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GLOBAL SHOCKS AND RISK TO FINANCIAL STABILITY IN ASIA

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Abstract

Asian emerging market economies have recovered relatively well from the Great Recession of 2008–2009. Emerging Asia has been quite successful in maintaining both macroeconomic and financial stability in a turbulent global environment. Policy frameworks and governance structures have been adapted based on lessons learned from the Asian Financial Crisis. In general, policy makers have not been shy to adopt an eclectic approach to achieving monetary and financial stability using more than a single policy instruments to reach their objectives. Interventions in the foreign exchange markets are used in many jurisdictions to limit currency volatility, short-term interest rates are aimed at attaining macroeconomic stability interpreted mainly, but not exclusively, as price stability, and macroprudential policies have been employed in attempts to reduce the risk of financial stability.

The use of multiple instruments to reach multiple goals is not without risk, however. At a minimum it requires coordination among the entities that are responsible for each instrument, which in turn necessitates proper governance both within the central bank and between the central bank and other agencies that may be involved. Including a wider set of objectives than price stability in the tasks assigned to central banks also raises questions about the ability of the central bank to reach these objectives while avoiding the pitfalls associated with trying to do so.

Keywords: Global shocks, emerging market economies, central bank policy strategies, external borrowing, capital flow measures, macroprudential policies.

JEL Classification: E44, E61, F38

Contents

1. INTRODUCTION

Eighteen years ago much of Asia was engulfed in a severe financial crisis that is still present in the memory of those who experienced it firsthand. The Asian Financial Crisis (AFC) of 1997–1998 was a painful reminder of the harm that currency and banking crises can bring to the real economy. Asian policy makers took notice and introduced policy reforms to strengthen their financial markets and render policy frameworks more resilient. Important aspect of these reforms were to allow greater exchange rates flexibility, to strengthen regulatory and monetary policy institutions, and to pursue liberalization of financial markets cautiously, inter alia by making use of what now is being referred to as macroprudential and capital account management policies.

The reforms have been credited with protecting Asian financial markets from direct effects of the near-collapse of the financial systems in the United States (US) and the eurozone during the Great Financial Crisis (GFC) in 2007–2008. To be sure, some economies in the region, notably Republic of Korea, did experience financial turmoil during the GFC, but the region as a whole was remarkably resilient to the financial troubles in the US and the eurozone. The loss of employment and the slowdown of real economic growth in Asia were principally due to the decline in export demand associated with the GFC.

But nearly 2 decades of relative financial stability should not be a reason for complacency. Reforms of regulatory systems must continue and monetary policy frameworks must adapt to new challenges. In the area of regulation and supervision Zamorski and Lee (2015) enumerate as many as nine areas that need to be watched carefully. Several of these deal with aspects of compliance with evolving international standards and with cross-border supervisory challenges.[1] Reflecting on financial crises with a broader perspective Zeti (2014) emphasizes the importance of putting in place appropriate governance arrangements to manage not only the aftermath of a crisis but also to monitor and anticipate developments in financial markets that may signal stress. Such governance arrangements include international cooperation between central banks and regulatory authorities, but also cooperation within each jurisdiction between different agencies that may be called upon to deal with a crisis.

While important lessons can be learned from periods of financial instability in the past, changes in the international financial landscape bring new challenges that need to be analyzed and incorporated in policy strategies going forward. These challenges are principally the result of increased integration and globalization of financial markets, which enhances the potential for policy spillovers and transmission of shocks that may pose threats to financial stability. Among current developments that merit observation are economic policies in advanced economies and their consequences for international trade and capital flows, exchange rates, and asset prices; banking sector fragilities in

[1] The following four recommendations (slightly adapted from the original) are particularly noteworthy in this regard: (i) Ensure that bank regulators adopt the international standards promulgated by the Basel Committee and other international standards-setters, and conduct self-assessments of compliance with these standards using outside experts as assessors if necessary; (ii) Ensure that the country's legal and regulatory frameworks support domestic and cross border supervisory cooperation and information exchange, including the sharing of confidential supervisory information, between supervisors and other relevant authorities, such as deposit insurers; (iii) Ensure that the organization's supervisory culture and training approach develops examiners' ability to understand bank strategy and risk-taking rather than simply assess compliance; and (iv) Ensure that well-defined crisis management and resolution plans, including cross border resolution plans, are in place so that nonviable banks can be resolved in an orderly manner. Domestic and foreign authorities should be clear on their roles and decision-making authority.

the eurozone and the People's Republic of China; persistently sluggish growth in advanced as well as emerging economies; and commodity price developments.

Focusing principally on monetary policy developments, this paper reviews the sources of potential threats, discusses how they impact emerging market economies, and what policy makers in the affected economies might do to mitigate the fallouts of threats should they materialize.

2. POTENTIAL THREATS TO FINANCIAL STABILITY IN EMERGING ECONOMIES

2.1 Monetary Policies in Advanced Economies

Low and Negative Interest Rates Post GFC

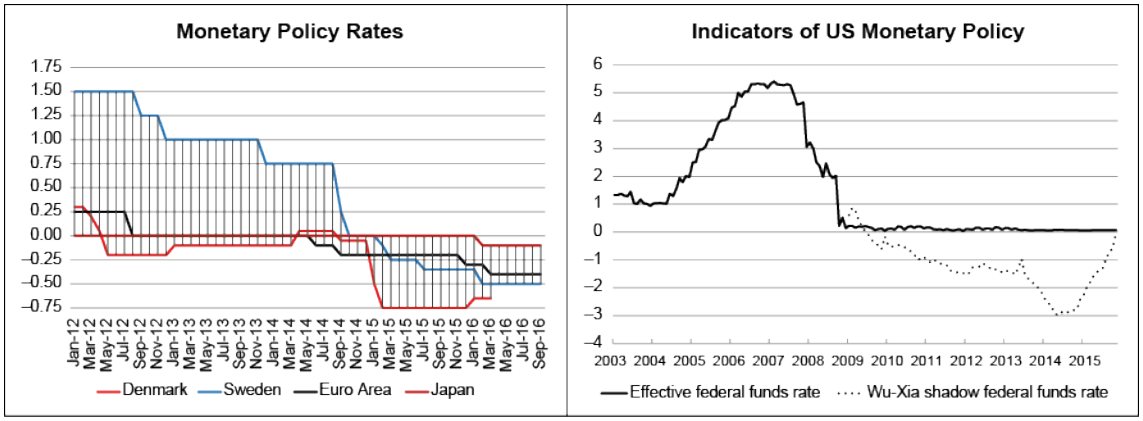
The immediate response of central banks in advanced economies to the GFC was to cut policy interest rates drastically and, in the case of the Federal Reserve, to inject liquidity into the economy by means of asset purchases. No doubt, these measures prevented a complete collapse of financial markets in the US but also in Europe, whose banks were heavily exposed to toxic US mortgage-related securities. As such, the aggressive policy easing also reduced the severity of the economic downturn caused by the financial turmoil, and thereby helped to dampen the decline in demand for emerging market economies' exports.

As the recession persisted and reached beyond the economies most affected initially, policy accommodation became widespread. By 2009 the Federal Funds rate in the US had declined to the so-called zero lower bound which prompted the authorities to engage in what was termed unconventional monetary policy consisting of a Quantitative Easing program that expanded the balance sheet of the Federal Reserve from US$1,000 billion before the crisis to US$2,000 billion in 2009, US$3,000 billion in mid-2011, and finally to US$4,500 billion in 2014, a level at which it has remained since. The expansion of the balance sheet had the effect of easing monetary conditions further, according to some estimates by the equivalent of a four percentage point decline in the federal funds rate. (Figure 1, right-hand side.) Other central banks followed suite reducing policy rates to zero and even beyond.[2] (Figure 1, left-hand side.)

The decline in policy rates has a counterpart in declining longer-term interest rates. This is illustrated in Figure 2 by the decline in the US 10-year Treasury Bill rate from close to 5% before the crisis to a trough at less than 1.5% in mid-2016. In Europe, corresponding rates have declined even further, so much so that as much as 40% of the value of outstanding European government bonds trade at negative yields.

[2] The Bank of Japan had of course maintained a zero policy rates for some time already. It also brought its rate into negative territory in 2016.

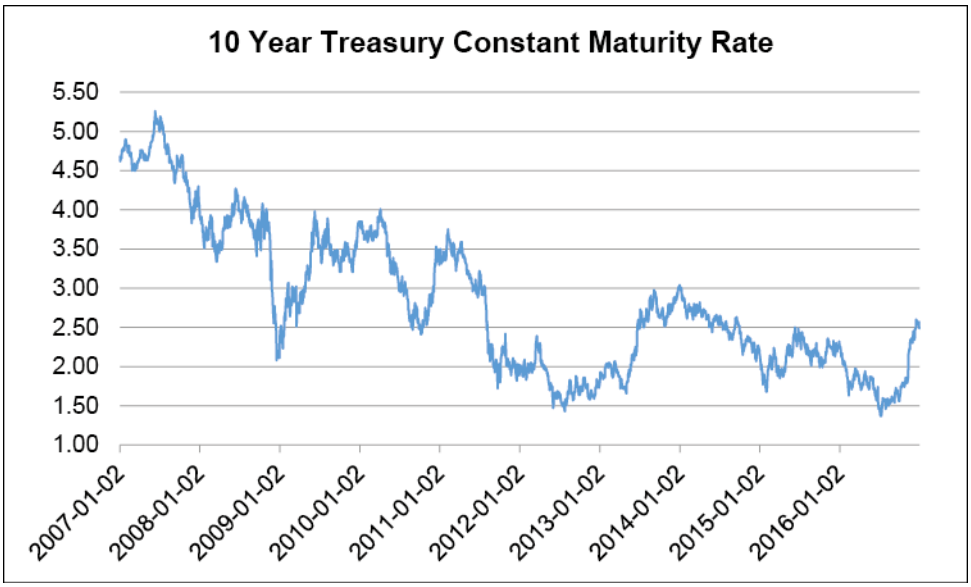
Figure 1: Negative Policy Interest Rates



Source: Author's calcluations based on national sources.
US = United States.

Source: Author's calculations based on data from the Federal Reserve Bank of Atlanta website.
US = United States.

Figure 2: Long-term Interest Rates



Source: Author's calcualtions based on Federal Reserve Bank of St. Louis data.

The consequence for emerging markets of the expansionary monetary policies in advanced economies is felt both through a re-pricing of assets and through capital flows. There is ample evidence that declining interest rates in advanced economies tend to increase asset prices in emerging market economies. As international financial markets have become more and more integrated, pricing of local assets is increasingly dependent on global factors. Expected cash flows from an asset depend on underlying business conditions which are influenced by developments in global markets. Assessing the present value of the cash flows, and hence their price, is being carried out by international investors who base their decisions on international financial conditions and risk preferences. As long as an economy is strongly integrated with international goods and asset markets, asset prices will follow global real and financial cycles to a significant extent. Rey (2013), for example, argues that expansionary policy of the US Federal Reserve reduces global risk aversion, which in turn increases equity

prices in emerging markets. Likewise Chen et al. (2014) reports evidence that quantitative easing policies in advanced economies lowers government and corporate bond yields, compresses CDS spreads, in addition to boosting equity valuations.

Expansionary monetary policy in advanced economies also encourages capital flows to emerging markets. The effect of interest differentials as a push factor for capital flows into emerging markets is a long-standing empirical finding. Recently the term "search for yield" has been used to describe this phenomenon. As interest rates on low-risk assets in advanced economies decline, investors seek out higher-yielding securities in emerging markets. In addition to being the consequence of the normal substitution effect when yields change, two other mechanisms may be at work. Institutional investors that have obligations promising a certain return feel the pressure to switch to higher-risk, higher-return investments. Likewise, managers of hedge funds and similar institutions, who face demands for redemptions as returns decline, will also seek to invest in higher-yielding instruments among them from emerging market.

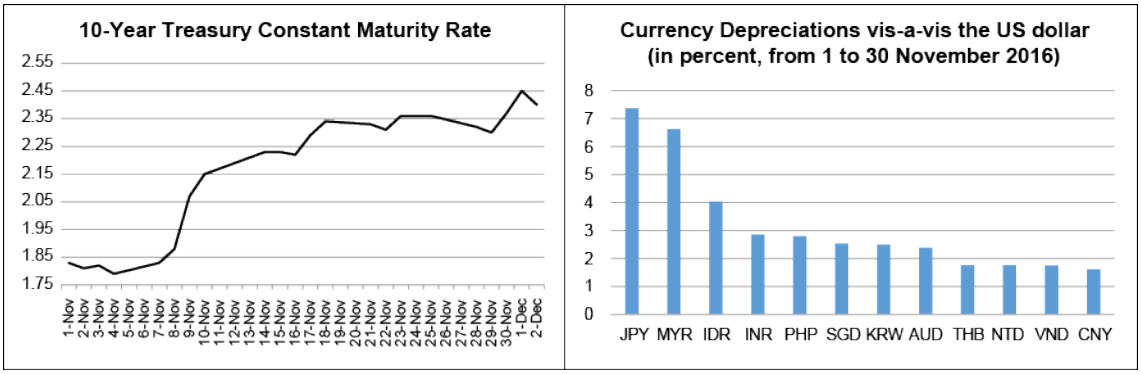
Capital inflows pose a dilemma for policy makers as they put appreciation pressures on the domestic currency threatening to erode competitiveness on local firms. As will be discussed in more detail in Section III, intervening in the foreign exchange market to moderate appreciation may lead to increased growth in domestic credit and threats to financial stability.

Rising Interest Rates in the United States

As the US economy has begun to recover, emerging market policy makers have switched from being concerned with the consequences of capital inflows to preparing for the possibility of abrupt capital outflows. The "taper tantrum" episode in May 2013 serves as a reminder of the disruptions that can come from actions of central banks that are unanticipated or misunderstood by financial markets. In a testimony before the US Congress on 1 May 2013 Chairman Bernanke signaled that the Federal Reserve would likely slow the rate at which it purchased assets from the banking system later in the year. In other words, he signaled that US monetary policy would become slightly less expansionary. The announcement led to a sell-off of emerging market sovereign bonds, leading to a sharp rise in yields and a substantial decline in values of the corresponding currencies. Volatility of the yields also increased significantly.

While there is now a better understanding of the Fed's policy strategy and hence a reduced likelihood of surprises from its policy moves, a new source of significant uncertainty has emerged with the victory of Mr. Trump in the US Presidential election. While the details of his economic policy priorities are yet to be revealed, it is generally believed that they involve some combination of government expenditure increases and tax cuts, thus leading to substantially higher interest rates in the US and renewed pressures on emerging market bond yields and currencies. Figure 3 shows the evolution of the 10-Year US Treasury yield, which recorded an increase in the order of 50 basis points during the month of November (left hand panel), most of which occurred after the voting in the US on 8 November 2016. The right-hand panel in the figure shows the widespread depreciation of Asian currencies during the same time period ranging from around 1¾% in the case of the PRC renminbi, the Vietnamese dong, the NT dollar, and the Thai bhat to almost 7½ and 6¾%, respectively, for the Japanese yen and Malaysian ringgit.

Figure 3: Financial Market Reaction to the Outcome of the United States Presidential Election



Source: Author's calcualtions based on Federal Reserve Bank of St. Louis data.

AUD = Australian dollar; CNY = People's Republic of China yuan; IDR = Indian rupee; INR = Indonesian rupiah; JPY = Japanese yen; KRW = Korean won; MYR = Malaysian ringgit; NTD = Taipei,China dollar; PHP = Philippine peso; SGD = Singapore dollar; THB = Thai baht; VND = Vietnamese dong.

Source: Author's calculations based on data from the website of Bank Negara Malaysia.

Divergent Monetary Policies between the United States and Europe/Japan

Even if "normalization" of US monetary policy goes smoothly and without elements of surprise, the divergence between monetary policies in the US on the one hand and Europe/Japan on the other will persist for some time. This has the potential for creating divergent paths in exchange rates of the US dollar against the euro and Japanese yen, which in turn has consequences for in Asian currencies. As already noted, the yen depreciated by close to 7½% during the month of November and the euro lost slightly over 3% relative to the US dollar. On a trade weighted basis the Asian corporates will be cushioned by the divergent paths of the dollar, the yen, and the euro. Overall changes in trade competitiveness will hence be muted. However, exporters that are concentrated in only one of the markets will feel the full effect of the bilateral currency movements.

External asset and liability positions are likely to be affected by divergent exchange rate movements depending on their currency denomination. As discussed below, some Asian economies have incurred substantial debts denominated in US dollars and will see the domestic currency value of these debts increase as the dollar strengthens. External assets denominated in euro or yen will experience corresponding decreases in value.

Finally, divergent monetary policies in advanced economies may also bring about greater volatility in exchange markets which could give rise to financial stability concerns depending on external asset and liability positions of local Asian financial institutions and corporations.

2.2 De-globalization and Protectionism

Globalization has contributed to improved living standards for millions of citizens of emerging market economies, as these have integrated into the world economy. Manufacturing facilities and service providers have been established generating numerous employment opportunities in emerging economies, while at the same time reducing prices in advanced economies of imported goods and services, hence improving living standards there as well. But globalization has also contributed to

rendering some economic activities in advanced economies uncompetitive, leading to extended job losses for those sector-specific skills that are no longer demanded. While it has been shown that technological change is a far more important reason than international trade for the loss of low-skilled jobs, there has still been a backlash against globalization which has been blamed not only for the decline in employment in advanced countries but also for the increase in income inequality. Nowhere has this backlash had consequences as significant as in the US where President Trump has abandoned the Trans-Pacific Partnership on trade and called in question the benefit of the North-American Free Trade Agreement. Mr. Trump has also hinted that he might introduce tariffs on imports from the PRC. While these statements are so far just pronouncements by Mr. Trump and not actual policies, there is a risk that the policy of the next US administration will be less supportive of international trade, and that they could, in an extreme scenario, trigger retaliatory actions and a significant reduction in international trade.

Should protectionist policies prevail, economic growth would likely suffer particularly for export-oriented economies. Financial stability would be indirectly affected through the impact of slower economic growth on debt service capacity of corporate borrowers and hence on the size of non-performing loans on the balance sheets of financial institutions and on the value of outstanding corporate bonds. Equity prices could also suffer leading to wealth-induced reduction in aggregate demand and further slowdown in economic growth.

3. IMPACT AND VULNERABILITIES

3.1 Capital Inflows, Currency Appreciation, and Asset Price Inflation

Capital flows from advanced economies seeking high returns in emerging markets create pressure on the host country's exchange rate, and without official intervention the currency will appreciate. The appreciation reinforces the gains from the carry trade based on the interest differential, and may induce further self-reinforcing inflows, potentially leading to significant currency misalignment. The consequence may be a prolonged period of weakened profitability in export-oriented segments of the economy.

This well-known narrative is the reason why authorities in many emerging markets intervene in the foreign exchange market to limit "volatility" in the foreign exchange market, where "volatility" in this context refers to some notion of deviations from the equilibrium and not to the typical measure used in the finance literature that is intended to capture very high frequency (e.g., day to day) swings in the exchange rate.

Interventions in the foreign exchange market, a purchase of foreign exchange in exchange for bank reserves denominated in domestic currency, leads to an expansion of domestic-currency liquidity in the economy thereby easing monetary conditions. This can be a cause of concern because the increased liquidity may cause unsustainable asset price increases and general overheating in the economy. For this reason interventions are typically "sterilized" by a corresponding sale of a domestic short-term asset—a treasury bill or a central bank bill—to "mop up" the bank reserves that have been created. This policy creates its own potential problems, however. The first is that the effectiveness of the intervention on the exchange rate may be limited. A sterilized intervention in the foreign exchange market is effectively an exchange of foreign assets coming into the economy for domestic assets. If the two types of assets are close substitutes, the intervention will have limited effect on the value of the currency.

Instead, as the domestic interest rate remains relatively high due to the sale of domestic assets, further capital inflows may be induced.

The second problem associated with sterilized foreign exchange market intervention is that the interest rate the central bank has to pay on the domestic asset it has sold is almost always higher than the interest rate it earns on the foreign asset it has purchased. This carry cost, often referred to as a "quasi-fiscal cost," can be substantial.[3]

Central bank interventions to smooth exchange rate movements can be thought of as providing insurance to the private sector against the risk of losses due to large exchange rate movements. As with any insurance this could give rise to a moral hazard problem whereby the private sector takes on more foreign exchange risk than they otherwise would. An alternative to providing such insurance therefore would be to put the burden on private agents themselves to hedge their foreign exchange exposures. This, however, requires that the necessary hedging instruments are available at a reasonable cost, which in turn requires that the foreign exchange market is well developed. But this entails a catch-22 problem—the private sector will not engage in significant foreign currency hedging until a deep and efficient foreign exchange market exists to provide the necessary instruments, and the foreign exchange market will not develop as long as the central bank provides the implicit insurance. There is no simple solution to escape from this dilemma, as it will have to involve some period of time during which exchange rate fluctuations are allowed to be larger than what might be thought of as "comfortable" to allow for the development and use of market-based hedging.

3.2 External Borrowing

The image of push factors leading to capital flows from advanced to emerging markets obscures an important source of capital flows, namely external borrowing by domestic financial and non-financial corporations. Low interest rates in global financial markets create an incentive for domestic institutions to finance their operations by borrowing in international markets. For institutions in emerging markets, such borrowing is predominantly denominated in foreign currency, typically the US dollar. While banks and other financial institutions have traditionally been the principal intermediaries in this process, recently non-financial corporates have become involved on a non-trivial scale. The way many of them have carried out this borrowing has only recently been highlighted in available statistics. Traditional balance of payments statistics are compiled on a residence basis, and external borrowing of non-financial corporates has been captured in these data. However, if a corporate in an emerging market economy borrows through a subsidiary located in an advanced economy the transaction will not be recorded in balance of payments statistics. Researchers at the Bank for International Settlements (BIS) have compiled data on these statistics and highlighted differences between these data based on the nationality of the corporate and the balance of payments data that are based on the residence.[4] For a set of Asian economies Figure 4 illustrates the difference between the two measures, which in some cases is substantial.[5]

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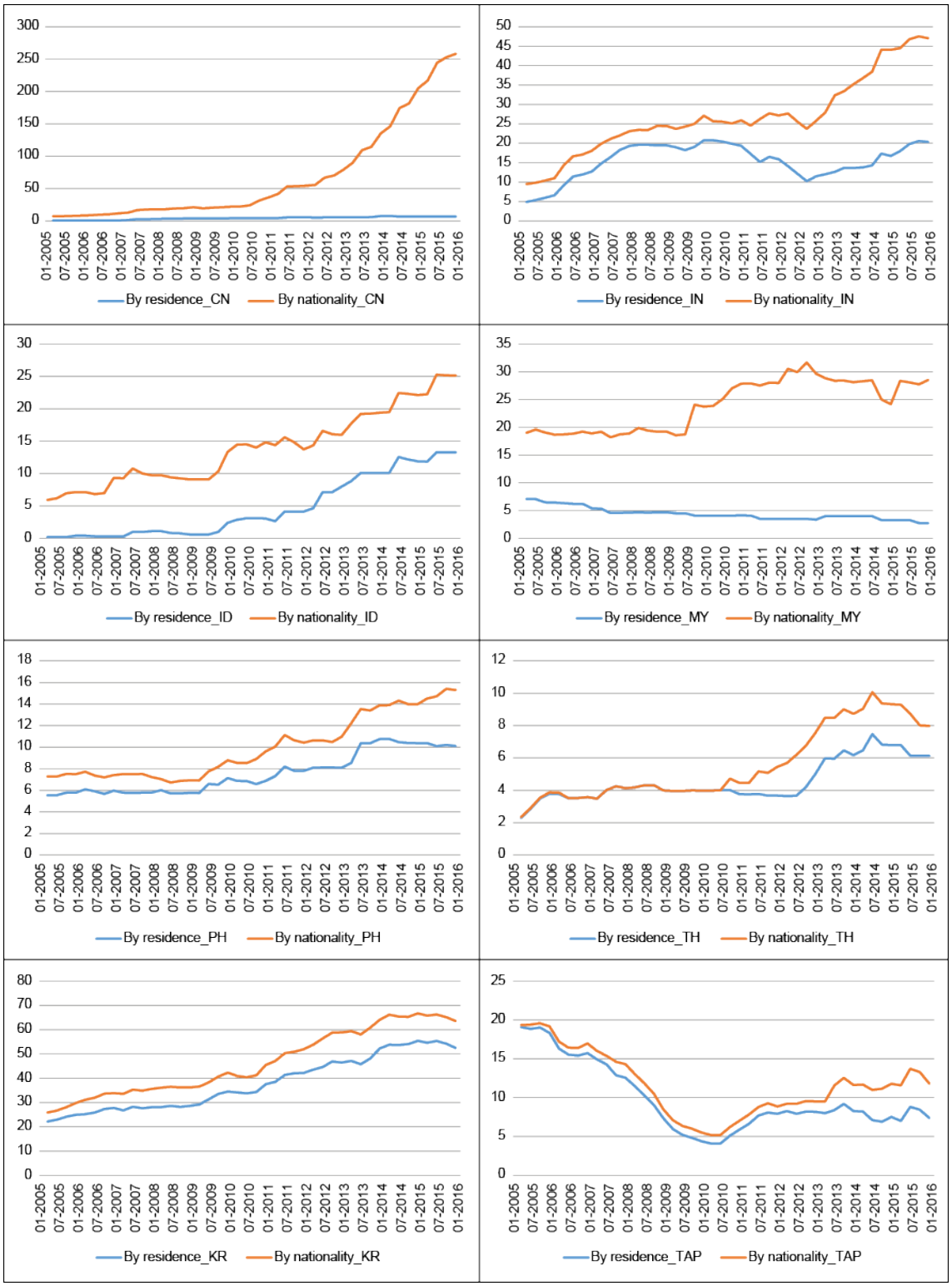
[3] Calculated on the total stock of foreign exchange reserves the quasi-fiscal cost is frequently cited as a major reason why self-insurance against the risk of a balance of payments crisis can be expensive. For example, if reserves constitute 25% of gross domestic product (GDP) and the interest differential is 4%, the annual cost will be 1% of GDP.

[4] See, for example, Chui et al. (2016).

[5] I am grateful to Michael Chui of the BIS for providing the underlying data.

Figure 4: External Borrowing by Non-financial Corporates
(US$ millions)



US = United States; CN = People's Republic of China; IN = India; ID = Indonesia; MY = Malaysia; PH = Philippines; TH = Thailand; KR = Republic of Korea.

Source: Author's calculations based on data provided by M. Chui and used in Chui et al. (2016).

Data for the PRC illustrate the most remarkable difference. While on a residence basis there appears to be relatively little external borrowing by PRC non-financial corporates, the nationality based measure shows a very rapid growth of external borrowing especially during the period of exceptionally low global interest rates in the aftermath of the North-Atlantic financial crisis. A similar, albeit less spectacular, pattern can be seen also in the other economies depicted in the figure with the exception of Indonesia where the increase in external borrowing has been carried out principally by resident corporates.

What are the consequences for financial stability of the external borrowing by non-financial corporates? First, as I discuss at some length below, the external debt is likely to imply a certain amount of currency risk for the corporate, which may materialize when there are substantial movements in the exchange rate vis-à-vis the currency in which the debt is denominated. In addition, the corporate can effectively become an intermediary of external funds to the economy fueling domestic credit creation and possible overheating asset and goods market. This can occur in several ways. For example, if the parent company has foreign currency commitments it can discharge these obligations by borrowing through its subsidiary located in the foreign economy, rather than using its domestic funds, converting them to foreign exchange and transferring them abroad. The domestic funds can be placed in the domestic banking system sustaining elevated credit creation in the domestic market.

3.3 "Sudden Stops," Rising Funding Costs, Increased Value of External Debt

A contributing factor to the AFC was foreign currency denominated borrowing by entities that did not have corresponding foreign currency denominated sources of revenue to service the debt. As currencies depreciated, the domestic currency equivalent of both the debt servicing costs and the principal increased sharply, leading to widespread insolvencies. Loans could not be rolled over as capital inflows ceased. Is there a corresponding risk that the corporate borrowing discussed in the previous section will lead to similar problems? The issue hinges on the degree of currency mismatches on the balance sheet and income statement of the borrower. A currency mismatch arises when a significant portion of the liabilities of an entity is denominated in a different currency from the assets, or when a significant portion of expenditures is denominated in a different currency from revenues. In the case of a corporate that has debts denominated in dollars and assets denominated in pesos, a fall in the value of the peso will increase liabilities relative to assets. Interest expenditures will also increase relative to revenues in so far as the latter are principally in pesos making debt service payments more onerous. An exporter that has export revenues denominated in dollars, on the other hand, is naturally hedged as far as the income statement is concerned, but will still face the problem associated with an increased peso value of the principal.

Corporates that do not have natural hedges in the form of foreign currency assets with similar maturity structure as the foreign currency debts and foreign currency receipts matching foreign-currency commitments can of course hedge the currency mismatch in by engaging in the appropriate forward, futures, or options contracts. But this merely transfers the currency mismatch risk to the counterparty. If that counterparty is a domestic financial institution, the risk to the financial stability of the economy as a whole may not be diminished, unless the entity selling the insurance is naturally hedged against currency fluctuations.

Officials in jurisdictions where corporates have engaged in significant external borrowing either on their own account or through subsidiaries abroad have expressed confidence that the associated financial stability risks are contained because of requirements that such borrowing be done on a hedged basis. Data on the extent to which this is actually the case are not publicly available, however, and cannot be independently verified. Furthermore, as noted in the previous paragraph, if the counterparty selling the currency risk insurance is also a domestic entity, the risk to the economy as a whole may not be reduced.

3.4 Expansionary Fiscal Policy, Tight Monetary Policy, and Protectionism: A Toxic Mix for Emerging Markets.

As already noted, the policy agenda that emerged from the electoral campaign of Mr. Trump amounts to a toxic mix for emerging markets. The agenda hints at expansionary fiscal policy focusing on infrastructure investment and tax reductions, as well as on trade policy measures that could lead to a significant reduction in international trade. Furthermore, the implication of the fiscal policy agenda is an increase in the federal budget deficit, increased borrowing requirement, and therefore increased interest rates.[6] If the Federal Reserve continues to raise its policy interest rate as expected, the upward pressure in market rates will be strengthened.

If enacted, the consequences of this policy mix are likely to be problematic. Higher interest rates are likely to be transmitted to emerging markets through the integrated global financial system, and will have contractionary real effects. Some of the challenging effects of capital flows and exchange rate changes have already been discussed above. Will the depreciation of emerging market currencies relative to the US dollar provide a counterbalance through increased competitiveness and growth of exports? If the protectionist measures in the Trump agenda are implemented, the answer is no, since the growth of global trade is likely to decline and possibly turn negative. In addition, even if the US economy were to pick up as a result of the increase in infrastructure investment, the impact on Asian emerging economies is likely to be muted as the dependence in the region has shifted toward the PRC. Finally, if threats of imposing tariffs on PRC goods exported to the US are carried out, the knock-on effects of the consequent slowdown in the PRC will be felt strongly in emerging Asia.

All in all, if the policy agenda Mr. Trump advocated during his campaign is enacted, the prospects for emerging markets will not be good. Latin America will be most vulnerable, but Asian economies will not be spared.

4. POLICY RESPONSES TO VULNERABILITIES AND FINANCIAL STABILITY RISKS

The use of conventional policy measures, principally changes in a short-term interest rate controlled by the central bank, to address financial stability risks is controversial. In the early 2000s the broad consensus among central bankers and academics was that central bank policy should focus on inflation as the primary, if not only, objective. This focus would ideally be implemented using the inflation-targeting strategy pioneered by the Reserve Bank of New Zealand in 1990. Several Asian emerging market central banks were skeptical, however, emphasizing the importance of paying attention to a

[6] As already shown in Figure 3, the increase in interest rates has already materialized.

wider set of variables, in particular the potentially damaging effects of exchange-rate misalignments, and taking measures to limit excessive volatility of the exchange rate using interventions in the foreign exchange market.

Some economists had also been questioning the exclusive focus on inflation, suggesting that central banks should also pay attention to financial imbalances building in the economy.[7] But the status quo was robustly defended. (In Bernanke and Gertler 2001, for example.) One facet of this defense was that it would not be desirable to use interest rates to lean against asset price increases, since it was not possible to determine whether such increases were due to fundamental economic developments or to irrational exuberance in financial markets. All central banks could, and needed to, do was to clean up the financial wreckage should a collapse of asset prices lead to a widespread failures of financial institutions. Furthermore, it was also widely thought that the policy interest rate was too blunt an instrument to correct asset price misalignments.[8]

The financial crisis of 2007–2009 in the US and Europe (the Crisis) led to widespread acceptance of the idea that financial stability should be added to inflation as a policy objective of central banks.[9] The Crisis thus underscored the need for relevant national authorities, primarily central banks, to improve surveillance systems to detect, at their incipient stages, the build-up of macroeconomic risks, vulnerabilities or threats that could jeopardize financial system stability. At the same time it became recognized that the traditional interest rate tool needed to be supplemented with other policy instruments to deal with the additional policy objective, in particular macroprudential policies and capital account management policies.

In its purest form the post-Crisis consensus saw the short-term interest rate as focusing exclusively on inflation, or macroeconomic stability more generally, and leaving regulatory measures, macro-prudential policies, to focus exclusively on financial stability (e.g., Bernanke 2011; Svensson 2012). But this strict division of labor between the policy interest rate and macroprudential policies has been challenged. For example, there is evidence that changes in the short-term monetary policy interest rate can have an impact on risk taking by economic agents (Borio and Zhu 2008) In addition, macro-prudential instruments are, as we shall see, often focused on specific markets and as such may not fully guard against more diffuse risks to financial stability. In such cases using interest-rate policy may be justified as it “gets into all the cracks,” as Professor Jeremy Stein once expressed it when he was one of the Governors of the US Federal Reserve (See Stein 2013).

Recent research by Filardo and Rungcharoenkitkul (2016) also suggests that an interest rate policy that leans against the financial cycle in addition to the macroeconomic cycle can improve economic performance. The distinguishing feature of their analysis is a focus on a systematic reaction to the full financial cycle. Previous analysis of the costs and benefits of leaning against a financial cycle such as that found

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[7] Borio and Crockett (2000); Borio and Lowe (2002); Borio and White (2004); Cecchetti, Genberg, Lipsky, and Wadhwani (2000).

[8] “The evolving consensus, which is by no means settled, is that monetary policy is too blunt a tool to be routinely used to address possible financial imbalances; instead, monetary policy should remain focused on macroeconomic objectives, while more-targeted microprudential and macroprudential tools should be used to address developing risks to financial stability, such as excessive credit growth.” Bernanke (2011)

[9] In some jurisdictions the task of implementing macro-prudential policies is vested in a separate institution from the central bank. This raises issues of coordination with decisions taken at the central bank, which may also have a consequences for economy-wide financial stability. See Section d below for a discussion.

in IMF (2014) and Svensson (2014) had considered a one-time intervention by a central bank in the midst of a financial boom and found that the macroeconomic costs of a tighter policy would outweigh the benefits of reducing the probability and severity of a financial bust. But Filardo and Rungcharoenkitkul show that this calculus is likely to be turned on its head when the central bank adopts a systematic lending policy over the whole financial cycle, thus altering the nature of this cycle as economic agents adjust their behavior in response to the policy maker's strategy.

Preserving financial stability is now widely accepted as a legitimate objective of public policy. Staff of international financial institutions as well as authorities in central banks, regulatory bodies, and finance ministries are actively looking for appropriate policy instruments, analyzing their effects, and setting up governance arrangements for their implantation.

Facing potential turbulence in the global economy and having to take account of the domestic vulnerabilities described in the previous sections, central banks in Asian emerging markets are like to take an eclectic approach in designing their policy strategies. Filardo, Genberg, and Hofmann (2016) described this approach as a three-pillar approach in which foreign exchange market intervention is used to deal with short-run currency volatility, traditional interest rate policy is targeting macroeconomic stability, and macroprudential policies and current account management policies are implemented to lessen the risk of financial instability. As we shall see, however, implementing this policy strategy must be done with care and with due account taken of the potential pitfalls associated with each of the pillars and with the considerable interlinkages between the policies.

4.1 Monetary Policy and Macroeconomic Stability

Since the AFC, central banks in Asia have been quite successful in achieving their core macroeconomic stability objectives. Filardo and Genberg (2010) document that the inflation performance in economies in the Asia and the Pacific region has been admirable. They argue that greater focus by central banks on inflation control has translated into a lower and more stable inflation environment. They also show that it is difficult to document big differences in inflation performance between explicit inflation targeters and non-inflation targeters. In other words there is no one-size-fit-all recipe for ensuring macroeconomic stability, provided that there is a broad consensus about the importance of inflation control.

That said, changes in central bank governance have been supportive of the successful policy outcomes after the AFC. In particular, central banks in the region have gained legal and/or political independence during the past decade. Improvements in governance have usually been associated with enhanced ability to achieve inflation control.

There are thus reasons to be optimistic that central banks in Asia will be able to navigate the uncertain global economic waters going forward. Policy frameworks have been calibrated to the needs of individual economies and are not bound by unquestioned adherence to what used to be called "best practice" in central bank policy.

An important component of policy frameworks is the willingness to tolerate greater variations in nominal exchange rates. This has provided some degree of policy independence in spite of the growing influence of international financial markets on domestic interest rates. At the same time, however, central banks stand ready to intervene in foreign exchange markets to maintain orderly conditions. Purists may

argue that such interventions go too far in limiting currency movements, and that it would be preferable for the private sector to learn to live with greater exchange rate volatility. As already noted, however, this requires deep and well-functioning foreign exchange markets which do not yet exist in many jurisdictions.

4.2 Capital Flow Measures

The attitude toward the use of capital flow measures varies substantially across jurisdictions in Asia. In those with the most advanced financial systems—Australia; Hong Kong, China; Japan; New Zealand; Singapore—capital account transactions are largely free of restrictions and exchange rates are either freely floating (Australia, Japan, and New Zealand) or a closely managed policy instrument (Hong Kong, China; and Singapore).[10] In terms of the classification of exchange rate regimes along a spectrum from freely floating to rigidly fixed, these economies are thus situated at the two ends. While both groups have abolished capital controls, the former has retained monetary (interest rate) independence whereas the latter has foregone such independence in favor of a rigid exchange rate based monetary policy.

In other jurisdictions policies involving capital flow management measures are eclectic. Figure 5 shows measures of de jure financial openness for selected Asian economies for four separate periods, before and during the AFC, after the AFC, and before the GFC, and after the GFC.[11] Panel 1 shows that in some jurisdictions capital account transactions are tightly controlled and have been so for a long time.[12] Panel 2 shows jurisdictions in which capital account transactions have been liberalized to a certain extent during these periods, especially after the AFC.

Panel 3 is the most interesting in that it shows that financial openness has actually been reduced over time in Sri Lanka, Indonesia, Lao PDR, Malaysia, Philippines, and Thailand according to the Chinn–Ito index. This is consistent with the notion that authorities have been reluctant to embrace a fully open capital account as a principle to strive for at least in the short run. But this finding is surprising in view of the fact that four of the five economies identified as having tightened restrictions on financial integration are members of the Association of Southeast Asian Nations (ASEAN), a group of countries striving for greater economic integration over time.[13]

Panel 4 is included as a cross-check. It uses a different index of financial openness and shows results for a group of countries that overlaps with those in Panels 1–3. The conclusions that emerge are broadly consistent with those just presented. In particular, the declining trends in openness for Indonesia, Malaysia, the Philippines, and Thailand are confirmed.

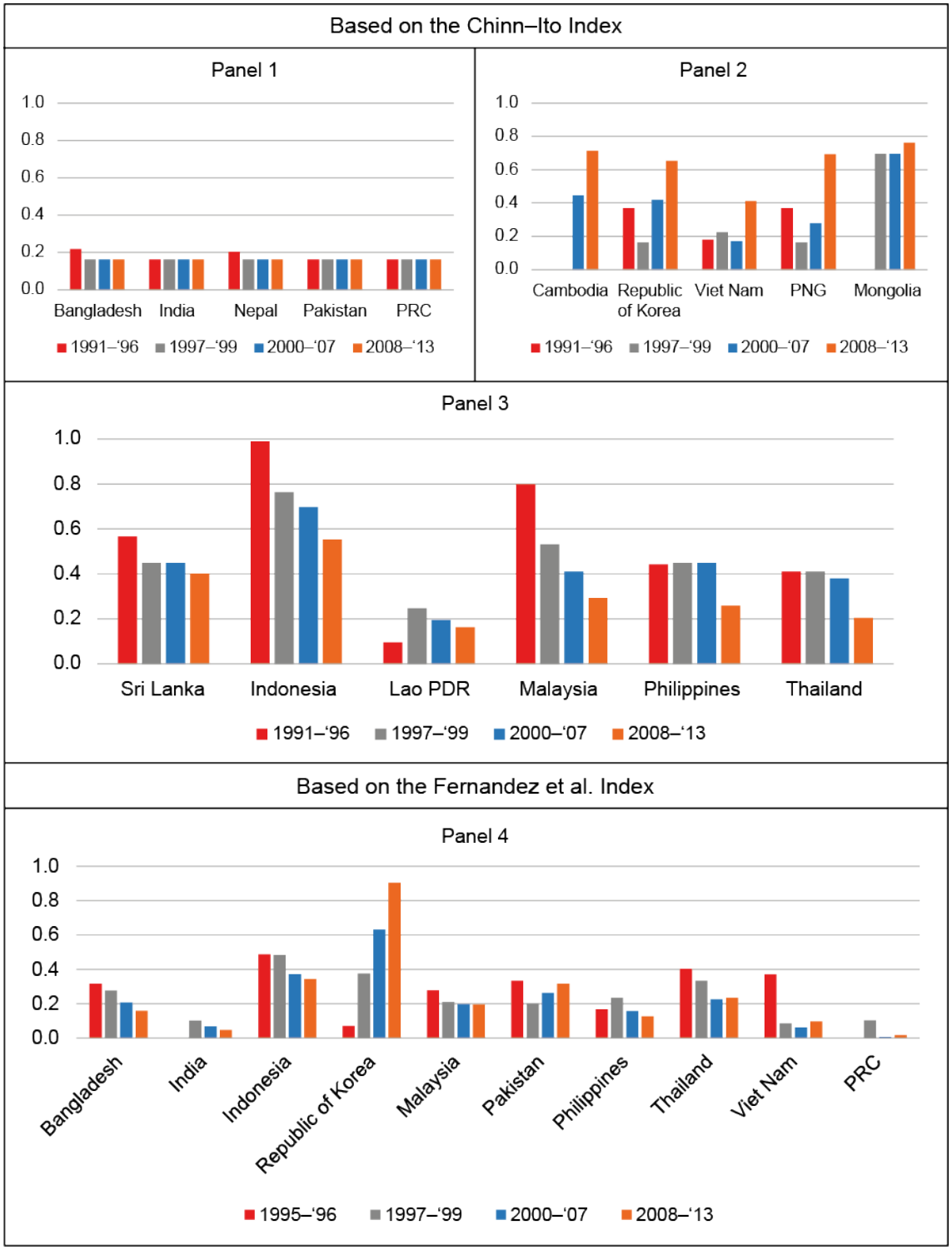
[10] Hong Kong, China's currency board arrangement features a rigidly fixed exchange rate vis-à-vis the US dollar, whereas Singapore conducts its monetary policy by choosing a level and a slope of the value of the Singapore dollar relative to an unannounced currency basket. As predicted by the Mundellian Trilemma, in both cases the short-term interest rate in the economy will be completely determined by the exchange rate policy given that international capital flows are free of restrictions.

[11] See Box 1 for a brief description of the indices used and a reference to alternative de facto measures.

[12] It should be noted that the index covers conditions only up to 2013. Since then liberalization measures have been introduced in the PRC and India, which are not reflected in the figure.

[13] See Genberg (2016) for a further discussion and an attempt to reconcile the two seemingly contradictory trends.

Figure 5: Financial Openness in Selected Asian Economies



PNG = Papua New Guinea, PRC = People's Republic of China.
Source: Author's calculations. See Box 1 for data sources.

Box 1: Measuring Financial Openness De Jure vs De Facto*

In discussions about financial openness, a distinction is often made between de jure openness, which is meant to capture the legal regime in place in a jurisdiction, and de facto openness, which attempts to show the size of actual cross border flows and cross-border asset diversification.

De jure measures are typically based on the International Monetary Fund publication *Annual Review of Exchange Arrangements and Exchange Restrictions*, which provides descriptive accounts of measures taken by members to restrict capital account transactions. A number of authors have converted these descriptions into numerical measures of financial openness.[1] One example is the Chinn–Ito index described in Chinn and Ito (2006) and available online at http://web.pdx.edu/~ito/Chinn-Ito_website.htm. The Chinn–Ito index is calculated as the first principal component of indices indicating the presence of multiple exchange rates, restrictions on current account transactions, restrictions on capital account transactions, and requirements to surrender export proceeds. It is available for 182 countries for the period 1970 to 2013.

A more granular index has just been constructed and described in Fernandez, Klein, Rebucci, Schindler, and Uribe (2015) and also made available online. It focuses only on capital account transactions, but takes into account 10 different types of assets and distinguishes between capital inflows and outflows. It has been tabulated for 100 countries over the period 1995 to 2013.

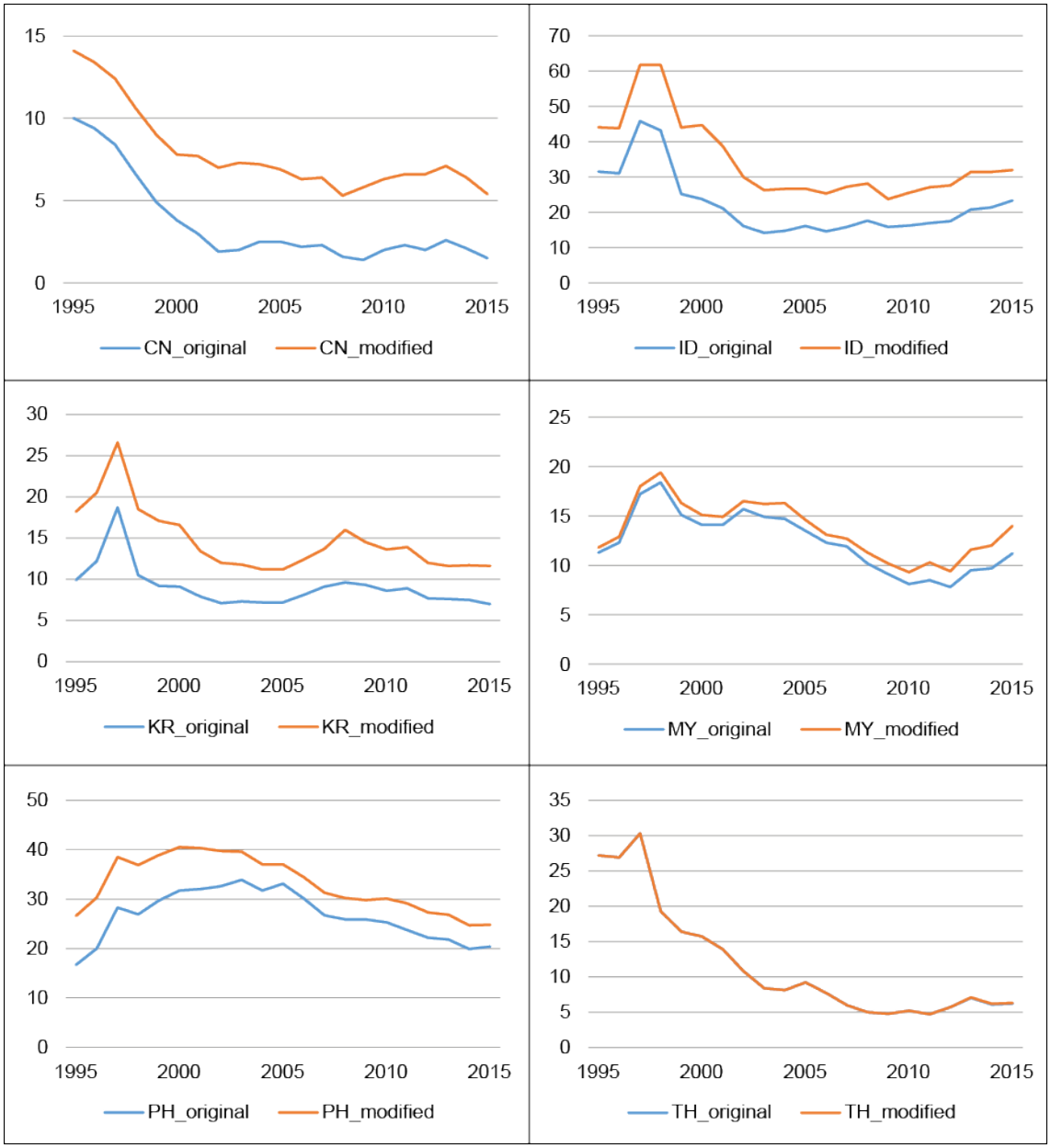
As noted, de facto quantity-based indices of financial openness attempt to record the extent to which domestic residents hold foreign financial assets in their portfolios and correspondingly what proportion of domestic financial instruments are held by non-residents. There are two difficulties associated with constructing and interpreting these indices. First, while balance of payments statistics provide reasonably comprehensive data on the cross-border flow of financial assets, there is much less information about international investment positions which are the results of these flows but which are also affected to an important extent by valuation changes. In addition, cumulating flows to obtain stock figures require accurate starting values if they are to be reliable.

The second problem associated with quantity-based measures of financial openness relates to interpretation. What would be the extent of international portfolio diversification in the absence of statutory restrictions on such diversification? Calculating the benchmark so defined would require a model of optimal international diversification, rendering the interpretation of the index dependent on the appropriateness of the model.

*For a more detailed discussion including a comparison of de jure and de facto measures of financial openness, see Genberg (2016).

It appears then that Asian policy makers have dealt with vulnerabilities related to capital flows in part by retaining some controls on capital account transactions and in some cases actually tightening them. They have also dealt with vulnerabilities in other ways since the AFC. Figure 6 shows that the share of foreign currency denominated debt in total debt in the economy has generally been reduced since the AFC, in some cases substantially so. It is also well established that official foreign exchange reserves have increased markedly. Both developments have rendered the economies more resistant to currency fluctuations. Nonetheless, the recent uptick in foreign-currency denominated debt in Indonesia and Malaysia, as well as the external borrowing of non-financial corporations discussed in Section II, warrant monitoring.

Figure 6: Foreign Currency Debt as a Percentage of Total Debt*



CN = People's Republic of China; ID = Indonesia; KR = Republic of Korea; MY = Malaysia; PH = Philippines; TH = Thailand.

* The series denoted as "original" assumes that debt between domestic residents is denominated in domestic currency, where as the series denoted "modified" is adjusted to take into account foreign-currency denominated debt between domestic residents. See, Chui et al. (2016) for a discussion.

Source: Author's calculations based on data provided by M. Chui and used in Chui et al. (2016).

4.3 Macroprudential Measures

Asian policy makers have also been active with respect to the application of macroprudential policies. Data presented in IMF (2014) and Zhang and Zoli (2014) as well as in Cerutti, Claessens, and Laeven (2015) show that economies in emerging Asia have increased the use of such measures substantially in the aftermath of the AFC. By some measures they are far ahead of policy makers in other jurisdictions in this respect, and arguably this contributed to the fact that Asian economies were relatively little affected by the financial aspects of the GFC, although they were of course heavily influence by the slowdown in import demand from the US and Europe as these economies entered recessions.

Macroprudential policies take many forms, reflecting the diffuse nature of "financial stability."[14] For example, there are measures intended to influence the aggregate growth of credit to the private non-financial sector, measures that focus on credit growth or price developments in particular sectors of the economy, measures to affect maturity mismatches and liquidity mismatches on banks' balance sheets, and measures to curtail currency mismatches in the financial sector of the economy.

A common feature of these measures is that they tend to be relatively narrowly targeted at a particular sector or activity, contrary to interest rate policies, which affect the financial system and the economy more generally. This feature is often viewed as an advantage because the policy can focus on the epicenter of a potential financial crisis as opposed to being a "blunt instrument" affecting all sectors. But this assumes that it is possible to identify where the epicenter is located, and when there is a risk that a financial crisis will erupt. But this is not necessarily the case. Consider, for example, housing price development or the growth of bank credit as the intermediate target of macroprudential measures. Can we be certain that the housing market or bank credit growth is really the underlying source of financial system risk or not just a readily observable symptom? If it is the latter, then a targeted macroprudential policy will not solve the underlying fundamental problem. An instrument that "gets into all the cracks" may be preferred.

In addition, examining the example further, while both house prices and bank credit growth can be readily measured, it is not a simple matter to decide when they have reached levels that threaten financial stability. Both variables evolve over time in response to fundamental economic forces, and policies should react only to growth rates over and above what these forces dictate. In other words, we are faced with exactly the same difficulty as that identified in the debate about whether interest rate policy should react to asset prices, except now the problem is associated with the introduction of macro-prudential policies.

Targeted macro-prudential policies are typically focused on a particular type of institution (e.g., limits on the growth of credit extended by commercial banks or countercyclical capital buffers required of regulated banks), a particular financial activity (e.g., maximum loan-to-value ratios on mortgage lending or a minimum net stable funding ratio for a commercial bank), or the financial strength of bank clients (e.g., ceilings on debt-to-income ratios). As such they aim to reduce risks associate with the institution, the financial activity, or the type of individual being targeted. While

[14] European Systemic Risk Board (2014) lists five measures that will be covered by a European Union (EU) Directive, three measures covered by a Regulation, and an additional three that are not covered by EU legislation but that member countries may use. Cerutti, Claessens, and Laeven (2015) report the result of a survey of IMF member countries on their use of macro-prudential measures. They identify no less than 12 such measures.

the measures taken may well be successful in curbing these risks, the more difficult question to answer is whether they succeed in significantly reducing overall financial risk in the economy, or whether the risk is transferred somewhere else in the financial system: from regulated banks to shadow banks or the capital market; from mortgage lending to credit-card lending; and from borrowing from commercial banks to borrowing from "curb-market" money lenders.[15] If so, the risk in the system may not decrease substantially, and it may in fact become more opaque. There is also a danger that the transfer of risk will beget additional macro-prudential policies targeted at the new activities resulting in multiple layers of policies whose aggregate effects may be hard to assess.[16]

4.4 The Need for Coordinated Policies

As central banks take on multiple objectives and by implication start using multiple instruments, the question naturally arises about the need for coordinating policy decisions. The need arises because each instrument is likely to have an impact not only on the policy objective it is seeking to reach but also on other objectives. A clear example would be the spillover effects of interest rate policy decisions on financial stability and those of macroprudential policies on macroeconomic stability. A loosening of monetary policy (an interest rate decrease) will increase economic activity, but it will simultaneously increase the risk of financial instability, for example by increasing credit growth in the economy or by inducing additional risk taking. To counter the increased risk of financial instability, macroprudential policy may need to be tightened. Similarly, a tightening of macroprudential policies may slow economic activity, which, if this was considered inappropriate, would have to be countered by an expansionary monetary policy.

The implications of this interaction between the two types of policies can be illustrated in the well-known Swan diagram where the two policy instruments are measured along the respective axes, and the lines in the diagram show those combinations of the two instrument settings that result in reaching the policy objectives.[17] In Figure 7, Panel 1, the basic setup is illustrated by the red line signifying combinations of interest rates and macroprudential settings that achieve macroeconomic (price) stability, and the blue line those combinations that yield financial stability. The relative slopes of the lines are based on the assumption that interest rate policy has a relatively stronger impact on price stability and that macroprudential policy has a relatively stronger impact on the financial stability objective.

Panel 2 illustrates the case of an increase in financial stability risk, which shifts the blue line to the right. A tightening of macroprudential policy would counteract the risk but at the cost of slowing economic activity. To maintain both macroeconomic and financial stability a simultaneous tightening of macroprudential policy and easing of monetary policy would be needed as shown by the intersection of the dashed blue line with the solid red line.

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[15] As an illustration, Cerutti et al. cite results indicating that the existence of macroprudential policies in an economy aimed at curbing lending by domestic financial institutions is associated with larger cross-border financial claims consistent with the idea that borrowers switch from domestic to foreign sources of funds in response to domestic macroprudential regulations.

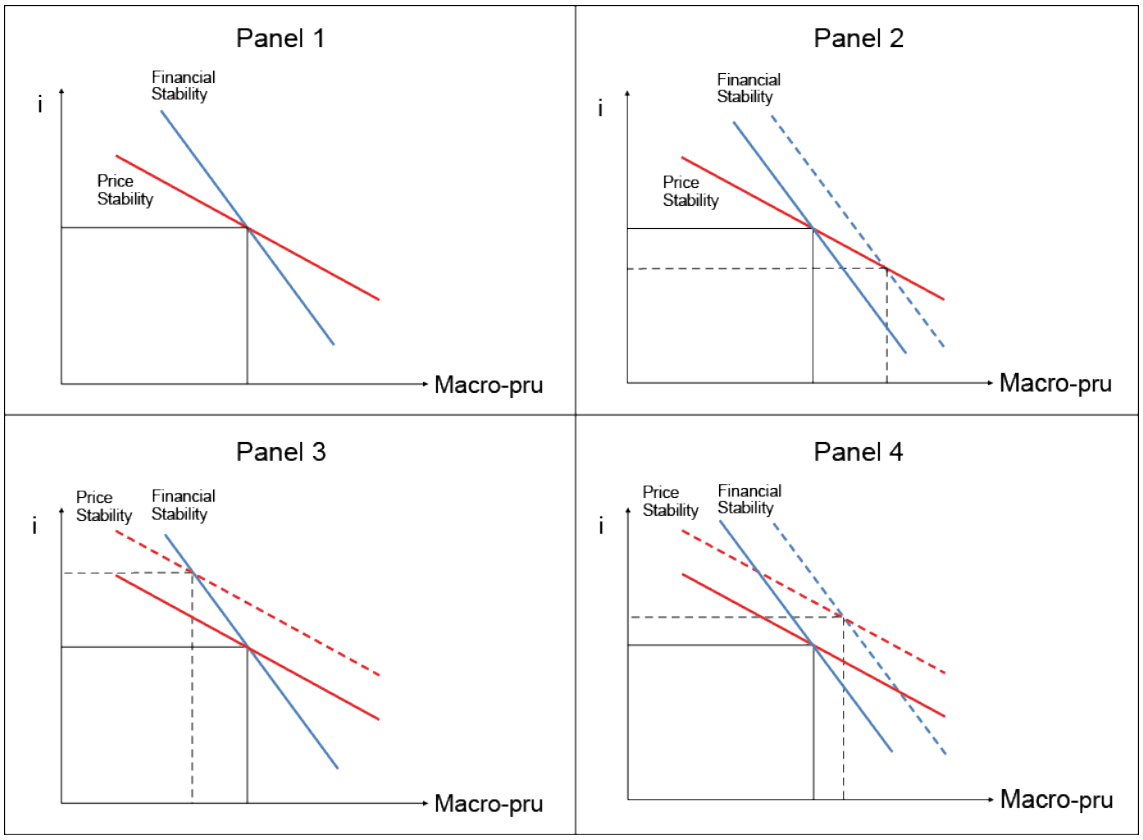
[16] The arcade game "whack-a-mole" offers an apt analogy. In this game the player faces "moles" that appear temporarily from different holes in the game console, and the goal is to whack each mole before it disappears. The application of macro-prudential policies must guard against the temptation to chase each type of new risk that appears in what might be called a "whack-a-risk" fashion.

[17] This diagram was used in the same context in Bean (2015).

Panel 3 illustrates the case of a pure inflation shock, which in isolation would require a tightening of monetary policy. However, with the interdependence of the two policy instruments, a simultaneous tightening of monetary policy and easing of macroprudential policy would be appropriate.

In these two cases the adjustment of the two policy instruments would go in opposite directions. Panel 4 illustrates a case where they would be adjusted in the same direction. This corresponds to a case of a simultaneous inflation and financial stability shock, perhaps because of capital inflows leading to rapid credit creation and asset price inflation threatening financial stability, and an increase in aggregate demand putting upward pressure on inflation. In this situation the appropriate policy response would be a tightening of both monetary and macroprudential policy.

Figure 7: Coordination Interest Rate Policy and Macroprudential Policy



The need for coordination raises not only the technical problem of how to calibrate the policy adjustments in response to shocks. It also requires a governance structure that nurtures interactions between the bodies that are responsible for each instrument.

Furthermore, coordinating monetary policy and macroprudential policy also gives rise to communication challenges in particular when the two policy instruments have to be altered in opposite directions. Care must be taken to avoid giving the impression that those responsible for monetary policy and those responsible for setting macroprudential policies are working at cross-purposes.

5. CONCLUDING REMARKS

A number of features of current global financial and trade relationships pose challenges for policy makers in emerging markets. Combined with structural vulnerabilities these create risk of financial instability. This paper has argued that emerging Asia has been quite successful in maintaining both macroeconomic and financial stability in this turbulent global environment. Policy frameworks and governance structures have been adapted based on lessons learned from the AFC. In general, policy makers have not been shy to adopt an eclectic approach to achieving monetary and financial stability using more than a single policy instruments to reach their objectives. Interventions in the foreign exchange markets are used in many jurisdictions to limit currency volatility; short-term interest rates are aimed at attaining macroeconomic stability interpreted mainly, but not exclusively, as price stability; and macroprudential policies have been employed in attempts to reduce the risk of financial stability.

The use of multiple instruments to reach multiple goals is not without risk, however. At a minimum it requires coordination among the entities that are responsible for each instrument, which in turn necessitates proper governance both within the central bank and between the central bank and other agencies that may be involved. As the paper has argued, including a wider set of objectives than price stability in the tasks assigned to central banks also raises questions about the ability of the central bank to reach these objectives while avoiding the pitfalls associated with trying to do so.

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