2005 increased in all East Asian countries, especially in Indonesia, Japan, and Thailand.

Figure 1: Central Bank Independence Has Generally Increased
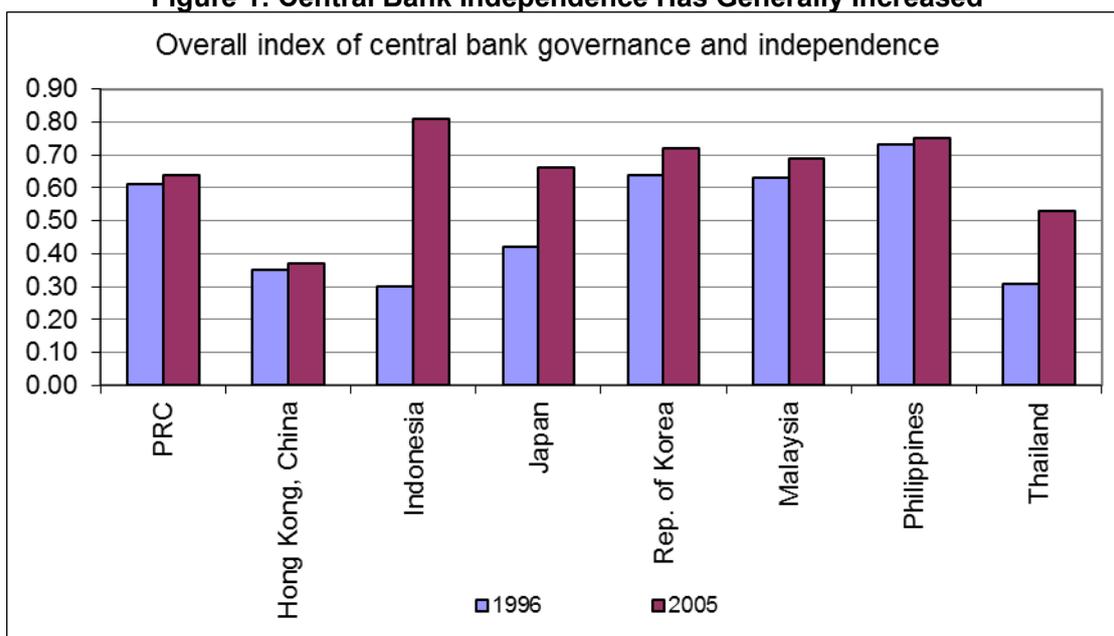
PRC = People's Republic of China
Source: Adapted from Ahsan et al (2008).

3. POLICY OBJECTIVES AND FRAMEWORKS

3.1 Price stability

As mentioned in the previous section, most central banks in East Asia region have chosen to pursue price stability as at least one principal objective of monetary policy. Based on information contained on their websites, the monetary authorities of Japan, Korea, the Philippines, Singapore, and Thailand currently aim for price stability as an overarching objective. Three central banks—the People's Bank of China, Bank Indonesia, and Bank Negara Malaysia—state their goal as maintaining the stability of the value of the currency, which could mean either the internal value in terms of goods and services—i.e., the price level, the external value, namely the exchange rate—or some combination of the two. Bank Indonesia, for example, makes it explicit that the term refers to both aspects. The Bank Negara Malaysia states that an adequate supply of credit to the economy is also an explicit goal of the central bank. The Hong Kong Monetary Authority puts exclusive emphasis on exchange rate stability (vis-à-vis the US dollar) and pursues this goal by means of a currency board arrangement.

Strategies adopted to achieve the objectives are quite diverse. Four central banks are self-proclaimed inflation targeters—Bank Indonesia, Bank of Korea, Bangko Sentral ng Pilipinas, and Bank of Thailand. These central banks are relative new-comers with Korea starting in 1999, Indonesia and Thailand in 2000, and the Philippines in 2002.

The Bank of Japan has adopted an innovative "two-perspectives" monetary policy framework that blended views of a more conventional nature with views of a less conventional nature (e.g., especially those associated with high impact, low probability events). The other central banks employ a range of eclectic strategies generally reflecting a set of policy tradeoffs, not least being those associated with the targeting inflation, sustainable growth, and exchange rate stability.

With respect to policy instruments, the majority of the institutions carry out their policy

by means of targeting a short-term interest rate (Table 2). The principal exceptions are the Monetary Authority of Singapore, which, as already noted, uses the nominal effective exchange rate as an intermediate target, the Hong Kong Monetary Authority, which intervenes in the foreign exchange market to keep the exchange rate vis-à-vis the US dollar within a pre-specified constant target zone, and the People's Bank of China (PBC). The PBC has adopted growth rates of monetary aggregates as intermediate targets and typically employs several instruments in the implementation of its monetary policy—exchange rate, required reserve ratio, interest rates, and open market operations. Existing controls on the domestic financial system and on international capital flows arguably makes it possible for the PBC to use several instruments somewhat independently of each other, an option less feasible in jurisdictions with more liberalized and efficient domestic financial markets and with more open capital accounts.

Table 2: Institutional Frameworks for Monetary Policy in East Asia

Economy	Targeting Arrangement	Formal Policy Rate	Formal Operating Target
PRC	Reference to money growth targets	1-year deposit and loan reference rates	Excess reserves
Hong Kong, China	Currency board: target range centered on HKD 7.8 = US$1		USD/HKD spot rate
Indonesia	Inflation targeting: inflation target for 2012–2014 is 4.5±1%; for year-on-year CPI inflation	BI rate (= target rate for 1-mo. SBI)	1-month SBI rate
Japan	Medium- to long-term price stability expressed in terms of year on year rate of change in the CPI (approximately between 0 and 2%).	Uncollateralized O/N call rate target	O/N call rate
Republic of Korea	Inflation targeting: target range of 3±1% in terms of annual headline CPI inflation (2010–2012)	O/N call rate target	O/N call rate
Malaysia		Overnight policy rate	Avg O/N interbank rate
Philippines	Inflation targeting: target range of 4±1% (2011–2014) for the avg year-on-year change in the CPI over the calendar year.	O/N repo and reverse repo rates	No formal target
Singapore	As of mid-2012, modest appreciation of the undisclosed Singapore dollar NEER policy band	Policy band for Singapore dollar NEER	Singapore dollar NEER
Taipei,China	Intermediate target for M2 growth: 2.5%–6%	Rediscount rate	Rediscount rate
Thailand	Inflation targeting: target range of 0.5%–3% for quarterly average of core inflation.	1-day repo rate	1-day repo rate

BI = Bank Indonesia; CPI = consumer price index; HKD = Hong Kong, China dollar; IT = inflation targeting; NEER = nominal effective exchange rate; O/N = overnight; PRC = People's Republic of China; SBI = Bank Indonesia promissory notes.

Sources: Bank for International Settlements (2009); national central banks websites.

3.2 Financial Stability and Systemic Risk

The GFC raised questions about the adequacy of IT policy frameworks in particular and the focus on price stability in general, and heightened the awareness of financial stability and the need for a macroprudential dimension to financial surveillance and regulation. The International Monetary Fund's (IMF) analysis (IMF 2009) stated that "macroeconomic policies … did not take into account building systemic risks" and that "a key failure during the boom was the inability to spot the big picture threat of a growing asset price bubble." It is widely believed the United States (US) Federal Reserve underestimated the buildup of financial imbalances coming from housing price bubbles, high leverage of financial institutions, and interconnections among different segments of the financial market. In addition, Taylor (2009) argued that the Federal Reserve's monetary policy stance was too easy, in that it kept the federal funds rate too low for too long, fueling the housing boom and other economic imbalances, although Bernanke (2010) disputed this view.

Several excellent reviews of what went wrong in financial regulation (Group of Thirty 2009; Brunnermeier et al. 2009; de Larosiere Group 2009) point to regulatory and supervisory deficiencies, including inadequate macroprudential supervision. Due to the propensity to focus on individual institutions (the traditional "microprudential" approach), supervisors around the world failed to recognize interconnections and links across financial firms, sectors, and markets due to the lack of a macroprudential approach. Supervisors only focused on their piece of the puzzle, overlooking the larger problem. Shin (2009) pointed out that "mis-educated" supervisors and examiners were focused on individual institutions, without regard to the impact on the system.

Nonetheless, there is no generally agreed definition of financial stability, because financial systems are complex with multiple dimensions, institutions, products, and markets. Indeed, it is perhaps easier to describe financial instability than stability. The European Central Bank (ECB) website defines financial stability as:

> …a condition in which the financial system—comprising of financial intermediaries, markets and market infrastructures—is capable of withstanding shocks, thereby reducing the likelihood of disruptions in the financial intermediation process which are severe enough to significantly impair the allocation of savings to profitable investment opportunities. (ECB 2012)

Further, the ECB defines three conditions associated with financial stability:

> (i) The financial system should be able to efficiently and smoothly transfer resources from savers to investors.
> (ii) Financial risks should be assessed and priced reasonably accurately and should also be relatively well managed.
> (iii) The financial system should be in such a condition that it can comfortably absorb financial and real economic surprises and shocks. (ECB 2012)

Perhaps the third condition is the most important, because the inability to absorb shocks can lead to a downward spiral whereby they are propagated through the system and become self-reinforcing, leading to a general financial crisis and broadly disrupting the financial intermediation mechanism.

In a similar vein, threats to financial stability are considered to pose systemic risks. The Committee on the Global Financial System (CGFS 2010: 2) defines systemic risk as "a

risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy."

3.3 Need for Stronger Macroprudential Policy in Asia

In Europe and the United Sates, undetected systemic risks before the GFC arose for several reasons, including widespread use of sophisticated derivative financial products to move risks around the system; the development of the unregulated shadow-banking system; excessive reliance on wholesale funding by banks; under-capitalization of banks; and lack of understanding of the riskiness of innovative financial products. These factors on the whole did not apply to Asian financial systems during the crisis, and this helps to explain why those economies did not suffer financial crises and recovered relatively quickly. Moreover, in the aftermath of the Asian financial crisis, Asian economies greatly strengthened their financial systems, reduced foreign debt, improved their monetary policy and financial regulatory frameworks, and moved toward greater currency flexibility.

Nonetheless, Asian economies need to strengthen their macroprudential policy frameworks for several reasons. First, although emerging Asia does not have much of the shadow-banking system that plagued the financial stability in developed economies, many financial institutions exist outside the formal banking system, including real estate finance companies and credit card companies. Finance companies triggered the Thai financial crisis and merchant banks were behind the Korean financial crisis, both in 1997. Asian financial systems also show signs of procyclicality, most notably in the close relation between bank lending, real estate cycles, and overall economic growth.

Perhaps most importantly, Asian economies are subject to large and volatile international capital flows. Capital inflows provide emerging market economies with valuable benefits in pursuing economic development and growth as they enable them to finance needed investment, smooth consumption, diversify risks and expand economic opportunities. However, large capital flows, if not managed properly, can expose capital-recipient countries to at least three types of risks (Kawai and Takagi 2010):

(i) Macroeconomic risk. Capital inflows could accelerate the growth of domestic credit, create economic overheating including inflation, and cause the real exchange rate to appreciate, thus threatening sustainable economic growth and price stability.

(ii) Risk of financial instability. Capital inflows could create maturity and currency mismatches in the balance sheets of private sector debtors (particularly banks and corporations), push up equity and other asset prices, and potentially reduce the quality of assets, thereby contributing to greater financial fragility.

(iii) Sudden stops and/or reversals of capital flows. Capital inflows could stop suddenly or even reverse themselves within a short period, resulting in rapid reserve decumulation or sharp currency depreciation.

The Asian financial crisis, as well as other emerging economy crises, highlighted the systemic risks associated with so-called "double-mismatches" associated with borrowing short term in foreign currencies and lending longer term in domestic currencies. It is noteworthy that about 15% of the large capital inflow episodes over the past 20 years ended in crisis, with emerging Asia experiencing proportionately more episodes of hard landings (Schadler 2010).

Asian economies are also exposed to activities of large global banks, which could become an issue if one or several such banks needed to be resolved. Finally, Asian financial systems are likely to increase in complexity as they develop, so that issues of market transparency and interconnectedness of financial firms are likely to become more relevant.

3.4 Role of a Central Bank in Financial Stability

A country's central bank is well qualified to play a key role in monitoring and regulating financial stability from the point of view of its surveillance capacity and the policy tools at its disposal. This reflects its routine work of monitoring the macroeconomic developments and financial system conditions and its responsibility for overseeing payments and settlement systems. As described in more detail below in this section, central banks have a number of policy tools that can affect financial stability, including monetary policy instruments and, in some cases, exchange rate and capital flow management tools and macroprudential policy tools. These tools can be used both to prevent crises and to mitigate crises when they occur. Nonetheless, there is wide debate about the consistency of an objective of financial stability with the more traditional and well-established central bank objective of price stability. More broadly, the current debate focuses on the appropriate role of a central bank within a broad architecture of financial stability and macroprudential policy responsibility.

3.5 Financial Stability Mandate versus Price Stability Mandate

The debate has been lively about whether a central bank mandate for financial stability would conflict potentially with the more traditional mandate for price stability. Some studies concluded that targeting asset prices directly, as part of an augmented Taylor Rule, could be potentially destabilizing. For example, Bernanke and Gertler (2000: 46) argue that:

> Given a strong commitment to stabilizing expected inflation, it is neither necessary nor desirable for monetary policy to respond to changes in asset prices, except to the extent that they help to forecast inflationary or deflationary pressures.

However, few proponents of a financial stability mandate actually propose targeting asset prices; instead they merely support taking asset price movements into account as a risk factor in setting monetary policy over a longer period of time. Cecchetti, Genberg, Lipsky, and Wadhwani (2000: xix) conclude that:

> A central bank concerned with stabilizing inflation about a specific target level is likely to achieve superior performance by adjusting its policy instruments not only in response to its forecasts of future inflation and the output gap, but also to asset prices.

Similarly, Borio, and Lowe (2002: 20) argue that:

> …a slightly modified policy regime, under which the central bank responds not only to short-term inflation pressures but also, at least occasionally, to financial imbalances, may ultimately deliver a better combination of monetary and financial stability.
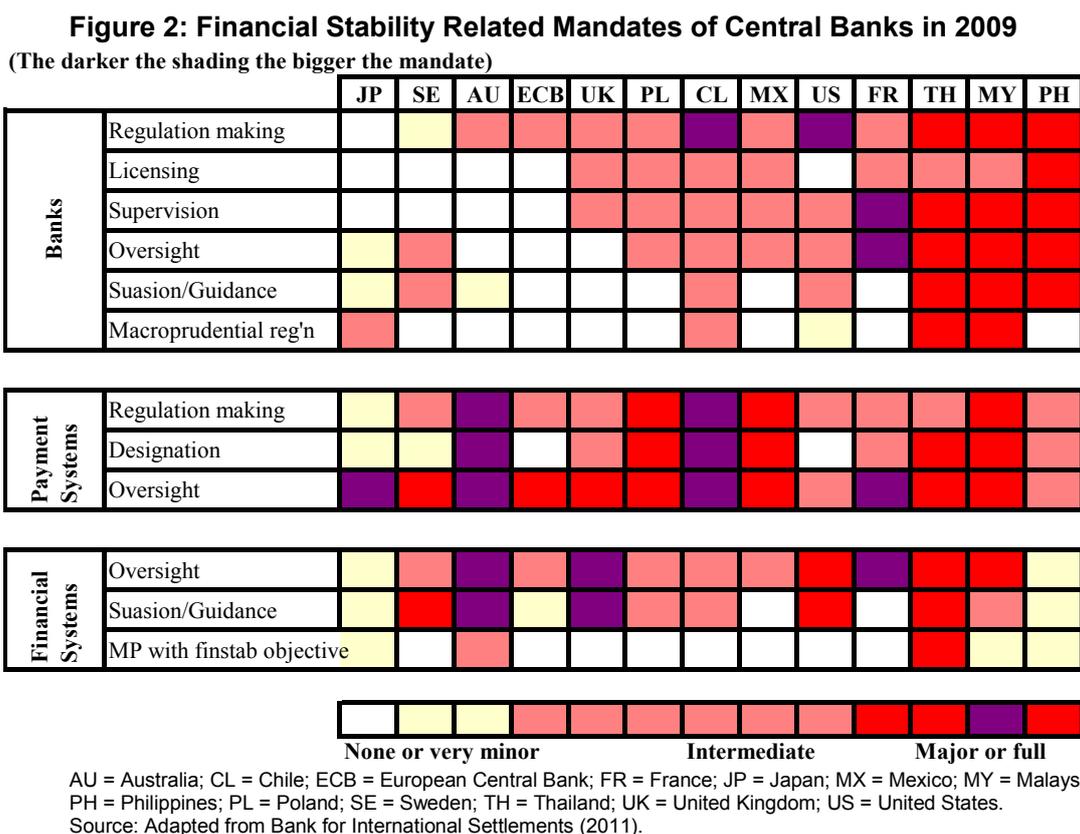
The crux of the matter is that an environment of low and stable inflation may be

conducive to the development of financial imbalances, as low interest rates and profitable investment opportunities contribute to an increasing appetite for risk. This pattern was described by Minsky (1986), and has been emphasized by Borio and Lowe (2002), Borio and White (2004), and others. This implies that, in a period of low inflation, systemic imbalances are likely to appear first in the financial sector and later in the real sector with a significant lag. This also highlights the need for a longer-term time horizon for monetary policymaking.

This debate is closely related to the "lean versus clean" debate of whether it is preferable for the monetary authority to "prick" bubbles before they burst by "leaning against the wind," or to wait until after the bubble bursts, and then clean up the mess via aggressive monetary policy easing. However, the huge costs and lengthy recovery period following the GFC due to the deleveraging process have severely undermined the argument in favor of the "clean" approach. This experience highlights the potential risks of a credit-driven bubble and supports the argument in favor of leaning, rather than cleaning, to prevent such bubbles. As a result, the consensus has swung strongly in favor of a central bank paying close attention to financial stability and leaning against the wind, even if it is not an official part of its mandate.

3.6 Current Situation of Central Bank Financial Stability Mandates

The specific responsibilities for financial stability vary widely across central banks. Figure 2 provides a good summary of financial stability mandates of a large number of central banks of advanced and emerging economies as of 2009, based on a survey of central banks by the Bank for International Settlements (2011). A darker shade is associated with a stronger mandate. The survey divides mandates into three major areas: banking sector, payments system, and financial system. The mandate for the banking sector varies widely across countries. European central banks are generally very light in their banking sector responsibilities, while emerging economy central banks in Latin America and Asia have the strongest mandates, and Japan and the US fall in between. For the financial system as a whole, relatively strong mandates are recognized for oversight and suasion and guidance, but few central banks have an explicit monetary policy mandate for financial stability. Interestingly, all central banks with such mandates are in Asia. It seems likely that the relative emphasis placed by Asian central banks on financial stability contributed to their good performance during the GFC.

Figure 2: Financial Stability Related Mandates of Central Banks in 2009
(The darker the shading the bigger the mandate)

		JP	SE	AU	ECB	UK	PL	CL	MX	US	FR	TH	MY	PH
Banks	Regulation making													
	Licensing													
	Supervision													
	Oversight													
	Suasion/Guidance													
	Macroprudential reg'n													
Payment Systems	Regulation making													
	Designation													
	Oversight													
Financial Systems	Oversight													
	Suasion/Guidance													
	MP with finstab objective													

None or very minor				Intermediate				Major or full		

AU = Australia; CL = Chile; ECB = European Central Bank; FR = France; JP = Japan; MX = Mexico; MY = Malaysia;
PH = Philippines; PL = Poland; SE = Sweden; TH = Thailand; UK = United Kingdom; US = United States.
Source: Adapted from Bank for International Settlements (2011).

3.7 Tools for a Central Bank Can Help Achieve Financial Stability

A central bank has a number of policy tools that can affect financial stability, including monetary policy instruments and, in some cases, exchange rate and capital flow managemewnt tools and macroprudential policy tools. These tools can be used to help prevent and mitigate crises. Monetary policy tools are ordinarily aimed at affecting the demand for and supply of money, primarily open market operations and reserve ratio requirements. In a crisis, the lender of last resort function of the central bank can simply be seen as an extreme version of open market operations. Macroprudential policy tools are aimed at reducing systemic financial risk, most typically by restraining bank credit growth.

There has been a good deal of debate about whether capital flow management tools should be classified as macroprudential tools, or whether they belong in a separate category. Ostry et al. (2010) represented a sharp break from previous thinking at the IMF by arguing that emerging economies could and should adopt capital flow management tools in some cases. However, they argued that capital control measures should be considered separately from domestic prudential measures, partly because long-lasting and widespread adoption of capital control measures could distort capital flows and exchange rates, thereby worsening international imbalances, and therefore should be used only as a last resort when other policy options are exhausted. However, in the presence of large and destabilizing capital flows, many observers in emerging economies believe that this position is too extreme, and that capital control measures could be used on a more regularized basis. It may be helpful to distinguish them by arguing that macroprudential measures are aimed primarily at domestic

balance while capital control measures are aimed mainly at international balance, but this distinction clearly blurs in practice.

It should also be emphasized that the prime justification for capital flow controls is to shield shallow and unsophisticated financial sectors from the damaging effects of capital flow volatility. As financial sectors deepen and become more sophisticated in line with economic development, their resilience to capital flow volatility should increase, thereby gradually lessening and eventually ending the need for capital control measures. In this regard, the openness of capital markets in Hong Kong, China; Japan, and Singapore provide an endpoint toward which other Asian economies may expect to evolve.

There is also a fair degree of confusion about the distinction between microprudential and macroprudential policy tools. For example, loan-to-value ratios were originally developed as microprudential tools to ensure viability at the level of an individual bank. But they have been employed as macroprudential tools to control the real estate cycle in several economies, including the PRC; Hong Kong, China; and Korea. Therefore, whether or not a policy tool is regarded as microprudential or macroprudential has to be judged in terms of its broad objective, that is, whether it is used to promote the health of individual financial firms or to contain financial vulnerabilities in certain sectors such as the real estate sector. It should be clear that if loan-to-value ratios are modified in response to the regulator's perception of the risks of the credit cycle, they should be regarded as macroprudential policy tools.

3.8 Monetary Policy Tools

In normal times, open market operations are typically conducted with sales of short-term government paper (a virtually riskless asset) for cash with the aim of raising the level of short-term money market rates. If the economy falls into a liquidity trap with zero nominal short-term interest rates, and/or suffers seize-ups in particular markets that disrupt the normal financial intermediation process, then the central bank can resort to so-called "unconventional" measures.[2] Open market operations can become unconventional ones if they broaden the types and maturities of assets to be purchased, the credit rating or equivalent metric of the assets, and the time horizon of the purchases. The objectives of such purchases can range from lowering long-term bond yields to easing freeze-ups of specific markets, such as those for interbank borrowing or asset-backed securities. Lender of last resort operations are just one example of this.

Descriptions of central bank balance sheet operations typically distinguish between quantitative easing and credit (or qualitative) easing—see for example, Bernanke and Reinhart (2004) and Borio and Disyatat (2009)—although the distinction in practice is not so clear-cut.[3] The aim of quantitative easing is to expand the size of the central bank's balance sheet by increasing the size of reserve deposits—current account balances—beyond the level that is required to bring the overnight funds rate to zero. Possible channels of impact of such a policy include (i) the permanent, positive effect

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[2] Such measures are regarded as "unconventional" mainly relative to the standard practice during normal times of central banks in developed economies, which is almost exclusively to target the short-term money market interest rate by open market operations. Emerging market economies tend to use a broader range of operations much more regularly, as did developed economy central banks in earlier periods.

[3] See Morgan (2012) for a more detailed discussion.

on base money and money supply; (ii) the signaling effect of the central bank's commitment to keep the policy interest rate low; and (iii) the portfolio balance effect of money supply increase, that is, the effect of inducing investors' shift toward other assets due to the imperfect substitutability of money for other financial assets, thereby raising their value and stimulating final demand (Morgan 2012).

Credit (or qualitative) easing is aimed at changing the shares of various kinds of assets held by the private sector, with the expectation that this will lead to changes in their relative prices, and thereby stimulate real economic activity. For example, a central bank's outright (permanent) purchases of long-term government bonds could be expected to reduce long-term bond yields, stimulate long-term investment and boost overall economic activity. A central bank's direct lending to market participants could reduce credit market spreads and improve the functioning of private credit markets more generally, when the normal transmission mechanism breaks down. Like quantitative easing, credit (or qualitative) easing generally involves an increase in the size of a central bank's balance sheet, but attempts to change the mix of assets, not the level of bank reserves (liabilities). Bernanke (2009) provides a detailed description of the Federal Reserve's credit easing measures.[4]

In Asian emerging economies, unconventional measures were adopted by the Bank of Korea, the Monetary Authority of Singapore (MAS), the Reserve Bank of India (RBI), and the Central Bank of Taipei,China (CBC). Perhaps the most significant unconventional policy measures in the region outside Japan have been those involving provision of foreign currency liquidity by central banks via the Federal Reserve swap arrangements to offset the shortage of US dollars arising from capital outflows.[5]

For example, the Federal Reserve and the Bank of Korea announced the implementation of a $30 billion swap agreement on 29 October 2008. This appears to have been effective in easing the shortage of dollar funds in the Korean market. The spread between the Korean one-year interbank rate and the one-year Treasury bill rate, a measure of banking sector credit risk, spiked upward from mid-2008 when the Bank of Korea's foreign exchange reserve holdings (mainly US Treasuries) dropped sharply. However, once the foreign reserve holdings began to rise again in December, as a result of the loan by the Federal Reserve, the spread shrank rapidly again. The Bank of Korea drew roughly half of the Federal Reserve's swap line, and total foreign exchange reserve holdings rose by 40.8 trillion won (roughly $29 billion) during that period. The Bank of Korea also expanded its won-yen swap agreement with the Bank of Japan from $3 billion equivalent to $20 billion equivalent, and established a won–yuan swap with the People's Bank of China of up to 180 billion yuan, although it did not make use of these.

The CBC also adopted a number of unconventional measures in September and October 2008, including expanding the eligible counterparties for its repo operations; extending the term of such operations from 30 days to 180 days; expanding eligible collateral to include certificates of deposit; and linking the interest rates on central bank reserve deposits to market rates (CBC 2008a; 2008b). These operations seem to have been effective in reducing interbank spreads relative to policy rates by about 30–40

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[4] Although the Fed's large-scale outright purchasing operations of Treasury bonds, agency bonds and mortgage backed securities in 2009 and 2010 were widely referred to as "quantitative easing" (QE1 and QE2, respectively), the Fed has not described them as such, instead referring to them as credit easing measures.

[5] There is some debate about whether such measures can be regarded as unconventional or not.

basis points during that period.

Central banks can also attempt to influence market expectations by making announcements about the expected trend of future monetary policy. A large volume of literature has developed around what generally is referred to as the "commitment" or "policy duration" effect. The basic idea is simple—even though a central bank may set the very short-term rate, normally the overnight interbank rate, at zero, the market still has considerable uncertainty about the future development of monetary policy. Therefore, if a central bank can persuade the market that it will keep the policy rate lower than the market would expect otherwise, this should cause longer-term rates to fall, thereby stimulating the economy. This type of policy has been analyzed theoretically by a number of authors, including Svensson (2001) and Eggertsson and Woodford (2003).

3.9 Currency and Capital Flow Management

Capital inflows provide emerging market economies with substantial potential benefits in pursuing economic development but, if not managed properly, can expose recipient countries to macroeconomic risks, financial instability, and sudden stops and/or reversals of capital flows. A central bank's management of the exchange rate and capital flows can play a key role in reducing such volatile and potentially destabilizing capital flows.

Sterilized intervention has been the favorite tool applied by many emerging Asian economies to prevent nominal exchange rate appreciation and economic overheating. From 2000 to 2007, intervention in the foreign exchange market was unidirectional, that is, purchasing the US dollar to prevent domestic currency appreciation against the dollar, leading to large buildups of foreign exchange reserves across the region. Such interventions had to be sterilized to prevent overheating of the economy.

In addition to sterilized intervention aimed at stabilizing exchange rates, capital controls are a common tool for limiting capital inflows in emerging market economies.[6] Countries that have substantially liberalized their capital account, market-based controls—such as the Chilean unremunerated reserve requirement imposed on capital inflows—have been the predominant option in recent years.[7] However, designing and implementing capital inflow controls is not easy. Administering capital controls requires highly competent country regulatory authorities as they must constantly watch for unwanted flows—often disguised—entering through various channels. For these economies, returning to draconian capital controls or recreating a system of extensive administrative controls is no longer a viable option.

3.10 Macroprudential Policy Tools

Some central banks also have macroprudential powers to promote financial stability by virtue of having responsibility for supervising the banking sector. This enables them to restrain the buildup of financial imbalances by using tools such as loan-to-value ratios,

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[6] In Ostry et al. (2010), however, tools aimed at controlling large capital inflows that may fuel domestic credit booms are not seen as macroprudential tools per se but rather as measures that can buttress prudential regulations.

[7] Brazil imposed a tax on fixed-income and equity inflows in October 2009 in response to surges in capital inflows and, in the following month, imposed another tax on certain trades to prevent circumvention.

debt-service-to-income ratios, credit exposure limits on specific sectors (especially real estate), and limits on loan growth, among others. Some of these tools tend to be time-invariant, while others can be altered in a discretionary way according to the authorities' assessment of the economic and financial situation. Many macroprudential tools have been developed for use as microprudential tools (loan-to-value ratios, exposure limits, among others.) at a bank level, but can be adapted to macroprudential used by calibrating them in relation to the macro-financial cycle. If central banks do not have such powers, they must try to work with the supervisory agencies having those powers if they believe it is necessary to have them implemented.

Sector-targeted macroprudential tools are used to restrict bank lending and other financial activity during boom periods. They generally aim to limit the tendency for a self-perpetuating cycle between asset values and credit growth to lead to an unsustainable asset bubble. Measures include loan and underwriting standards, loan-to-value ratios, debt-service-to-income ratios, caps on credit growth, and exposure limits. Table 3 provides a summary of macroprudential measures in Asia.

Table 3: Asian Experience with Macroprudential Tools

Objective	Tools	Examples
Manage aggregate risk over time (procyclicality)	Countercyclical provisioning	PRC; India
	Loan-to-value ratios	PRC; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; Philippines; Singapore; Thailand
	Debt-service-to-income ratios	PRC; Hong Kong, China; Republic of Korea
	Tighter lending criteria	PRC; Hong Kong, China; Republic of Korea; Malaysia; Philippines; Singapore; Thailand
	Credit limits	PRC; Hong Kong, China; India
	Tighter supervision	PRC; Hong Kong, China; India; Republic of Korea; Malaysia; Singapore
	Capital requirements	India; Malaysia
	Exposure limits on lending to specific sectors	Republic of Korea; Malaysia; Philippines; Singapore
Manage aggregate risk at every point in time (systemic oversight)	Capital surcharges for systemically important banks	PRC; India; Philippines; Singapore
	Liquidity and funding requirements	PRC; India; Republic of Korea; Malaysia; Philippines; Singapore; Thailand
	Loan-to-deposit requirements	PRC; Republic of Korea
	FX exposure limits	Republic of Korea; Philippines
	Limits on currency mismatches	India; Malaysia; Philippines

PRC = People's Republic of China; FX = foreign exchange.
Sources: CGFC (2010); Lamberte, Manlagñit, and Prativedwannakij (2010); Sheng (2010).

3.11 Architecture for Financial Stability

The experience of the GFC shows the need for a strong systemic stability regulator that can make objective assessments of the financial situation and take pre-emptive actions where needed (Kawai and Pomerleano 2012). However, responsibilities for financial stability frequently are divided among multiple entities, mainly central banks and financial regulators. Moreover, other policymakers need to be involved in decision-making as well, especially the finance ministry, since it is responsible for committing

public funds in the case of resolution, and the deposit insurance agency, which often has responsibility for bank resolution. An effective structure for systemic stability regulation must ensure adequate sharing of information and good coordination of decision-making and policy implementation.

The relationship between such a systemic stability regulator in charge of macroprudential policy and a central bank charged with traditional monetary policy is an important issue. To achieve both price stability and financial stability, there have to be at least two policy instruments, that is, monetary policy and macroprudential policy. However, in practice it is often questionable to what extent macroprudential policy tools can be wielded independently of monetary policy. If monetary conditions are easy and investments attractive, market participants may try to evade specific macroprudential regulations and make investments by alternative means, and their ability to evade such regulations tends to increase over time. This suggests that both monetary and macroprudential policies should aim in the same direction.

A cooperative effort to regulate financial stability requires that financial system information be shared fully. However, experience shows that there is a natural tendency for individual regulators not to share information to the extent needed. Therefore, there is a strong argument in favor of the central bank having some direct oversight responsibility for the financial sector, so that it can obtain needed information about financial market conditions directly rather than having to request it from another agency.

3.12 Regional Cooperation

The discussion so far has dealt with macroprudential policy in a single country, but the experiences of the Asian financial crisis, the GFC, and the eurozone financial crisis show that such crises can be contagious, transmitted by volatile capital flows within a region. Therefore, regional perspectives on systemic risk regulation are needed as well. This is particularly so when global systemically important financial institutions are involved.

Within Asia, existing policy dialogue processes include the ASEAN+3[8] meeting for finance ministers and the Executives' Meeting of East Asia-Pacific Central Banks for central bank governors. From 2012 central bank governors joined the ASEAN+3 finance ministers meeting for the Economic Review and Policy Dialogue, whereas only deputy governors had attended previously. However, the development of an Asian Financial Stability Dialogue (AFSD), as proposed by Kuroda (2008), could enhance communication about common risk factors and possibly lead to coordinated actions to reduce systemic risks. The AFSD would include finance ministries, central banks, financial supervisors, and deposit insurance companies.

At the global level, the IMF and Financial Stability Board (FSB) can assist in assessing risk, while the newly-formed ASEAN+3 Macroeconomic Research Office, which is the surveillance arm of the Chiang Mai Initiative Multilateralization (CMIM), and the economic review and policy dialog, could be a counterpart of the IMF and the AFSD could become the regional counterpart to the FSB.

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[8] Ten member nations of the Association of South East Asian Nations plus the PRC, Japan, and the Republic of Korea.

There is no doubt that Asia needs an effective mechanism of intensive policy dialog and cooperation. The existing policy dialog processes among the region's finance ministers described above can play a critical role in fostering the establishment of such a mechanism, but the development of an AFSD could provide a more complete platform for such cooperation.

The CMIM has the responsibility to act as a regional financial safety net for its members (ASEAN+3), i.e., to provide foreign exchange if a member country faces a balance of payments crisis. A reliable safety net could limit the need for an individual country to acquire foreign exchange reserves, and thereby reduce the potential impact of such reserve accumulation on the worsening of global current account imbalances. However, there are many practical issues that need to be resolved to achieve such reliability. The biggest stumbling block is IMF conditionality, which is required if a country needs to draw more than 30% of its quota. However, making the provision of reserves automatic without conditionality invites the risk of moral hazard. Adding pre-approved credit lines can help, but, until such issues are solved, Asian countries are likely to continue to rely on their own foreign exchange reserves as the first line of defense against capital outflows.

4. POLICY TRANSMISSION MECHANISM BASED ON FINANCIAL LINKAGES AND DEEPENING

This section discusses the policy transmission mechanism based on financial linkages and deepening, including global financial linkages and domestic financial deepening. The former focuses on developments in the size and composition of capital flows, while the latter includes credits, private bonds, government bonds, equities, corporate savings, household savings and household balance sheets. It is not possible to go into detail on every economy, so we focus on sketching the broad outlines.
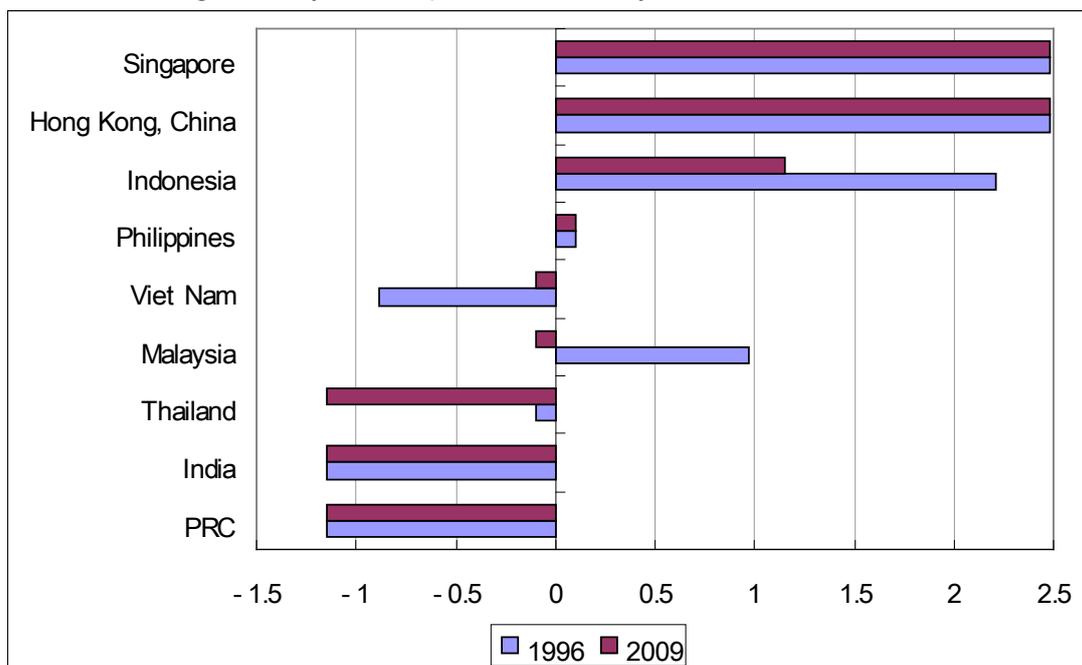
4.1 Financial openness in Asian emerging economies

Financial systems tend to become more open as economies develop and restrictions in areas such as capital accounts ease. However, capital account regimes can also become more restrictive, particularly in countries that experience shocks and crises from rapid capital inflows or outflows. The Asian financial crisis was a watershed in Asia in terms of the perceived risks associated with open capital accounts. Financial openness is not easy to measure. There are two broad approaches—de jure and de facto. De jure measures assess the restrictiveness of published laws and regulations regarding foreign exchange and capital account transactions. These are typically based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (IMF 2008). Examples of this approach include Quinn (2003) and the Chinn-Ito Index[9] (Chinn and Ito 2008).

The degree of openness has ranged widely and has changed substantially in major Asian emerging economies, according to the Chinn-Ito Index for 1996 and 2009 (Figure

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[9] The Chinn-Ito Index is compiled by evaluating four major categories of restrictions on external accounts: (i) the presence of a multiple exchange rate regime, (ii) the presence of restrictions on current account transactions, (iii) the presence of restrictions on capital account transactions, and (iv) the presence of a requirement of the surrender of export proceeds. The index score ranges from -1.84, which indicates they are fully closed, to +2.48, meaning they are fully open.

3). Hong Kong, China and Singapore are rated as fully open, consistent with their status as regional financial centers. Both the PRC and India have maintained relatively low ratings of -1.15, suggesting they are relatively closed. Indonesia and Viet Nam have become significantly more open, while Malaysia and Thailand have become less

open, primarily as a result of their experiences during the Asian financial crisis.

Figure 3: Chinn-Ito Indices for Major Asian Emerging Economies

PRC = People's Republic of China

Source: Chinn and Ito (2008).

However, it is widely recognized that de jure measures may not reliably capture the effective degree of capital market openness. The alternative approach is to measure de facto capital market openness, based on estimates of actual capital flows. One of the main sources in this regard is Lane and Milesi-Ferretti (2006). The essential idea was that a higher level of external assets and liabilities (relative to GDP or some other measure) indicated the effective openness of capital markets. The series was updated to 2009 in Kawai, Lamberte, and Takagi (2012). The external assets and liabilities ratios generally rose for all Asian economies from 1990 to 2009. Despite the region's relatively low overall de jure openness scores, the ratios were close to or exceeded 100% for all but one economy in 2009. The capital accounts of many Asian economies, therefore, in fact appear to have been quite open on this measure.

4.2 Capital flow composition

Gross capital inflows to emerging Asia[10] have risen rapidly over the past two decades, although the share of GDP peaked in 2007 (see Figure 4). Direct investment flows have been relatively stable, with persistent positive inflows. Portfolio flows have been somewhat more volatile, although there were only two years of actual outflows, which corresponded to the two crisis years of 1998 and 2008. Other inflows, mainly loans, have shown by far the greatest volatility, underlining the persistent concern about the

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[10] Total for PRC; Hong Kong, China; India; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Taipei,China; and Thailand.

risks to financial stability emanating from this category. Nonetheless, the outflow of other inflows in 2008 was much smaller than in 1998, pointing to the improved fundamentals of emerging Asian economies at the time.

Figure 4: Gross Capital Inflows in Emerging Asia
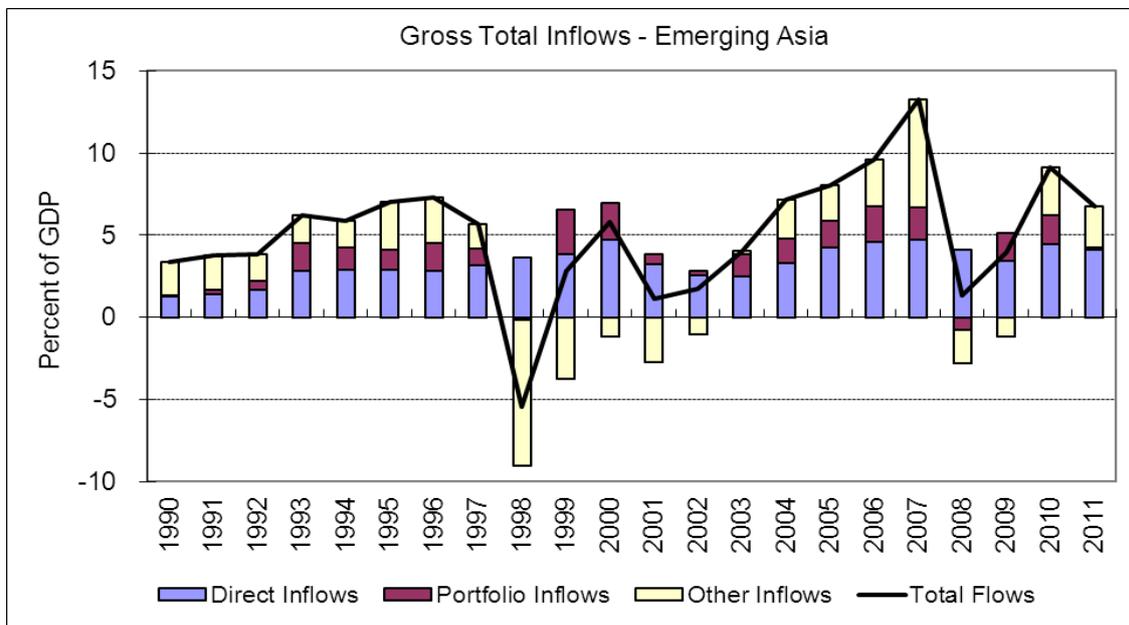
Source: CEIC Database Co.

The picture on net inflows is similar, but shows little sign of an upward trend as percent of GDP over time, as the peak in 1996 was never exceeded (Figure 5). The pattern of relative stability of direct investment flows is maintained, but both portfolio and other flows show greater volatility on a net basis, with more episodes of net outflows for both. The large net portfolio outflows seen in 2006 and 2007 appear to reflect the increasing role of Hong Kong, China and Singapore as investment intermediary centers.

Figure 5: Net Capital Inflows in Emerging Asia
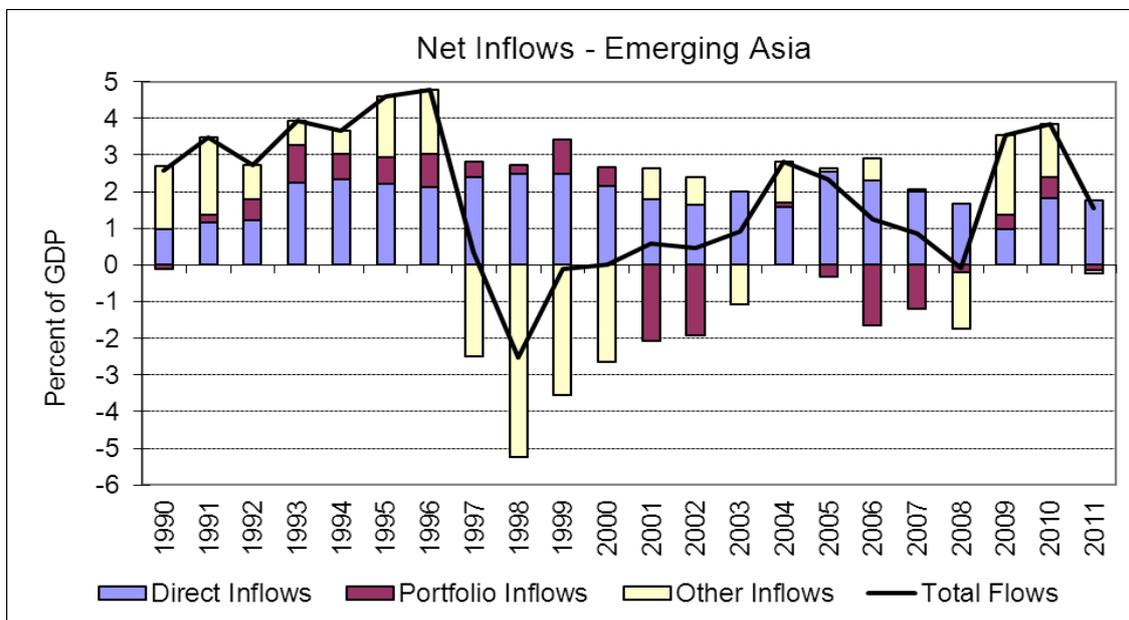
Source: CEIC Database Co.

There is a continuing debate about whether gross or net capital flows are a better indicator of currency and financial stability risks. Net inflows are probably more relevant for currencies, but gross inflows may be more directly related to financial stability risks, since they are a function of total transaction volumes.

4.3 Domestic financial development

All East Asian emerging economies showed substantial increases in total private liabilities relative to GDP from 2000 to 2009, especially the PRC and Viet Nam. As Table 4 shows, however, there were major differences when it comes to types of liability. Private bank credit fell in Malaysia, the Philippines, and Thailand in the aftermath of the Asian financial crisis. Stock market capitalization rose in all Asian emerging economies, while private bond market capitalization fell only in Singapore. However, among Asian emerging economies, private bond market capitalization is high only in Malaysia, which underlines the scope for further development of this sector.

% of GDP	Private credit by deposit money banks		Stock market capitalization		Private bond market capitalization		Total	
	1990	2010	1990	2010	1990	2010	1990	2010
PRC	74.3	120.0	--	81.0	2.9	21.3	77.3	222.4
Hong Kong	--	168.1	108.5	1207.9	0.2	14.4	108.7	1390.4
India	24.2	49.7	12.2	93.5	0.3	5.7	36.6	148.8
Indonesia	38.1	24.1	7.1	51.0	--	1.5	45.1	76.6
Japan	168.2	102.8	95.5	74.6	39.8	36.3	303.4	213.6
Rep. of Korea	47.2	98.4	42.1	107.4	28.3	63.0	117.5	268.7
Malaysia	77.0	109.3	110.4	172.6	18.8	43.5	206.2	325.4
Philippines	17.0	29.4	13.4	78.8	--	1.1	30.4	109.3
Singapore	78.2	96.1	93.1	166.2	14.6	11.4	185.9	273.7
Taipei,China	--	124.5	60.5	175.0	14.7	21.8	75.2	321.4
Thailand	72.3	91.7	28.0	87.1	6.5	17.9	106.8	196.7
Viet Nam	--	109.7	--	19.7	--	--	--	129.3

Sources: IFS Dec 2011 CD, CEIC Data Company, BIS Quarterly Review June 2011, WDI.

Table 4: Sources of Private Sector Funding as % of GDP

PRC = People's Republic of China

Local currency bond issuance has generally increased substantially in Asia over the past two decades. The increase in government debt has been most obvious in the PRC, Japan, Korea, Singapore, Taipei,China, and Thailand. In many cases, this resulted primarily from bond issuance accompanying sterilization of foreign exchange intervention. Private bond issuance has increased mainly in the PRC; Hong Kong, China; Korea; Malaysia; Taipei,China; and Thailand. However, corporate bond issuance in general is still substantially lower than government bond issuance.

Life insurance premiums as a percentage of GDP have reached very high levels in Hong Kong, China, and Singapore, befitting their status as international financial centers.[11] Malaysia's level also is relatively high at 6.3% of GDP. Levels in the PRC

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[11] Data on assets are not available for most economies.

and Thailand are relatively close to that of Korea, where premiums equal 4.5% of GDP and represent a good long-term benchmark. India, Indonesia, the Philippines, and Viet Nam have further to go.

Asian emerging economies' asset management sectors are expected to grow rapidly as a result of rising incomes, high savings rates, and the aging of populations in most economies. Again, however, there is wide variation in the region. Hong Kong, China and Singapore have very high shares of assets under management in GDP, followed by Thailand. Using Korea as a benchmark, where such assets equal around 20% of GDP, countries such as the PRC and India seem likely to develop further.

5. ASSESSMENTS OF POLICY OUTCOMES

Assessments of monetary policy performance in Asian emerging economies have generally been favorable. Filardo and Genberg (2012) argue that monetary policy frameworks in the Asia and Pacific region have performed well since the late 1990s in terms of inflation outcomes. They cite three main reasons: central banks have focused on price stability as the main objective of monetary policy; institutional arrangements have facilitated the successful pursuit of this objective; and other economic policies, mainly fiscal policy, have supported this pursuit by reducing concerns about fiscal dominance. We may add to this the availability of a large number of policy tools, including unconventional policies, macroprudential measures and capital flow measures that help to deliver financial and economic stability.

5.1 Effectiveness of inflation targeting

Trying to assess the effectiveness of inflation targeting has been difficult. Figure 6 shows that CPI inflation rates fell substantially in both Asian "IT" economies (those adopting IT frameworks after the Asian financial crisis—Indonesia, Korea, the Philippines, and Thailand) and in "non-IT" economies (PRC, Japan, Malaysia, Singapore, and Taipei,China) in the decade after the Asian financial crisis. The degree of improvement in 2000–2011 relative to the pre-crisis period was about the same for both groups, about three percentage points. Therefore, this improvement in inflation cannot necessarily be attributed to the implementation of IT policies. At the same time, central banks in the region generally gained greater independence, their management was strengthened, exchange rates became more flexible, and, in a number of cases, trend growth slowed, which would lead to lower inflation by itself.

Figure 6: Inflation rates of Asian IT and non-IT countries
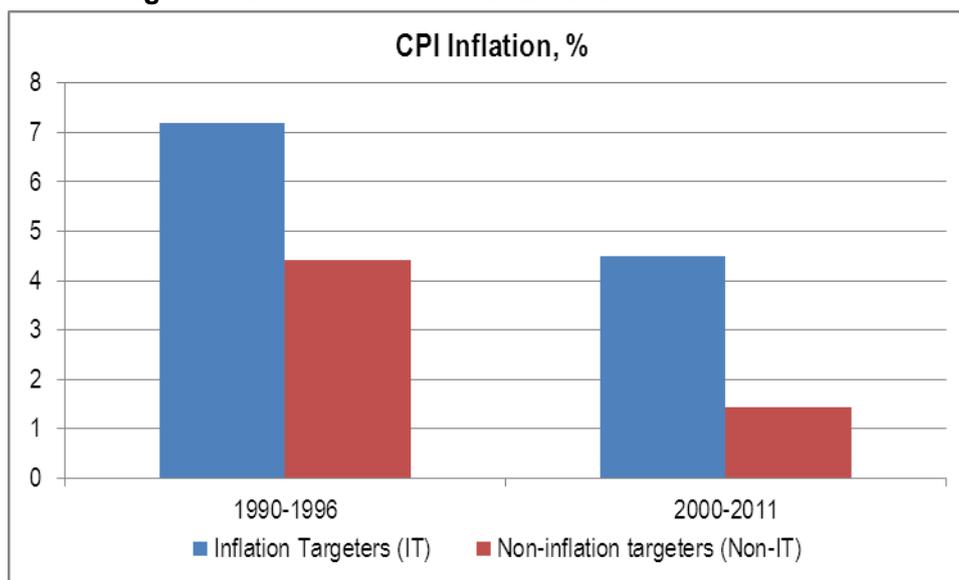
IT = Indonesia; Republic of Korea; the Philippines; Thailand
Non-IT = People's Republic of China; Japan; Malaysia; Singapore; Taipei,China
Source: CEIC Database Co.

More sophisticated studies using econometric techniques have not reached firm conclusions regarding the impacts of IT on macroeconomic performance, including inflation rates, inflation persistence and output gaps. Optimistic studies (e.g., Mishkin and Posen, 1997; Neumann and Hagen, 2002; Bernanke et al. 1999) marshalled evidence that IT is associated with lower rates of inflation, lower volatility of inflation and output, better-anchored inflation expectations, and reduced inflation persistence. However, others reached more skeptical conclusions, including Cecchetti and Ehrmann (1999) and Ball and Sheridan (2003), pointing to other factors such as the general downward trend in inflation before the adoption of IT policies and the period of the "great moderation."

Naqvi and Rizvi (2009) focused on the experience of IT in Asia, analyzing the performance of four IT economies (Indonesia, Korea, the Philippines, Thailand) against six Asian non-IT economies (PRC; Hong Kong, China; India; Malaysia; Pakistan; Singapore). They conclude that economic performance has improved in all Asian economies in post-targeting period, but IT does not seem to have played any significant role in this improvement of targeting countries. They also find strong evidence that all variables showed strong reversion to mean suggesting that improved performance of variables today is simply relative to poor economic performance in the past. On the other hand, a more recent study, Gerlach and Tillman (2011), finds a significant improvement in inflation persistence attributable to IT in a sample of nine Asian economies with four of them using IT. On the whole, it seems difficult to attribute significant improvement in inflation and output performance to IT policy in particular, but the general improvement in currency and monetary policy frameworks and management during the period should accept a good deal of the credit for this improved inflation performance.

Ito and Hayashi (2004) note that there are a number of issues specific to the implementation of inflation targeting in emerging market economies. First, economic statistics are not as reliable as in advanced countries. Second, structural changes tend

to be larger, especially in Asian economies, and therefore price bias may be more serious. Also, modeling the monetary transmission mechanism for use in inflation forecasting is much more difficult. Fourth, the inflation target needs to take into account possible Balassa-Samuelson effects in economies that are fast-growing and therefore have a rising price level, on the one hand, and the Japanese experience of deflation, on the other. Taking into account all of these factors, they recommend that emerging market countries set their inflation targets at a higher central rate than in advanced economies and with a wider band of fluctuation. They also emphasize the need to achieve a certain degree of currency stability as well.

Inoue, Toyoshima and Hamori (2012) took a somewhat different approach by analyzing the effect of adopting inflation targeting on the correlation a country's economy with the global economic cycle. They applied the methodology of dynamic conditional correlation to analyze the degree of synchronization of the four Asian IT countries—Indonesia, Korea, the Philippines, and Thailand. They found some signs of increasing synchronicity in these countries after the adoption of IT. However, they did not compare this with the results for a control group of non-IT countries, so it is difficult to interpret the results.

5.2 Policy frameworks have multiple tools

One important point which perhaps has not received sufficient attention is that Asian monetary policy frameworks have become increasingly sophisticated, and make use of a number of different policy tools, including both macroeconomic and macroprudential ones. Management of capital flows provides another instrument for such control. Unlike central banks in advanced economies, Asian central banks have shown themselves willing and able to use such tools regularly and aggressively. This means that the standard characterizations of monetary policy frameworks focusing on the use or non-use of explicit inflation targeting are probably too simplistic. In some cases, they have also developed more explicit cooperation frameworks with financial regulators and finance ministers to monitor and manage systemic financial risk. This multiplicity of instruments should make it easier for central banks and financial regulators to achieve both price and financial stability, even when the requirements of these objectives may appear to differ in the short run.
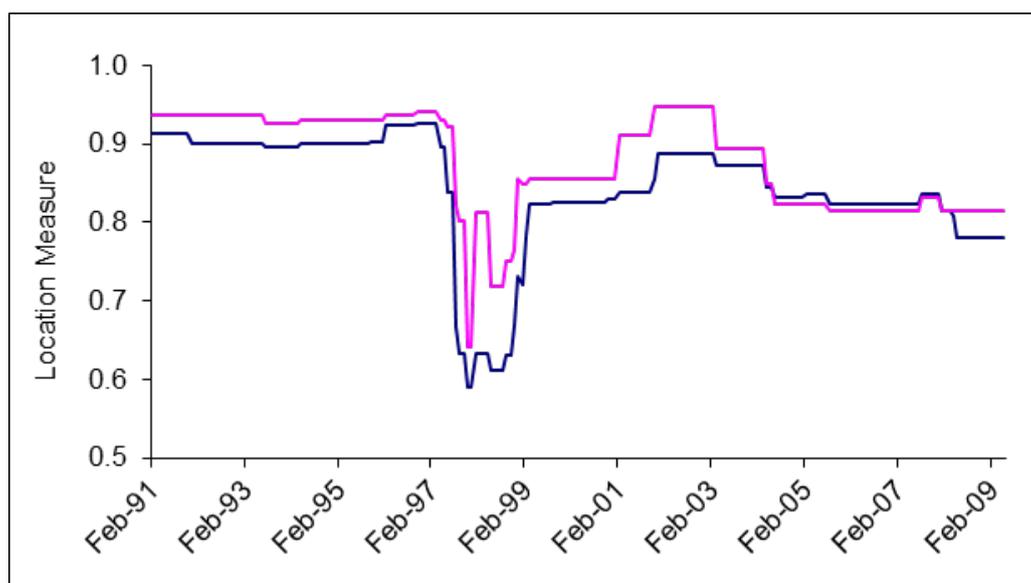
5.3 Monetary policy and the trilemma

The well-known "Impossible Trinity," or trilemma hypothesis, states that an economy cannot enjoy monetary policy independence, free capital flows, and a fixed exchange rate simultaneously. Although some economists concluded from this that policy frameworks under this constraint would tend to gravitate to "corner solutions"—either fixed exchange rates or fully floating exchange rates—this generally has not happened in East Asia. Instead, most economies in the region have moved to an "interior solution" characterized by independent monetary policy, some restrictions on capital movements, and some degree of currency flexibility coupled with active intervention. The main exceptions to this are Hong Kong, China, whose exchange rate is pegged to the US dollar, and Japan, which, with rare exceptions, maintains a free-floating exchange rate.[12]

There have been various attempts to categorize exchange rate regimes. These have

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[12] Brunei Darussalam's currency is linked to the Singapore dollar.

been complicated by the fact that a country's officially announced regime is not necessarily an accurate reflection of that currency's behavior. One recent empirical attempt to quantify currency flexibility in East Asia is Patnaik and Shah (2012), who apply the methodology of Frankel and Wei (1994) to identify the extent of correlation of 11 Asian currencies with major reserve currencies. Figure 7 shows the mean and median trend of flexibility of these currencies since 1991. The vertical axis shows the amount of currency movement explained by movements of key currencies, i.e., the R2 from the Frankel-Wei equation. Although currency flexibility in recent years is higher than that it was before the Asian financial crisis, correlations with key currencies are still high, suggesting that these currencies are far from freely floating.

Figure 7: Evolution of Exchange Rate Flexibility in Asia

Source: Patnaik and Shah (2012).

There have also been various attempts to quantify the three aspects of the trilemma—monetary policy independence, freedom of capital flows and exchange rate flexibility. Ito and Kawai (2011) developed estimates of these values to place East Asian economies on the trilemma triangle. These results clearly show a wide range of values, but skewed in the direction of monetary independence, with only partial financial openness and exchange rate flexibility. The key point is that these combinations appear to provide fairly complete monetary independence to these economies. There is no obvious evidence that the trilemma-related factors have meaningfully constrained monetary policy in these economies.

Another important factor contributing to policy flexibility in the region is the accumulation of large foreign exchange reserves, which help to buffer capital outflows when they occur. These reserves contributed substantially to the ability of Asian economies to weather the shocks of the GFC, although the process of reserve accumulation certainly raised questions about its contribution to the development of earlier global current account imbalances.

5.4 Recent experience of advanced economies shows problems remain

The above experience suggests that Asian monetary policy frameworks have performed well, that some restrictions on capital account openness and currency flexibility are useful, and that no major changes are needed. Perhaps the main suggestions would be to make financial stability an explicit objective of monetary policy and two strengthen institutions for regional policy cooperation, including the CMIM.

However, it is too early to claim that the major problems of monetary policy have been solved. Notably, the Bank of Japan so far has failed to deliver a convincing and sustainable escape from deflation despite having a floating exchange rate and having made many innovations in both monetary policy and the communication of that policy. This exception should raise warning flags, since Japan is the most advanced economy in the region, and therefore arguably represents the future toward which other Asian economies are evolving. The recent experience of central banks in other advanced economies, especially the US, the United Kingdom, and the eurozone, should give pause for thought as well, in view of their recent struggles to achieve their policy objectives. Most worrisomely, the ballooning of government debt and increasing calls on central banks to act as "lenders of last resort" to governments in those countries suggest that that the demon of fiscal dominance may not be securely chained.

It is beyond the scope of this paper to analyze the reasons for these shortfalls in monetary policy performance, as they touch on the fundamental limits of monetary policy. As noted in Morgan (2012) the experience of using unconventional monetary policy measures when the policy rate falls to zero suggests that they are effective in relieving specific bottlenecks in financial markets and raising asset prices, but is less effective in stimulating aggregate demand.

In other words, most Asian economies may simply have been lucky in that they still have relatively high trend growth rates and low government debt ratios, and were able to pick "low-hanging fruit" by improving their monetary policy frameworks. Also, the lack of exposure to sophisticated financial instruments in the run-up to the GFC meant that central banks in the region mainly faced garden-variety drops in aggregate demand rather than more challenging financial sector disruptions. Their risks in this regard are likely to increase in line with rising financial development. In that sense, monetary policy frameworks in the region have not yet been adequately tested.

6. CONCLUSIONS

Monetary policy frameworks in East Asia have evolved substantially in the past two decades, mainly in response to the shocks of the Asian financial crisis and the GFC. The Asian financial crisis showed the importance of exchange rate flexibility and credible policy frameworks, leading to increased central bank independence, greater focus on inflation policy and more flexible exchange rates. A number of Asian central banks adopted explicit inflation-targeting frameworks, and even those that did not have evidently placed greater emphasis on controlling inflation than previously.

The GFC highlighted the problem that surveillance and regulation of system-wide financial stability was inadequate in many countries in the pre-crisis period, and that

central banks may not have focused sufficiently on financial stability risks. The dimensions of systemic risk in both procyclicality of the financial system and interconnectedness of various financial institutions and markets were not adequately appreciated, nor was the need for a macroprudential perspective on such risks. Moreover, when responsibility for financial supervision was divided among central banks and financial supervisors, most countries lacked an adequate architecture to ensure coordinated surveillance, analysis, information sharing, and policy actions.

Defining financial stability is not an easy task because it has multiple dimensions and is related to complex financial systems. But this should not lessen the need to do so. Central banks' overview of the macroeconomic developments and financial system conditions, together with their oversight of payment and settlement systems, gives them a unique perspective on system-wide financial stability. The case is strong for central banks to have an explicit mandate for financial stability. Although there may be short-term conflicts between the traditional central bank objective of price stability and that of financial stability, in the medium and long term, these objectives should be largely consistent with each other because development of a financial crisis during periods of price stability will eventually lead to deflation and economic downturn.

Central banks have various tools to support financial stability, including standard and "unconventional" monetary policy tools, currency market intervention tools, and, in some cases, supervisory authority, macroprudential tools and capital flow management tools. These can be used to help prevent crises by dampening the credit cycle and strengthening banks and other financial firms to ensure that they are adequately capitalized and reserved to be able to ride out systemic shocks. Asian central banks have in fact frequently resorted to such tools to safeguard financial stability and reduce the volatility of capital flows. There is no guarantee that macroprudential and capital flow management tools will always be effective, but a multiplicity of tools makes it easier to achieve both price stability and financial stability. This also implies that central bank policy frameworks are more complex than simply being characterized by the presence or absence of explicit inflation targeting.

Monetary policy frameworks in the region have evolved to deal with greater financial and openness and depth. The ratio of gross capital inflows to GDP is still showing an upward trend, although that of net capital inflows appears to be stabilizing or declining. Domestic financial markets have also deepened substantially, which should contribute to strengthening the monetary transmission mechanism. Aside from Japan, there is no evidence of major failures of the policy transmission mechanism in the region.

Overall, monetary policy frameworks in the region appear to have worked well in achieving low and stable inflation coupled with economic growth. This mainly reflects three factors: central banks have focused on price stability as the main objective of monetary policy; institutional arrangements have facilitated the successful pursuit of this objective; and other economic policies, mainly fiscal policy, have supported this pursuit by reducing concerns about fiscal dominance. We may add to this the availability of a large number of policy tools, including unconventional policies, macroprudential measures and capital flow measures that help to deliver financial and economic stability. East Asian central banks also appear to have coped well with the constraints of the trilemma hypothesis, and for the most part have gravitated toward an "interior solution" with independent monetary policy, partial financial openness and partly managed currencies. On the whole, this positive experience does not suggest the need for any major changes in policy frameworks. Perhaps the most important suggestion at this stage is to give greater weight to financial stability as a policy

objective and to strengthen institutions for regional policy coordination, including the CMIM.

However, the failure of the Bank of Japan to escape from deflation, and the more recent failures of advanced economy central banks in the US and Europe to achieve full recoveries, points to problems that may confront other Asian economies in the future as they achieve higher levels of economic and financial development. Therefore, their recent positive experience to some extent reflects luck as well as improved policy frameworks. In that sense, monetary policy frameworks in the region have not yet been adequately tested.

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