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Four-G Episode and the elevated risks

Iwan J Azis*

Complacency and a false perception that markets will correct imbalances during two decades of 'Great Moderation' led to 'Global Imbalances'. The low interest rates and a lack of proper oversight, combined with a perception that housing prices will always move north, brought the sub-prime crisis in the USA and the subsequent 'Global Financial Crisis' and European crisis. The Quantitative Easing policy in advanced economies (AE) created an even more permissive global liquidity. The externality affecting emerging markets (EM) took the form of massive capital inflows, first channelled through banks where the global banks-mostly headquartered in Europe-played a significant role and then through capital market with fund managers being the protagonist. The augmented liquidity spurred growth in EM but also elevated the risk of financial instability. Capital flows reversal, slower growth and less benign external conditions have put EM in a quandary. The uncertainty is heightened by a non-synchronised monetary policy in AE ('Great Divergence'). To the extent that standard policies have become ineffective, and to defend from externality caused by AE's unilateral policy (financial nationalism), it is argued that EM can put a damper on the dangerous component of capital inflows. As part of macroprudential policy, such a measure is equivalent with discouraging risky behaviour to prevent financial instability and worsening income inequality.

On 5 April 2016, I delivered the 14th Heinz W. Arndt Memorial Lecture at the Australian National University. The Lecture was titled 'Managing Elevated Risks' and was based on my recent book with the same title. This paper elaborates on that lecture. I recall during one of his visits to Jakarta some 30 years ago, Heinz gave advice on ways to improve education and research in economics through the Inter-University Center for Economics (IUC-EC) of which I was the Director. I do not remember exactly his words, but it was crystal-clear that he essentially advised us to focus only on plans that are workable, and avoid ideas that are not —quiet and simple words of the wise.

We know Heinz's passion was for macroeconomic policy issues—both domestic and international. The topic of my lecture last April was also about macroeconomic matters. More particularly, it was on the externalities of macro policy taken unilaterally by advanced economies (AE) that spread to the rest of the world—especially emerging Asia (EA).[1] In line with Heinz's passion for policy issues, and to the extent policy externalities increase the risks of financial instability and worsen income inequality, in this

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1 The coverage of EA varies. Unless stated otherwise, in this paper, EA covers eight EMs in Asia: China, Korea, Taiwan, India, Malaysia, Indonesia, Philippines, and Thailand.

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paper I lay out the background events and present the complexity of issues faced by AE's policy makers that led to such externalities. I subsequently discuss the macro-prudential policies EA needs to take. I am aware that macro-prudential policy was not high in the policy discussion circles during Heinz's time, but it is an imperative in today's policy debate.

It is argued in the paper that the current elevated risks in emerging markets (EM), particularly in EA, are shaped by the 'Four-G' episode over the past two decades or so: the Great Moderation (GM) that began in the late 1980s, the Global Imbalances (GI) that peaked in the mid-2000s, the Global Financial Crisis (GFC) that erupted in 2008, and the recent Great Divergence (GD) in AE's monetary policy. The next two sections are about the first three Gs: a tour from the late 1980s to the late 2000s, elaborating on how GM and GI could end up with the GFC. The last section is on how the tasks of policy makers in EM became more difficult because of heightened uncertainties caused by GD in the midst of domestic challenges such as growing income inequality and limited effectiveness of standard policy.

From GM to GI

From the late 1980s until the onset of the 2008 GFC, the global economy enjoyed a period of GM. Growth of aggregate economic activity in AE during that period became more stable than in any other period. GDP volatility in G7 countries halved, and inflation volatility dropped even more sharply.[2] Volatility in inventories also fell. The US provides a clear example (Figs 1a and b). Albeit to a different extent and speed, a similar pattern occurred in other AEs, although the timing was not synchronised. The starting date marking the switch from a high ratio of low volatility to high volatility of GDP growth ranged from as early as 1971 in Germany to 1988 in Canada (for Australia it was 1984).

Different arguments abound as to what caused this GM. Specific country factors were clearly important, but similarities of patterns among these countries suggest that there may be some underlying global causes as well. Looking at major global events that took place during those two decades, first on the candidate list is deregulation policy. The global macroeconomic environment in late 1980s was characterised by falling inflation rates, as a result of the production shift to low-cost countries (e.g. the 'Chindia' factor: cheap imports of consumer goods from China, and outsourcing of services to India). A growing number of countries adopted deregulation to boost investment and production, and trade liberalisation to boost trade. Some also embraced supply-side economics by lowering tax rates to raise the after-tax rate of return with the purpose not only to expand the tax base but also to stimulate investment and production. Steady economic growth with falling prices was the outcome.

Next on the candidate list is the oil price. Some tests have been conducted where the results did not seem to support this idea (see, for example, Summers 2005). Although oil prices fell rather dramatically during the first half of the 1980s, and again in the early 1990s after a brief spike in 1990/91, there was a clear uptrend during the decade before the GFC (Fig. 2). This is in contrast to the pattern of GDP and price volatility shown in Figs 1a and b.

Narrowing fiscal deficits through fiscal consolidation and economic reforms also contributed to lower interest rates. The trend was quite widespread, including in the traditionally high-inflation countries in Latin America.

But another strong candidate is monetary policy. The determination of Paul Volcker, the then chairman of the US Federal Reserves (hereafter the Fed) to quash inflation is frequently cited. During the early 1980s, after the US economy recovered briefly from a recession, he orchestrated a series of interest rate increases that took the federal funds target from around 10% to near 20%. Although in the process it sent the US economy into a recession again (dubbed the 'Volcker recession'), US inflation has declined persistently ever since, allowing US interest

2 Among studies on the GM, see Mills and Wang (2003), Blanchard et al. (2000), Kim and Nelson (1999), McConnell and Perez-Quiros (2000), and Summers (2005). The G-7 countries are: Canada, France, Germany, Italy, Japan, the UK, and the US.

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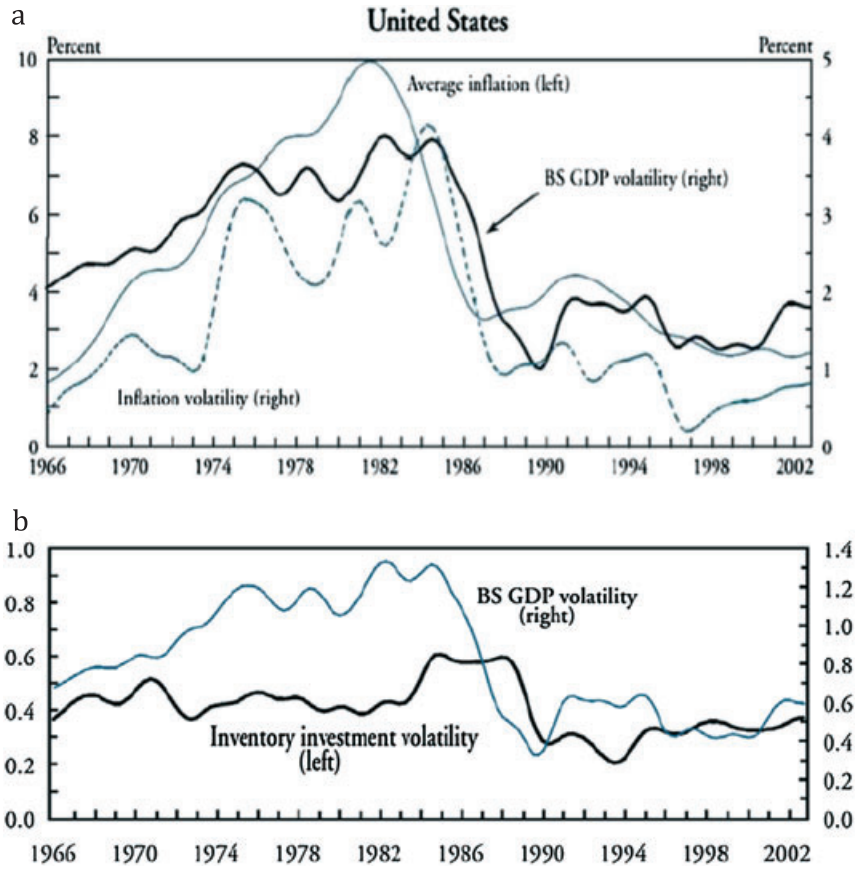
Figure 1
Volatility of GDP, Inflation, and Inventory Investment



Notes: BS stands for standard deviation of GDP growth. In the figure, the BS GDP volatility is multiplied by a factor of 3
Source: Summers (2005)

rates to fall dramatically to a one-digit level (except in 1984).[3]

In the early 2000s, the sharp fall in interest rates was prompted by the fear of deflationary pressure following the 1997 Asian financial crisis (AFC). Subsequently, the Fed adopted a more accommodative policy to forestall looming problems created by the bursting stock, high-tech, and telecommunication bubbles that accompanied the recession in 2001. As a consequence, investment and consumption surged and the saving rate fell, causing the saving-investment gap in the US to widen.

Since China joined the World Trade Organization (WTO) in 2001, their exports have boomed. As more Chinese goods entered the US market, US current account imbalances grew. But lower-costs goods from China helped

3 Observing a sharp decline in growth following his decision to raise the interest rate from September 1979 to April 1980, Volcker reversed course and sharply reduced the interest rate from April to September, only to increase it again in 1981. Some argued that this lack of consistency did not only change market expectations of inflation but also reduced his credibility, making the cost of disinflation higher (intensified the Phillip's curve).

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Figure 2
Oil Prices per-Barrel: Adjusted for Inflation (logarithmic scale)

Notes: Based on monthly West Texas Intermediate (WTI) crude oil prices per barrel
Source: Macrotrends.

reduce US consumer prices, and this explains the Fed's insistence on keeping interest rates low. In the meantime, growth remained strong, and complacency abounded.

By 2005, the imbalances peaked, whereby the US current account deficits (CAD) reached an all-time high: more than 7% of GDP, and around 70% of the entire global deficits![4] Correspondingly, imbalances between saving and investment also surged. The world had clearly entered a dangerous stage of GI while signs of GM continued.

During this period, EA's trade performance was strong, facilitated by growing production networks and participation in global value chains. China and other Asian countries combined contributed almost half of the global surpluses. Learning the hard way from the 1997 AFC about the importance of self-defence, most countries in Asia used foreign exchange earnings to boost their foreign reserves; a large chunk of which was kept in US Treasuries despite their low returns. This helped 'finance' the growing US deficits.

Enticed by good economic prospects and political stability in Asia, foreign investors flocked into Asia. 'Round-tripping' of capital was observed: the super-safe status of US Treasuries made Asia's funds flow into the US; while, lured by the good return prospects, private investors brought US funds back to Asia. This lasted until the collapse of Lehman Brothers in the fall of 2008.

To the extent GI played a vital role in seeding what turned out to be the most dangerous crisis since the Great Depression of the 1930s, one

4 For comparison, in the 1980s when imbalances between the US and Japan peaked, the US share in global deficits was much less. At the time, the 'solution' was to make the US dollar weaker and yen stronger through the Plaza Accord of 1984. Afterwards, AE entered a sustained period of rising prosperity: strong growth, low inflation, and falling real interest rates. The episode was hailed as a success in policy coordination.

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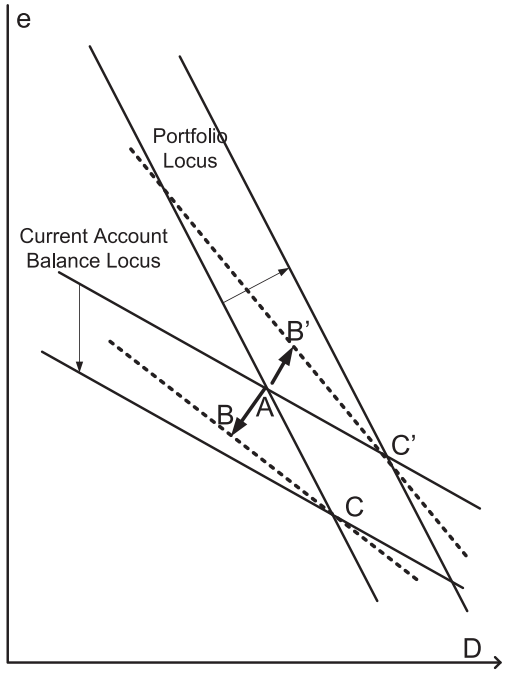
wonders why policy makers in the world's biggest economy and the largest contributor of GI allowed the accommodative policy to be sustained? Could it be that the US dollar depreciation occurred in a rather orderly manner despite a surge in CAD? If so, what made the US experience different from that of other countries? The complexity of US policy choices at the time must have been heightened.

At the centre was the ballooning US debt, the interest payments on which would also affect the size of the CAD and the extent of the exchange rate depreciation. Figure 3 displays the relation between the exchange rate, *e*, and net debt, *D* (the model specifications and its mechanisms are shown in the Appendix).

Reduced interest rates in an economy with a low elasticity of substitution between imports and domestic output, as in the US, led to higher imports.[5] Greater preference towards imports is reflected in an increased value of parameter *m* in equation (5) in the Appendix. That is, a leftward shift of the CA locus in Fig. 3. The resulting increase of CAD put pressure on the exchange rate to depreciate. A downward shift from the initial equilibrium A to point B captures the deteriorating CAD, and a shift from B to C reflects an increase in debt that caused the expected and actual exchange rate to depreciate further. What is important to note is, as the US net debt increased, the value of the US dollar would have depreciated more than required by the increase in CAD, because larger holding of US assets by foreign investors also means larger interest payments in the future.

But the portfolio balance in the asset market also played an important role. An increase in the preferences towards US assets is captured by a rightward shift of the portfolio balance relation in Fig. 4 see Caballero et al. (2006). In equation (5) in the Appendix, parameter *p* moves upward. At a given debt position D, the portfolio balance requires an exchange rate

Figure 3
Dynamics of current account locus under an accommodative policy



appreciation, and this is shown by a shift from A to B′. As this hurts competitiveness, however, the already growing CAD because of a higher *m* tends to become larger. As a result, the subsequent pressure on the currency is reversed.

The net outcome was a combination of a larger CAD and a smaller depreciation than would have been the case in the absence of countervailing forces from the portfolio balance. Thus, the new equilibrium is somewhere between C′ and C, where the currency depreciation is less than at C. Note that a greater net debt at C′ also implies a greater expected exchange rate because of higher future interest payments.[6] Indeed, with a larger CAD the

5 Elasticity of substitution of domestic production and imports is defined as the percentage change in the ratio of domestic output quantity to import quantity demanded per-unit percentage change in the price ratio of domestic output relative to imports. Note that combined with a rather loose fiscal policy, the accommodative monetary policy also raised housing demand, which caused a housing market boom.

6 Unlike a standard uncovered interest parity (UIP) model, the current model is capable of capturing these facts because it does not assume perfect substitution between U.S assets and foreign assets. The lower the degree of substitutability, the higher the anticipated interest payment—hence larger expected depreciation—as a result of an increase in foreign demand for U.S assets.

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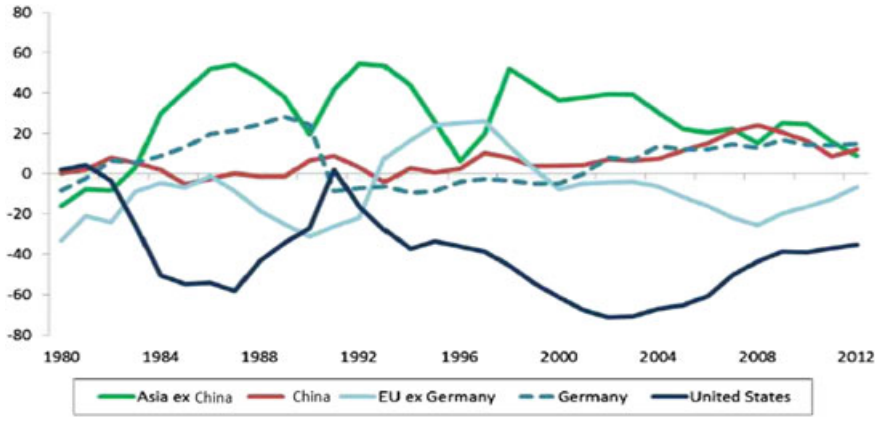
Figure 4
Current account deficits and surpluses (% of world deficits and surpluses)



Source: Processed from IMF-WEO data, various issues

expected depreciation of the US dollar at that time was higher than the actual depreciation.

Another factor that may have led to the insistence on an accommodative policy despite its detrimental effect on the CAD has something to do with the valuation effect. With a depreciated currency, the dollar value of US holdings of foreign assets increased. On the other hand, the US net debt position decreased, improving the US external financial position. This is opposite to the case of other countries where foreign liabilities are typically held in US dollars. When their currency depreciated, the burden of liabilities surged, causing many banks and firms to go bankrupt.

The 2007 US recession and the GFC eventually brought down the US deficits: falling growth of imports reduced the CAD, and the increased saving rate and slowing growth of investment narrowed the investment-saving gap. In the surplus countries, current account surpluses declined because of falling external demand (Fig. 4), and savings fell while investment began to pick up. The bad news was that a new country emerged as the biggest player in the surplus camp: Germany.

As shown in Fig. 5, the German economy went through a period where the DCA reversed to surpluses around the early 2000s. Germany's export-driven economic model has come under the spotlight, especially since the onset of the European debt crisis in 2010. In the past, a large portion of German exports went to the euro-area. But since the onset of the crisis, declining demand from within Europe has been replaced by rising demand from EMs, including China.

By 2011, Germany overtook China as the country with the world's largest current-account surplus (Fig. 4). That position has not changed (see Table 1) with the surplus now constituting more-than 7% of Germany's GDP—similar to the deficits in the US during the peak of GI in 2006. Whether this will lead to a re-emergence of GI that provides the seeds for another crisis remains to be seen.

From Sub-Prime Crisis to GFC

The continued financing of deficits in the US by surplus countries allowed the deficits to persist. But most of the external capital ended up in US Treasuries. That outcome cannot explain the rapid growth of mortgage lending that led to the sub-prime crisis in the US. In addressing this issue, it is important to understand how events evolved in the lead up to the sub-prime crisis.

Driven to fulfil the 'American Dream', efforts to expand US home ownership were intensified. Real estate-related financial firms actively lent to

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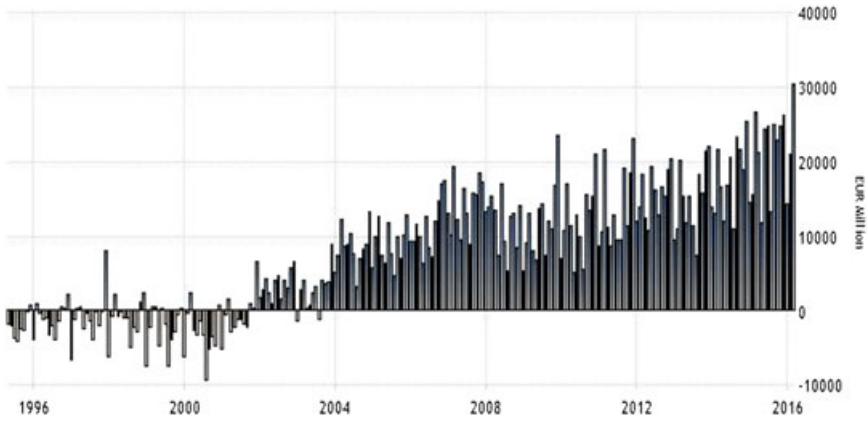
Figure 5
Current account: Germany (Euro million)



Source: ECB publication.

Table 1
Countries with largest deficits and surplus current account (US$ billion)

	2011	2012	2013	2014
United States	−460.4	−449.7	−376.8	−389.5
United Kingdom	−43.7	−86.4	−122.2	−151.9
Brazil	−77.0	−74.1	−74.8	−104.2
Australia	−44.5	−66.3	−51.2	−44.1
Turkey	−74.4	−48.0	−63.6	−43.6
Canada	−49.7	−65.7	−58.0	−40.6
Indonesia	1.7	−24.4	−29.1	−27.5
France	−29.5	−32.2	−22.5	−27.5
India	−62.5	−91.5	−49.2	−27.5
Mexico	−13.4	−16.6	−30.3	−24.8
Germany	227.9	240.9	239.3	280.3
China, P.R. Mainland	136.1	215.4	148.2	219.7
Korea, Republic of	18.7	50.8	81.1	84.4
Netherlands	81.3	89.5	87.3	83.5
Saudi Arabia	158.5	164.8	135.4	73.8
Switzerland	53.3	68.6	76.1	61.5
Norway	66.5	63.5	53.4	59.8
Russian Federation	97.3	71.3	34.8	56.4
Kuwait	66.1	79.1	69.5	54.0
Japan	129.6	60.1	41.1	24.0

future homeowners and used the assets to issue asset-backed securities (ABS) to be sold to investors. Convinced that housing prices will always move north, investors bought the ABS. When new investors joined, more investment money flowed in, allowing firms to use the money to pay the existing investors, that is, one group of investors paid another group of investors. A kind of Ponzi game emerged. As mortgage loans increased rapidly from the mid-1990s, so did the ABS (see Azis 2009, Ch 3; and Azis 2010).

In most cases, lenders were able to pass the rights to the mortgage payments and related credit/default risk to third-party investors via mortgage-backed securities (MBS) and collateralised debt obligations (CDO).[7] Everyone made money; everyone was happy. Hedge funds and other financial firms joined the party. The rules and regulations governing them were generally less restrictive than those for banks, mutual funds, and other financial institutions. Since the LTCM debacle in 1998, and despite pressure on US financial authorities to place tougher controls on hedge fund operations, there were practically no major improvements

7 MBS are securities created from the pooling of mortgages, whereas ABS evolved out of MBS and were created from the pooling of non-mortgage assets.

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in the financial regulations.[8] Indeed, there was a kind of regulatory *laissez faire* during that period despite the increased number of 'creative' financial institutions in a brave new world of financial globalisation.

The subsequent involvement of investment banks transformed the situation. With huge profits being made by underwriting sub-prime loans, banks and mortgage companies all but abandoned their prime loan guidelines. Many of the loans were made under *NINJA* (no income, no job, no assets) conditions.

Another important player was the global bank whose role in the US sub-prime crisis had a lot to do with the US accommodative policy (see again Fig. 1a). Responding to the 2000 recession and the event of 11 September 2001, the US Federal Funds rate fell precipitously from over 6% to a mere 1% by the summer of 2003. Over the same period, the European Central Bank (ECB) rates dropped from over 4% to 2%. Fears of asset bubbles subsequently led to interest rate increases in the US and Europe. By late 2007, rates had doubled in Europe and increased more than five-fold in the US. As the US recession began in December 2007, the Fed shifted gears again by lowering the interest rate steadily from more than 5% to 2%.

In a regime of a liberalised financial sector, such conditions translated into capital flows. But the nature of capital flows during the low interest rate period was different from the standard case where investors bring in capital directly. Instead, the flows were largely prompted by the operations of global banks in the US.

In addition to prompting private investors to conduct carry trade, the low interest rates attracted foreign banks operating in the US to raise funds and lend to US residents. They contributed to the US credit boom especially in housing mortgages. Data on net inter-office assets of foreign banks in the US (160 at the time) show that while during 'normal' periods inter-office assets are always negative—foreign banks act as the lending post—they turned positive after 2001. This suggests a role reversal from being lenders to becoming fund raisers. There could be no other reason but the super-low interest rates that led to such a role reversal. It was only when the crisis in Europe and the resulting bank deleveraging began in 2011 that the inter-office assets returned to negative (Fig. 6).

Under normal circumstances, these global banks—mostly headquartered in Europe—draw on dollar funding from US money markets or the wholesale market to lend to US residents. The amount was huge, almost half of the entire US$1.7 trillion of the US prime money market. Much of the lending, especially that related to the housing market, was done through the purchase of securitised claims on US borrowers. In this way, they actually performed as shadow banks. It was through the operations of European banks rather than US banks that most intermediation between US borrowers and savers took place (see also Cetorelli & Goldberg (2010)).[9]

Thus, capital first flew out of the US and then back in. The boundary of jurisdiction was thus crossed twice, so that the usual net flows did not capture the financial intermediaries engaging in the maturity transformation of the mortgage market.

Observing a growing stream of revenues from sub-prime lending, they and other lenders got greedy, trying to extract as much juice from the borrowers as possible by extending credit without much, if any, regard for borrowers' ability to repay. Believing that the probability of house prices falling was close-to zero, many of

8 LTCM (Long Term Capital Management) is a hedge fund founded in 1994 with USD1.3 billion investments at inception. It made huge profits during a few years of operation. By early 1998, the fund had a leverage factor of roughly 30 to one, that is, holding US$5 billion equity and over US$125 billion borrowing. The key reason investors were attracted to its strategy was the belief that long and short positions were highly correlated so that the net risk was small (this understanding was based on the complex computer models that LTCM used). In September 1998 the LTCM lost substantial amounts of investors' equity capital and was on the brink of default. To avoid the threat of a systemic crisis, the Federal Reserve orchestrated a US$3.5 billion rescue package from leading US investment and commercial banks in exchange for 90% of LTCM's equity.

9 The assets–liabilities of foreign global banks in the US increased sharply during the low interest rates policy in the 2000s. By the first quarter of 2008, the value reached more-than US$10 trillion, exceeding the total assets of the US chartered commercial banking sector.

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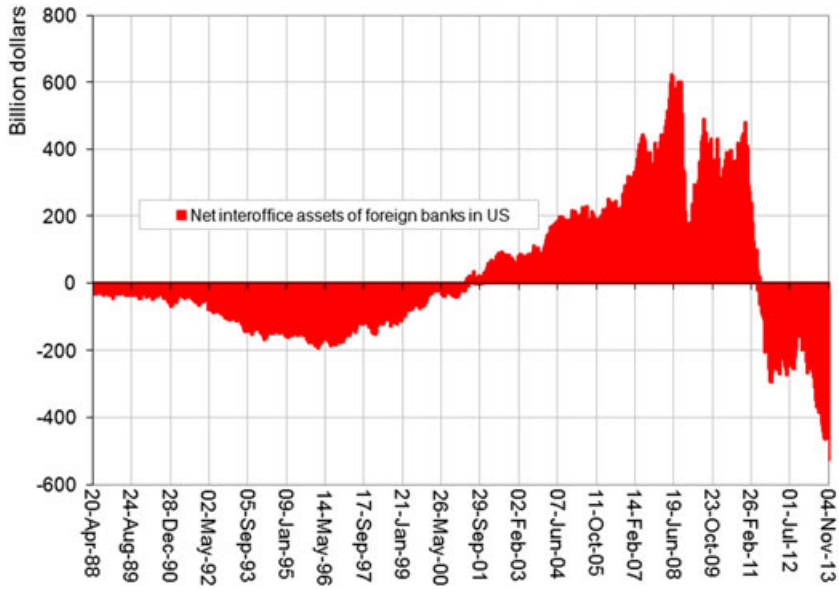
Figure 6
Net inter-office assets of foreign banks in the US



Source: Azis and Shin (2015), based on H8 series on commercial banks, Federal Reserve Board.

them also insured the issued MBSs and CDOs through a financial derivative known as credit default swap (CDS).[10]

The Fed declined to regulate these dubious practices. One of the intellectual underpinnings behind such 'stubbornness' was the Efficient Market Hypothesis (EMH), which assumes the financial market is efficient and that agents know the risks and will protect themselves. The EMH states that the prices of securities reflect all known information that impacts on their value; which can be interpreted as saying that the market price is always correct. Critiques of EMH argue that market prices are mostly 'wrong' in the sense that if we were given all present and future information, the 'true' ex-post rational price would almost always differ from the current market price (Siegel 2010). What is less controversial is the assumption that agents know the risks and will protect themselves. Kenneth Arrow's admission during the 2009 American Economic Association meeting in San Francisco cannot be clearer: *We just assume if we knew it so did the people, these smart people…..in the investment banks. We took it for granted that they will protect themselves. We are wrong obviously.*

Pandemonium set in when homeowners began to have difficulties. Refinancing became increasingly more difficult. Eventually, a wave of foreclosures hit the housing market. Questioning the viability of their counterparties, banks began to withhold short-term credit. This set up the fall of the house of cards as many parties relied on such credit. Investment banks had to enforce margin calls to protect themselves from the collapsing loan values, and mortgage companies and hedge funds were forced to sell assets to meet margin calls.

10 In a CDS, the buyer of the insurance contract agrees to pay a fixed spread to the seller of the contract. In exchange, given the approved term (usually five years), the seller agrees to buy the securities from the buyer at par in the event of a default. In this way, investment banks as the buyer received protection; insurance companies as the seller (e.g. American International Group, AIG) collected substantial premium income. Practically non-existent before the late 1990s, the CDS market grew very rapidly, reaching a staggering US$62 trillion in 2008, more than four times the US GDP!

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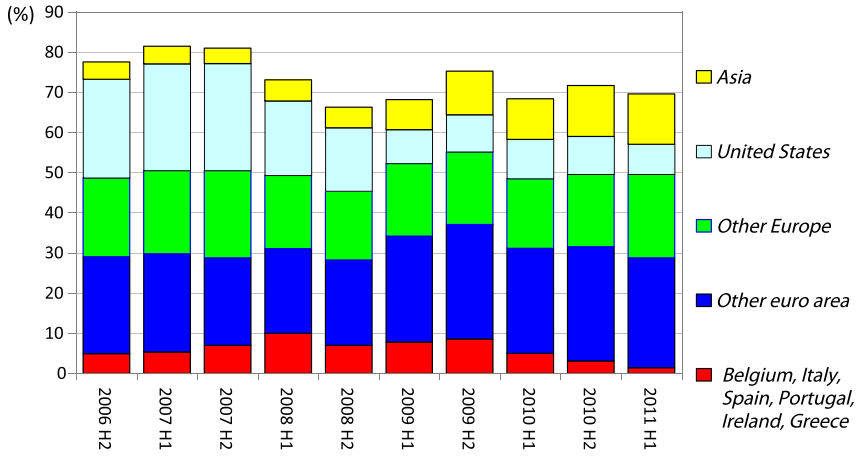
Figure 7
Amount owed by banks to US prime money market funds by nationality of borrowing banks (% of total)



Source: Azis and Shin (2015)

The turning point was 15 September 2008, the day that Lehman Brothers declared bankruptcy. Subsequently, one financial group after another collapsed, wiping out thousands of billions of dollars of value of investments.[11]

Contagion worked forcefully and rapidly. With so many CDS attached to CDOs, holders of all securities including good CDOs faced a high risk of their securities being priced unfavourably (Azis 2009). The entire securities market was eventually hit. Spillovers from housing to money markets occurred very fast. What started as a crisis in the sub-prime and mortgage market reached the entire credit and money markets.

Falling asset prices exacerbated the fall in consumption growth through the wealth effect (consumption constitutes more than 70% of US GDP). As a result, real sector activity stagnated and a vicious cycle set in. The sub-prime mortgage crisis had transformed into an economy-wide crisis. More seriously, what had largely been an American crisis suddenly went global. Here the global banks also played an active role in channeling capital flows globally. They became carriers for the transmission of cross-border liquidity spill-overs. The largest were the European banks (see Fig. 7). It was through their operations that permissive US liquidity conditions were transmitted globally.

From this perspective, the distinction between net and gross flows is important and deserves renewed attention. In the context of GI, this also suggests that focusing on the current account and the global savings glut obscures the role of gross capital flows. A more appropriate description for the contributor to sub-prime crisis is thus 'global banking glut' rather than 'savings glut'.

Based on the BIS-reporting by banks on counterparties, during the low interest rate period the cross-border bank claims reported by recipient economies increased dramatically in a synchronised way (Fig. 8). In EA, banks' external debt also increased, as shown by the trend in bank-led flows share in GDP (Fig. 9). Note that emerging Europe was also a large recipient of funds from the global European banks.

11 Unlike in the case of Bear Stern, the Fed and the US government decided not to bail out Lehman Brothers. People were stunned that one of the oldest, richest, and most powerful investment banks in the world was not considered too big to fail.

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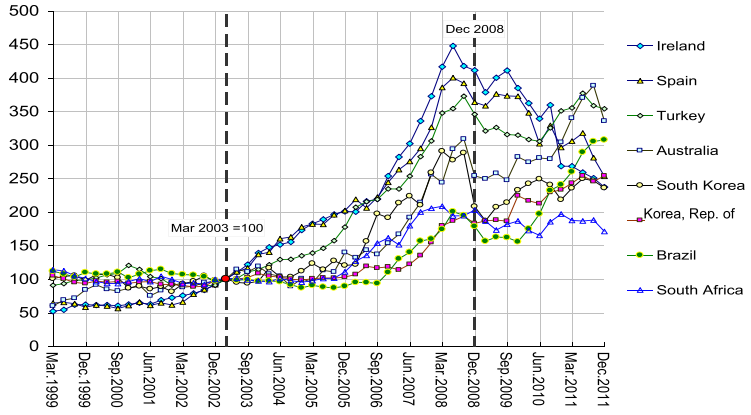
Figure 8
Claims of BIS-reporting banks on counterparties in selected economies (March 2003 = 100)



Source: Taken from Azis and Shin (2015) based on Bruno and Shin (2012); data from *Locational Banking Statistics,* Bank for International Settlements (BIS).

Figure 9
Bank-led flows to emerging economies: emerging Asia and emerging Europe (% of GDP).

Notes: Emerging Europe includes Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Poland, Russia, Turkey and Ukraine.
Source: Based on CEIC data.

As the housing market crisis in the US turned into a credit and money market crisis, all parties involved, including the global banks, suffered. When the resources they had provided to finance credit around the world, including EA, dried up, the liquidity of many banks was affected. The problem was exacerbated when global banks had to deleverage during the subsequent debt crisis in Europe. The pro-cyclicality came into force, affecting credit and the real sector in many countries. This was among the most important channels for the spread of the US sub-prime crisis across the globe.

As the signs of turmoil in financial market became more visible, trust and confidence dissolved. Financial markets around the world felt the pinch, even in countries that did not have

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close links with the US and European markets, which underscores the importance of confidence in the sub-prime crisis transforming into a global crisis.

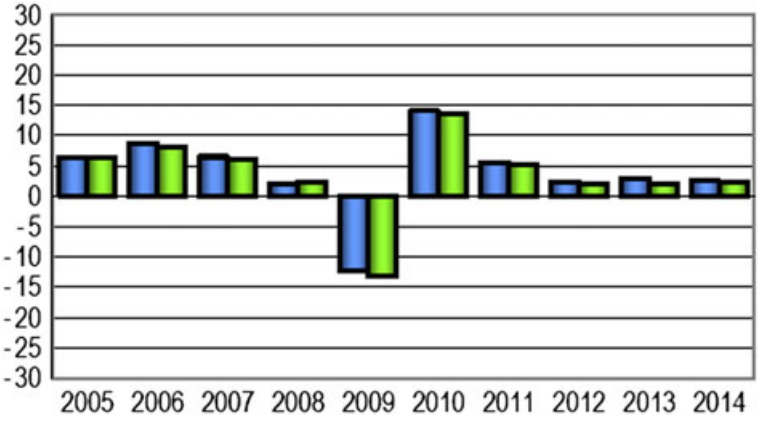
The trade channel also worked forcefully. Demand for imported goods, including from Asia, fell because of the slowdown in the US and Europe. Except for 2010, the recovery has been very slow since then (Figs 10 and 11). In value terms, the picture was even bleaker because of shifting exchange rates and falling commodity prices. At the time of writing, the world's trade growth has been below 3% per-annum for five consecutive years. And the threat of creeping protectionism continues.

At the end of the day, the pre-2008 conditions and the policy response to the shock determined how each country came through the GFC. Those with low government debt (ample fiscal space), a strong banking sector, and rapid fiscal

Figure 10
Percentage change in Asia trade volume

Source: WTO

Figure 11
Percentage change in global trade volume



Source: WTO.

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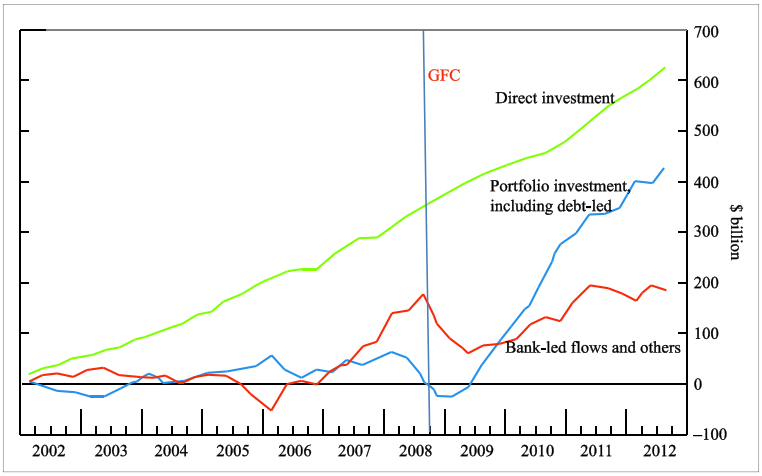
Figure 12
Gross capital inflows in emerging markets



stimulus did better. Flexibility of the exchange rate and supportive monetary policy also helped; but a rapid and well-targeted fiscal stimulus seems to have been more critical. The primary sector exporting countries in EA also reaped the benefits from China's continued strong growth and favourable commodity prices: two conditions that were eventually reversed in 2013.

Three Phases of Capital Flows and Elevated Risks

The collapse of Lehman Brothers in 2008 forced the Fed to be more aggressive in pushing down interest rates, with the federal funds rate reaching 0.25% by the end of 2008 and remaining there until late last year. The fall of interest rates in the Eurozone was also dramatic, with a decline from over 4% in 2007 to 1% shortly after the Lehman Brothers crisis, to 0.5% in mid-2013, and 0.25% until last year.

Amid financial globalisation, such swings in interest rates generated waves of capital flows into EA. To the extent EA already had excess savings after the 1997–98 crisis, one could only imagine what the added liquidity from capital flows would mean. Indeed, what really transformed the macroeconomic conditions in EA prior to and post the GFC was the resulting surge of these inflows.

Phase-1

Until the onset of the GFC, the bulk of capital inflows went through banks, and hence were labelled bank-led flows (Fig. 12, and see again Figs 8 and 9). The uptrend in banks' external debt in EA occurred in a synchronised way (Fig. 13), consistent with the trend of increased non-core liabilities.[12] By 2012, Hong Kong, Singapore, and Korea had a higher share of non-core liabilities than most of emerging Europe. However, measured by the ratio of non-core to total liabilities, almost all EA countries had a high share of non-core liabilities (Fig. 14); the share ranged from 40% in Indonesia to over 50% in Korea.

The close link between bank-led flows and banks' non-core liabilities is captured in

12 Core liabilities are retail deposits of the banking sector, while non-core liabilities are other components of bank funding. The ratio of non-core to core liabilities reflects the underlying pace of asset growth, including credit growth, relative to trend that could generate the risk premiums ruling in the economy.

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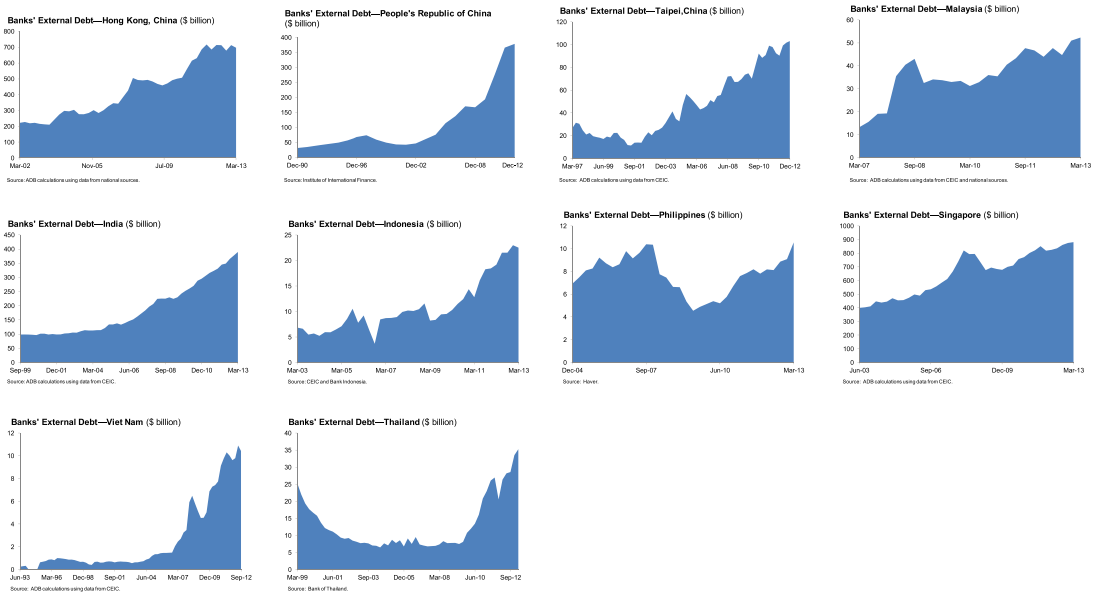
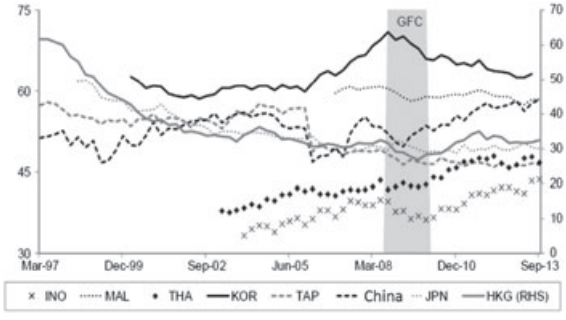
Figure 13
Banks' external debt in emerging Asia



Source: Processed from CEIC data.

Figure 14
Non-core bank liabilities—emerging Asia (% of total liabilities)



HKG = Hong Kong, China; INO = Indonesia; JPN = Japan; KOR = Republic of Korea; MAL = Malaysia; TAP = Taipei; THA = Thailand. Note: Non-core liabilities = Total liabilities less retail/ household/ individual deposits and shareholders' equity. GFC = Global Financial Crisis (Sep 2008–Dec 2009).

Source: Processed from CEIC data.

Fig. 15.[13] When bank-led flows increased, non-core liabilities also increased (2000–2007 and 2009–2012), and vice-versa. Clearly, bank-led flows were the major driver behind the changes in non-core liabilities. Having liquidity in excess of core liabilities (traditional saving and

13 In the Figure, EA refers to China, India, Indonesia, Korea, Malaysia, Philippines, and Thailand. Non-core liabilities data do not include India and the Philippines.

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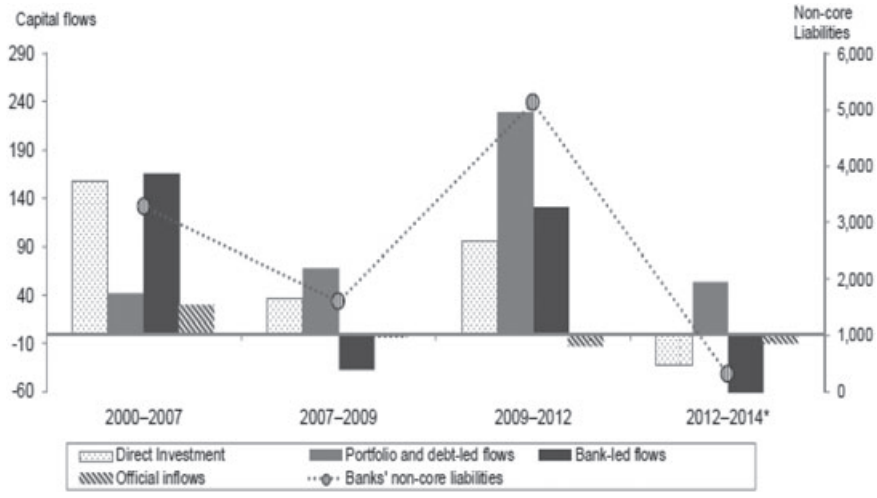
Figure 15
Capital inflows and non-core liabilities—emerging Asia (cumulative change, US$ billion)



Source: Processed from IIF and national sources.

current accounts), and borrowers converting foreign capital to local currency, two things happened: local currencies appreciated, and banks' capacity to either extend loans or conduct more risk-taking activities increased (Azis and Yarcia 2015).

Results of a regression model with control variables confirm the role of non-core liabilities in spurring credit (Table 2). In Model-2, economic growth, interest rates, and banks' net worth (to capture banks' financial structure) all determine credit growth.[14] Controlling for these variables, non-core liabilities are found highly significant in explaining credit growth.

As a standard early warning measure, a credit boom has a prominent role as a cause of financial crises. But with currency appreciation, the forces inciting a crisis are greater. The initial appreciation of local currencies improved the balance sheets of banks and borrowers, strengthening the bank's lending capacity. As a result, banks' credit and risk-taking activities increased, attracting further inflows. The initial impulses from currency appreciations were amplified.[15] As capital inflows persisted, so did the currency appreciation. Hence, a perceived virtuous cycle emerged.[16]

Given the above process, the standard policy of allowing currency appreciation is likely to fail to curtail inflows. The appreciation is far from self-correcting. A misunderstanding over the concept of risks is at the heart of the problem. The risks that lead to the perceived virtuous cycle are measured risks. The actual risks came to the fore only when the inflows of capital were reversed. This was evident in 2013 during the 'taper tantrum' episode. Given current global economic conditions and the uncertainties in

14 Following Bernanke, Gertler, and Gilchrist (1996, 1999) and Stiglitz and Greenwald (2003), changes in net worth ('credit channel' hypothesis) and external finance premiums are included in Model-2, although the coefficients are not significant. The inclusion of government bond is based on the premise that to reduce risks, banks tend to accumulate government bonds to meet the capital adequacy ratio (CAR) rule. Also, a rising share of government bonds may limit a bank's capacity to lend. The coefficients of the two variables have the expected signs but neither are significant. Changes in bond yields is included in Model-3 to capture a possible 'crowding out' effect.

15 The amplified effect of cross border flows on the supply of credit because of banks' changing risk behaviour is discussed in detail by Bruno and Shin (2012).

16 The process, labelled 'risk-taking channel' of currency appreciation, basically links financial stability with the dynamics of the exchange rate (see Azis and Shin 2015).

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Table 2
Regression results on credit growth

Panel regression results (credit growth = y)			
Independent variables	Model 1	Model 2	Model 3
GDP growth	0.065** (1.97)	0.0826** (2.26)	0.026 (1.97)
Change in Bank's net wortht – 1	0.042** (2.15)	0.049** (2.24)	0.054*** (2.95)
Change in nominal interset ratest – 1	−0.728*** (−2.62)	−0.976*** (−3.12)	−1.348*** (−4.10)
Change in non-core liabilitiest – 1	0.536*** (18.74)	0.635*** (20.65)	0.384*** (11.30)
Change in corporate net wortht – 1	–	0.018 (0.72)	–
	–		–
Change in share of government bond holdingt – 1	–	−0.008 (−0.48)	–
	–		–
Change in government bond yields	–	–	−0.002
	–	–	(−0.39)
Constant	0.042*** (2.15)	0.029*** (7.32)	0.062*** (9.09)
	R-squared		
Within	0.484	0.484	0.294
Between	0.897	0.901	0.920
Overall	0.613	0.613	0.551

Note: z-values in parenthesis.
***Significant at 1%.
**Significant at 5%.
*Significant at 10%.

financial markets, the likelihood is high that capital flows to EM will subsequently be retrenched or reverse.[17]

Phase-2

The second phase of capital flows began after the implementation of quantitative easing (QE) in the US, and was manifest in capital markets, particularly sovereign and corporate debt (see again Fig. 12).

QE policy is an attempt to inject liquidity into the economy by buying long-term government and other bonds. It did some good but in most cases sellers sat on the cash instead of spending or investing it.[18] Where QE succeeded was in pushing down long-term interest rates and yields. Through portfolio substitution, QE boosted the value of risk-assets and share prices, reducing volatility in financial markets. As a result, household net worth increased; so did consumption. This lifted GDP growth in the US and unemployment fell.

However, with virtually no yield on low-risk, fixed-income securities, investors pushed share prices so high that a bubble was formed (Feldstein 2015). As the P/E ratio of the S&P index reached 30% above its historic average, a sharp correction was inevitable as the event in 2015 has shown, bringing down consumer spending and business investment.[19] In the end, QE failed to produce the strength of business investment growth expected.

17 Two factors consistently emerged as the most robust and significant predictors of financial crises in AE and EA alike: (1) a rapid increase in leverage, and (2) a sharp real appreciation of the currency (Schularick and Taylor 2012; and Gourinchas and Obstfeld 2012).

18 Other AE that implemented QE are Japan, UK, and Europe (ECB), although each targeted different groups. While in the UK and the US the central bank purchased securities largely from non-banks, in Japan the purchases have been mostly from banks; so that the effects on the deposits or purchasing power held directly by firms and households are rather limited, and hence no reduction in private sector leverage.

19 Although the effect of the collapse of oil prices and the financial turmoil in China may have also played a role, the high price-earnings ratios were enough to make the downturn in 2015 inevitable.

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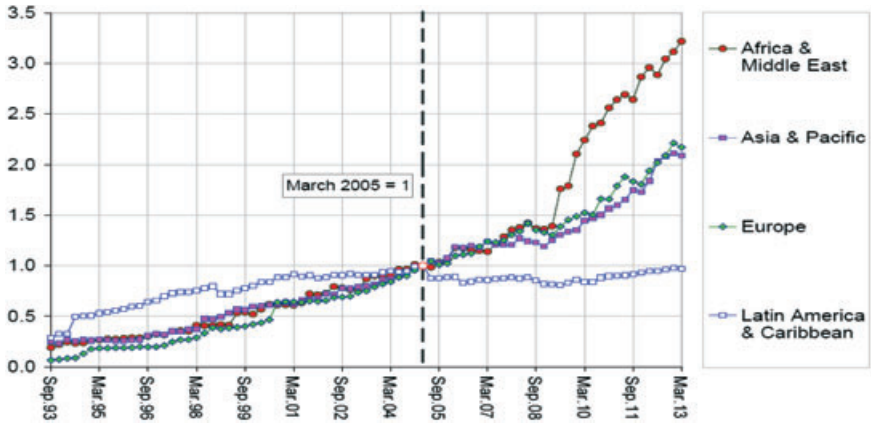
Figure 16
Government international debt securities outstanding (2005Q1 = 1)



Source: Bank for International Settlements (BIS) (n.d), *Debt Securities Statistics.*

Another factor may also be at work. Not knowing the long-term implications of QE tapering, risk-aversion among agents translated into a preference for shorter-term commitments; i.e. increased preference for financial assets as they are more liquid than real assets. Companies with ample liquidity choose to invest in financial assets, at home and abroad, over investment in a new factory.[20] The preference to invest abroad had repercussions on global liquidity and the demand for financial assets. The latter was matched by the increased supply in the EM.

The trends in total outstanding amounts of international securities are shown in Fig. 16, where the issuance of government bonds in Africa and the Middle East[21] and Asia and the Pacific has grown rapidly since 2009. By early 2013, the outstanding amounts reached more-than triple and double, respectively. In emerging Latin America, no increase in sovereign bonds is observed.

For non-financial firms, the rapid pace of debt issuance activity was even starker. For all regions listed in Fig. 17, the total international securities borrowing surged from less than US $200 billion in the aftermath of the Lehman Brothers crisis to US$450 billion in March 2013. Unlike in the case of government bonds, the issuance of corporate bonds increased significantly in Latin America.

A significant amount of capital from AE also flowed into EA's local currency (LCY) assets. As foreign investors shun risky holdings, while seeking high risk-returns, EA's LCY bond market became an attractive choice. This helped strengthen domestic capital markets. Having expanded their liabilities using non-core sources, domestic banks' attraction to holding financial assets was also enhanced. Before 2013, low yields and the slowdown in AE growth expectations pushed the LCY bond yields in EA lower, in tandem with those in AE, implying that credit risks associated with LCY bonds were significantly lower than in the past.

Continued foreign inflows to bond markets reinforced the trend and resulted in a growing share of foreign ownership. In Indonesia and Malaysia, for example, the share reached close to 40% and more-than 30%, respectively (Fig. 18). While they are both high numbers, the

20 Some may have also opted for 'shareholder friendly' share buybacks, simply sat on their cash, or stashed their assets in tax havens abroad. Although in theory all financial assets are claims on real assets (equities and bonds are financial claims on the future earnings of real businesses), such claims remain theoretical and have very little impact on the real sector when the actual money flows are reinvested in financial assets.

21 During the period, there was a surge in international bond issuance by 'frontier' sovereigns in Africa and elsewhere that have only recently ventured into the international bond market.

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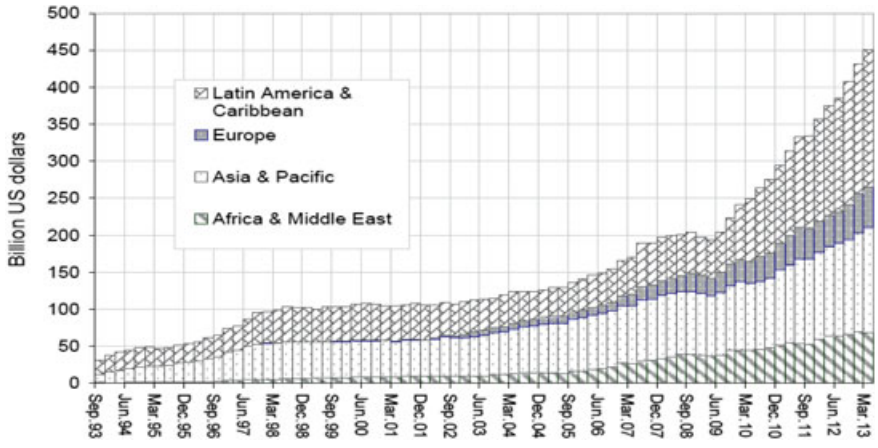
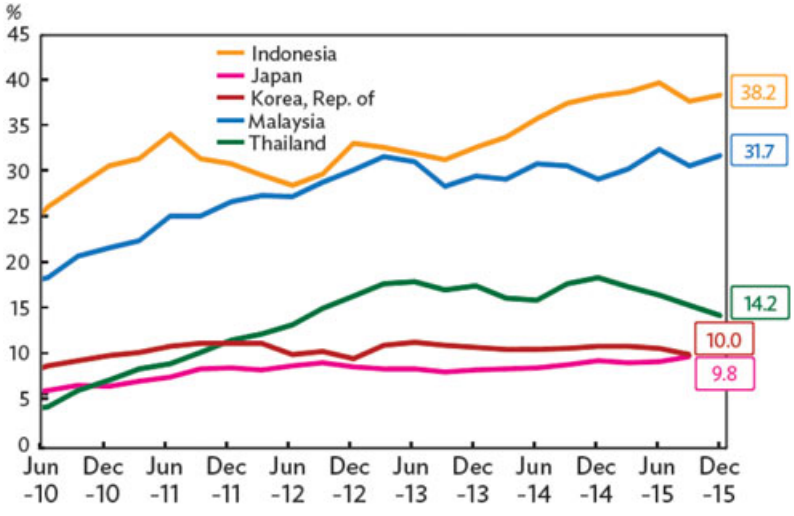
Figure 17
Non-financial corporate international debt securities outstanding



Source: Bank for International Settlements (BIS) (n.d), *Debt Securities Statistics*.

Figure 18
Share of foreign ownership in LCY government bond



Source: Asian Bonds Online.

level of risks is not the same. In the Indonesian case, the market is not liquid. In such a situation, any shock that may change investors' perceptions and cause outflows could rattle the market more easily. The episode of 'taper tantrum' in 2013 was a clear example. Compared to the bond market in Malaysia, where foreign ownership is also high but the domestic investor base is large, Indonesia's bond market is more vulnerable to changes in investors' perceptions.

Using market data of selected EA countries, it is seen that external shocks as in the US during the Lehman Brothers collapse and in Europe during the EU sovereign debt crisis had significant impacts on EA. More importantly, the shocks worked through cross-asset market

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spillovers, exposing not only the effects on other countries' bond markets but also on markets of other asset classes within and outside the affected countries. What happened in one market ultimately found its way into other markets. Within EA, the impact of a shock originating in Japanese government bonds (JGB) during the Lehman Brothers crisis and the EU crisis was also significant. Table 3 shows the list of countries across different asset classes that were affected by such a shock. The spillover of the shock in JGB during the Lehman Brothers crisis hit the equity (EQ) and the foreign exchange (FX) market in most countries, whereas during the EU crisis the FX market was more affected (see Azis, et al. 2013 for more details).

Phase-3

The first and second phases of capital flows set the stage for phase-3. The vulnerability caused by bank-led flows through non-core liabilities in the first phase is associated with procyclicality, while the vulnerability caused by debt-led flows in phase-2 is closely linked with the possibility of flow reversals. It is when such a possibility became a reality that phase-3 began.

An early sign of entry into phase-3 was apparent during the 'taper tantrum' of May 2013. It all started with the remarks made by the then Fed chairman Ben Bernanke who floated the idea of gradually reducing or 'tapering' the Fed monetary expansion. It was also mentioned that the tapering would happen only if and when there was consistent evidence that US employment conditions were improving. Even then the Fed would not allow US monetary conditions to tighten and would keep short-term interest rates low for a very long period.

Misunderstanding the significance of the remarks, markets in the US sparked a sell-off, with bond yields rising from 2.1% at the beginning of June to 2.7% in early July. The effect spread quickly to EA, where currencies, and bond and equity prices moved sharply. All these changes occurred despite the fact that there was actually no change in US policy. In reality, bond purchases as part of QE did not end until more than one year later (in October 2014), and the reversal of the US federal fund rate occurred more-than two years later (in December 2015).

As a result, from May to August 2013 capital outflows from east Asia's top ten economies were estimated at US$86 billion, half of which comprised outflows from China and roughly US$19 billion from Asian LCY bond markets. This was still relatively small compared with the US$2.1 trillion of inflows between November 2008 and April 2013 (based on foreign exchange reserves data). But the outflows have continued. For the first time since 1988, net flows in EM turned negative in 2014. When the increase in the US federal fund rate began, capital outflows surged, resulting in huge negative net flows (Fig. 19).

However, since interest rates in the US and Europe remained low, private sectors across EA continued to borrow in foreign currencies. Indeed, EM companies have dramatically increased their dollar debts. While the debt/GDP in developed countries began to decline following the deleveraging by many European banks, the ratio continued to increase in EM. In 2013, for the first time the debt/GDP of households and non-corporates in EM is greater than in AE, and the gap grew larger (Fig. 20). Most worrying, this happened while the profitability of firms and corporates measured by their returns on equity have fallen persistently since 2012 (Fig. 21).

By early 2016, the total debt in EM reached US$4 trillion, four times higher than in 2008. A stronger dollar contributes to higher financing costs, and for EM companies with large borrowings denominated in U.S dollars the stress was even more severe. A rapid deleveraging of the credit bubble added to the pandemonium. What is likely to happen with EM financial conditions is unnerving. In 2015 alone, EMs already faced a whopping net US$735 billion in capital outflows, including unrecorded flows from net errors and omissions.[22]

The quandary for EA is multifaceted. External conditions are becoming more difficult and no longer benign: commodity prices show no sign of recovering; China's growth has slowed;

22 Almost US$700 billion of funds left China alone, according to the Institute of International Finance (IIF).

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Table 3
Shock and volatility spillover from the Japanese Government Bond (JGB) Market

Lehman collapse								EU sovereign debt crisis							
Shock spillover to:								Shock spillover to:							
Bond market		Equity market		Foreign exchange market		Money market		Bond market		Equity market		Foreign exchange market		Money market	
Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.
China	0.48364	India	0.10798			Indonesia	0.06831	Korea	0.00782	Korea	0.00857	Indonesia	0.00078	India	0.00746
Philippines	0.18402	Korea	0.02186			India	0.11682	Thailand	0.00951			India	0.00603		
		Philippines	0.06975			Malaysia	0.04963					Korea	0.00124		
		Thailand	0.03065			Thailand	0.00030								
Volatility Spillover to:								Volatility Spillover to:							
Bond market		Equity market		Foreign exchange market		Money market		Bond market		Equity market		Foreign exchange market		Money market	
Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.	Country	Coeff.
China	0.12008	China	0.79109	China		Indonesia	0.00852	Indonesia	0.00241	China	0.09530	China	0.00056	Indonesia	0.00093
Malaysia	0.09945	India	0.62809	Korea				Korea	0.03360	Thailand	0.15165	Indonesia	0.00716	India	0.00340
Philippines	0.09478	Korea	0.39716	Malaysia								India	0.00436	Malaysia	0.02705
		Malaysia	0.05817	Philippines								Korea	0.00951		
		Thailand	0.02364	Thailand								Philippines	0.00082		

Notes: 1) Based on the residual vectors from the conditional mean equation, modelled as multivariate GARCH, where the conditional variance–covariance matrix is estimated using the unrestricted version of the Baba–Engle–Kraft–Kroner (BEKK) where the conditional variance–covariance matrix is positive definite. 2) The listed coefficients are only those significant at 5% level (see Azis et al. 2013).

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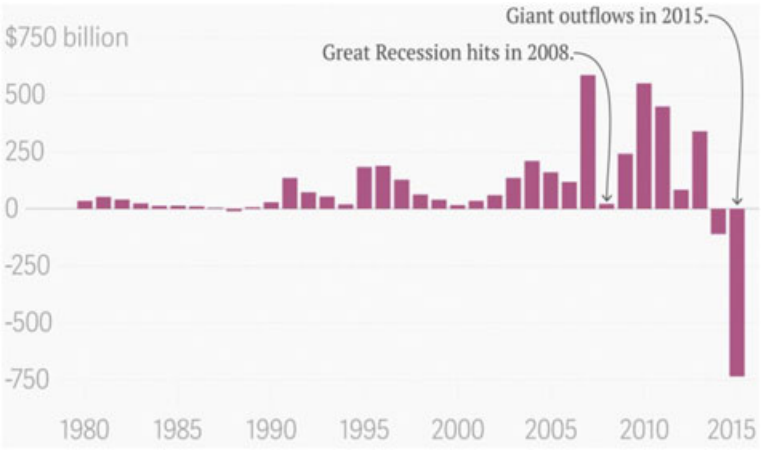
Figure 19
Net capital flows in emerging markets



Source: IIF.

Figure 20
Debt of households and non-financial corporates (% of GDP)

Source: Thompson Reuters Datastream; Bloomberg.

Figure 21
Debt to equity and return to equity

Notes: Debt to Equity (darker line); Return to Equity (lighter line).
Source: Thompson Reuters Datastream; Bloomberg.

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and US interest rates have begun to reverse. Almost eight years since the GFC, growth in AE and EA remains lethargic at best: low in AE and falling in most EM including EA. More of a concern is that in both AE and EA growth is even lower than the 'secular' (trend) growth, which has been falling. The latter is characterised by growing spare capacity in the industrial sector, especially in China, and the former is caused by a deceleration of technological advancement as reflected in the productivity slowdown.

Some point to a 'secular stagnation' in describing the current conditions, whereby the increased propensity to save and reduced propensity to invest resulted in no growth. The resulting drag on demand reduces growth and inflation, and the savings-investment gap pulls down real interest rates.[23] One implication is the need to boost aggregate demand via fiscal expansion (Summers 2016). In contrast to monetary policy that affects the exchange rate, where the resulting currency movements switch demand from one country to another rather than increase it globally (e.g. lower interest rates increase trade competitiveness), fiscal expansion will raise demand on a global basis. Putting the burden entirely on monetary policy also carries the risk of a currency war. This is not the case with fiscal expansion.[24]

Contagion is another factor. Since interdependence among countries intensified and its nature has evolved, contagion of a country's shock or policy changes could affect firms and citizens throughout the globe more rapidly than before. And the process is increasingly more symmetric. In the past, any shock in AE would have impacts in EA. During the period of 'double track' growth, for example, EA helped lift global growth when AE economies slowed (decoupling). Now the divergence has narrowed, and changes in EA conditions significantly affect AE. This is contagion version 2.0, where AE cannot escape from EM's slowdown and uncertainty. This makes global recovery more difficult.

The China factor plays an important role here. Although its slowdown is expected because of the rebalancing strategy, at least so far the cross-border repercussions appear larger than previously envisaged. It is true that the slower growth in China may not be much different from the double-digit growth of the past, but the interactions and interdependence between China and other EA countries is stronger. Using international input-output tables to take account of the indirect effects, the coefficient of interdependence between China and Asia has increased significantly, from 1.92 in 1995 to 2.63 in 2011 (Fig. 22).

Even countries that have a limited links with China are feeling the pinch. No one knows exactly why and how, but the transmission through the market confidence channel—including through the financial sector—is surely at work, as the episode following the sharp fall in China's equity market during the summer of 2015 showed. Obviously, the effect of contagion from continued China slowdown will also depend on how individual countries in EA respond to their over-reliance on China and to the opportunities offered by China's rebalancing strategy. Strengthening domestic demand seems to help in softening the impact (as in India), although the tightening of global financial conditions adversely affects domestic financial conditions.

Contagion also worked in the financial sector *within* countries. Since banks are the biggest holders of bonds, vulnerabilities in bond markets will have adverse effects on bank balance sheets. In such an environment, the quality of a firm's balance sheet is influenced by the mark-to-market price or the value of financial assets it is holding. Less bond issuance reduces debt obligations, while less bond holdings hurts the firm's net worth.

23 The term 'secular stagnation' was first used by Alvin Hansen in the 1930s and popularised again in recent years by Summers (2015) to describe the current situation in AE.

24 Eichengreen (2015) also suggested that large fiscal spending would be necessary to prevent the GFC from resulting in a depression. He argued that the parallels between the 1930s Great Depression and the 2008 GFC provided sufficient intellectual justification for more government spending since 2008, yet the perceived need and political support for it has been reduced, preventing a robust recovery in the US and the world.

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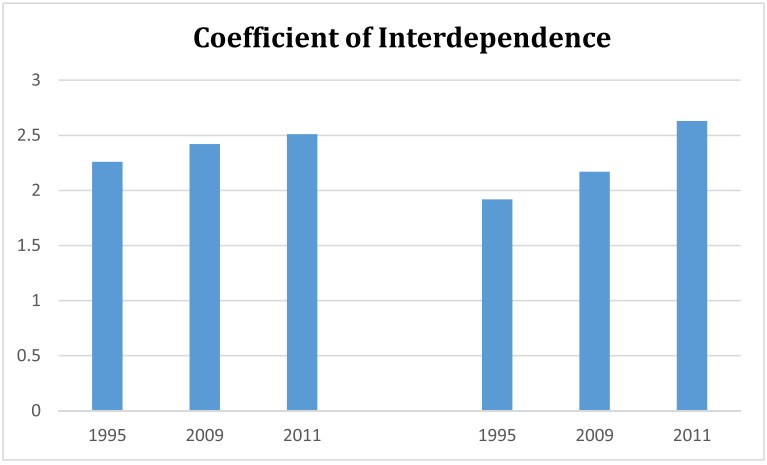
Figure 22
Coefficient of interdependence



The coefficient of interdependence (COI) is

$$\sum_{j=1}^{n} \phi_j b_{.j} = \sum_{i=1}^{n} \phi_i \, b_{i.} \text{ where } \phi_k = \frac{x_k}{\sum_{k=1}^{n} x_k}$$

where *b* is the coefficient of inverse IO table
Source: Azis & Yarcia (2015)

All in all, during phase-3 the risk perceptions of EM in general and EA in particular have deteriorated compared to what happened during phase-1 and phase-2. Two notes are in order, however. First, performance varies. In addition to differences in the fundamentals of capital markets and the exposure of each market, inter-country risk perceptions driven by factors beyond economic fundamentals have played a role as well. For example, while macro conditions in ASEAN are generally stable, where Indonesia is the only country having current account deficits, Malaysia and Thailand make more headlines in terms of perceptions of rising 'political risk' during phase-3. Although Thailand's macro conditions remained good, the valuation and momentum turned negative, supporting a downgrade of local bonds.

Second, with the delayed tightening of US monetary policy, the negative interest rate policy in some AEs, including the ECB, the Brexit, and the continued uncertainty in the global economy, massive capital inflows to EM resumed in recent months. Pension funds, sovereign wealth funds, and other large institutions have begun to pour money into EM bond funds. While this led to another round of improvement in liquidity conditions, the risks in phase-2 discussed earlier were also elevated. It remains to be seen whether the return to phase-2 will be sustained. It would be ill-advised for EM to assume that the resumption of capital inflows is evidence of resilience.

GD and Negative Interest Rate Policy

Setting an optimal policy is now even trickier than before because there is no clear signal as to the direction of global interest rates. The normalisation of US monetary policy sets the stage for an epic monetary tug-of-war between the world's most powerful central bank and its counterparts in Europe, China, and Japan. A Great Divergence (GD) is emerging: the US is tightening while the

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latter are loosening and even shifting towards negative interest rates policy (NIRP).

At the time of writing, there are five economies in the NIRP camp: Japan, Eurozone, Sweden, Switzerland, and Denmark. Under NIRP, the central bank taxes deposits instead of paying interest on commercial banks' 'excess' reserves. The idea is to urge banks to reduce their unspent balances and increase their lending or investments. However, without capital spending, especially for infrastructure by government or private investors, banks may tend to sit on the cash instead of lending it. In a strategic 'game' setting, as central banks violate the zero-bound rule, the more likely it is that banks will look at ways to limit their costs.[25] In a sense, there is a risk that NIRP will be simply a distraction from what actually needs to be done (spending and investing) to stimulate the economy.

The ECB uses NIRP also to increase the supply of high-class bonds for its QE. The NIRP translates into negative yield bonds—currently around US$10 trillion, mostly Japanese and European sovereign bonds. Some corporate bonds may follow, especially those with short maturity. Japanese bond yields are already at their lowest in 150 years, and US bond yields lowest since WW II. Clearly, zero is no longer the lower bound. Investors are not deterred from purchasing the bonds because demand from the ECB for these bonds is expected to increase because of ECB's aggressive QE policy. Assuming no reluctance on the part of bond holders to sell, this would push prices even higher.

What about the repercussion of NIRP and negative bond yields on EM? It surely complicates EM's management of foreign reserves. Invested mostly in short-term, liquid, and low-yielding government bonds such as US Treasuries, their foreign reserves are intended to ensure availability in troubled times (self-insurance). However, efforts to preserve capital and earn reasonable returns are undermined by the negative yields. Without diversifying reserves, EM taxpayers will ultimately have to bear substantial losses.

At any rate, the overall impact of GD on the rest of the world, including EM, is highly uncertain. The resulting tug-of-war may confuse policy makers, adding to the difficulties they already have given the current global economic and financial conditions. Although many predict that a strengthening US dollar could be the result, hence weakening EM currencies, no clear prognosis can be made as to what this really means for the policy direction and the economic trend of EA, let alone the global economy. Great uncertainty is obscuring the environment for policy making. Certainly, EM are on their own in defending against capital outflows and market volatility. This is on top of other important questions, of which two stand out: how capital flows affect income inequality, which is already worsening in so many countries; and what alternative policy measures EM should take to mitigate the risks of financial instability?

Studies on the implications of capital flows on income inequality are scarce. Use of a financial general equilibrium model revealed that the nature and the extent of the impact depend on the way the inflowing capital is used (Azis 2015); which has a lot to do with the behaviour of agents who manage the capital. More particularly, risk-taking behaviour by agents tends to worsen income inequality. The transmission mechanisms are rather complex, involving direct and indirect effects as well as feedback effects with non-linearity, but they are important to understand for policy intervention purposes.

The appreciated currency because of increased inflows widens the trade deficit and the CAD. A standard policy response to counter the pressure is sterilised intervention, albeit effective only up to a point due the well-known 'impossible trinity'. The effect of the declining net-exports on aggregate output depends on the extent to which the growth of consumption and investment offsets the decline.

Since liquidity is augmented by the inflowing funds, the resulting increase in capital stock will spur GDP growth. In turn, this stimulates expansion of the financial sector, enhancing the

25 For example, a Frankfurt-based bank, Commerzbank, announced that it will consider keeping cash in deposit boxes instead of keeping it with the ECB. Tokyo's biggest financial group also warned it was poised to quit from being one of the primary dealers for Japanese sovereign debt. Of course, in order to carry out the plan, they would need to access cash through their central banks where their reserves are held.

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incomes of those who participate in the financial and capital markets, or who own financial assets, or hold a sizable amount of foreign currency savings. Only a tiny portion of the population in most EM is in these categories, usually rich and urban-based households. The bulk of the population have neither access to capital markets nor foreign currency savings. As the returns on financial assets increase and the currency appreciates because of capital inflows, financial incomes and hence total incomes of households in that category also increase. Robust growth of the financial sector provides them with a stream of additional income from financial returns and greater wealth.

In many cases, the increase in financial incomes exceeds the increase in factor incomes. Through portfolio allocation, the added wealth is often reinvested in financial instruments, since the effective returns are more lucrative than those in the real sector because of myriad problems affecting the investment and business climate in EM. As a result, their earnings from financial assets increase further. It is through such a cycle that the overall income inequality tends to worsen.[26]

Another challenge for EM is to find alternative policy measures when standard policies fail to mitigate the adverse impacts of capital inflows. Why are standard policy measures ineffective?

In most EA, bond holdings exceed bond issuance; in some countries, the gap is quite sizable (Fig. 23).[27] If bond prices were to fall because of rising yields prompted by higher interest rates, the asset values on corporate balance sheets would likewise deteriorate. Some firms with strong fundamentals and ample liquidity may be able to withstand this pressure, but others, especially small banks, may not be able to do so. In an era of expanded capital markets, defending the exchange rate by raising interest rates carries a risk of bankruptcy.[28]

With standard policy being ineffective and the size and types of capital flows beyond policy makers' control, what most countries can do is to refocus their policies on the asset and liability side of banks' balance sheets. On the asset side, other than reducing the loan-to-value ratio, efforts are usually made to contain the excessive expansion of credit and other forms of risky investment. But in the context of surging bank-led flows (as in phase-1), focusing on the liability side to mitigate increased non-core liabilities is more critical because that is the source of credit expansion and bank risky behaviour (see Azis and Yarcia 2015; and Forbes and Warnock 2012).

Macroprudential Policy

With a stronger currency as a result of capital inflows, the balance sheets of borrowers improve and banks are willing to take even more risks. The perceived low risks are the key. Measures that go beyond standard macroeconomic and micro prudential policies are needed, one of which is to impose some form of levy on bank-led flows that cause non-core liabilities to surge. A levy on non-core bank liabilities is designed to mitigate the build-up of systemic risk through currency or maturity mismatches, and it works by counteracting the distortions to global funding conditions and the funding 'supply push' by global banks in phase-1. Since the stock of non-core liabilities reflects the stage of the financial cycle and the extent of underpricing or measured risk in the financial system, a levy on non-core liabilities can also mitigate pricing distortions that lead to excessive asset growth and risky bank behaviour.

The Korean case is a notable example. Hit hard by the 1997 AFC and the 2008 GFC, where the source of vulnerability in both cases was the rapid build-up of short-term FCY bank liabilities, Korea announced the imposition of a levy on non-core liabilities in 2010 and implemented

26 Azis (2015) applied the model using extensive data from Indonesia to illustrate the mechanisms and the results.
27 In the Indonesian case, for example, bond holdings are almost eight times larger than bond issuance.
28 This is aside from the obvious adverse effects on small-medium enterprises (SMEs), whose borrowing behaviour is more interest-rate sensitive than that of large firms, and from the direct growth-dampening effects of higher interest rates.

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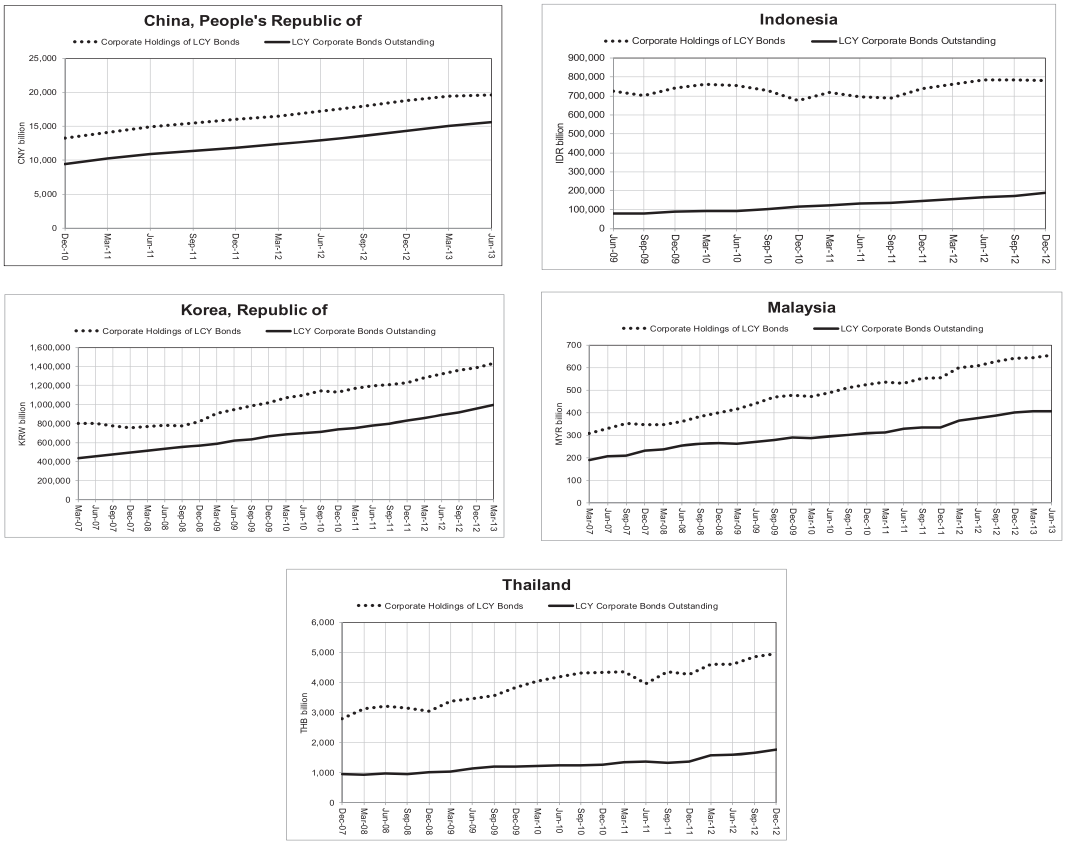
Figure 23
LCY corporate bonds outstanding and corporate holdings of LCY bonds



Notes: LCY = local currency

1. "Corporate" includes banks, non-bank financial institutions, and other corporate entities. It excludes government institutions, foreigners, and individuals.
2. "Corporate Holdings of Bonds" include holdings of government and corporate bonds.

Source: Asian Bonds Online.

it in 2011.[29] Total inflows did not fall, but the composition has changed towards a much lower share of short-term inflows. Based on a panel study comprising 48 economies, Bruno and Shin (2014) found that in contrast to other economies, including those in EA, capital flows into Korea became less sensitive to global supply-push factors after the levy was introduced.

There are arguments against imposing levies or other taxes on financial transactions. Most rest on two fundamental points: they can increase volatility through reducing liquidity; and they

29 This action was taken after other measures were implemented (e.g. a leverage cap on the notional value of FCY derivatives contracts that banks could maintain). The levy rate was set at 20 basis points for short-term foreign exchange-denominated liabilities of up to one year, falling to five basis points for liabilities exceeding five years. Unlike in the case of the levy in the UK, the proceeds in Korea are held in a special account under the Exchange Stabilization Account, managed by the finance ministry, because the main purpose is to maintain financial stability; although they can also be used as part of official foreign exchange reserves.

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raise the cost of capital. If legal, administrative, and institutional environments are also weak, they could be a source of corruption. However, issues highlighted by skeptics occur only within the context of hypothetical models or theories, and these are still debatable. More importantly, the empirical evidence produces inconclusive outcomes. Also, the levy proposed here is target-oriented: imposed only on inflows that correspond to bank non-core liabilities. It is also important to note that imposing a levy should not be a substitute for sound macroeconomic policies.

The relevance of imposing such a levy is stronger given the externalities caused by massive inflows that could lead to excessive asset growth and systemic risk, especially when banks are more interconnected. In a system with open capital accounts and bank-dependent, as in EA where capital flow reversals can be very harmful not only for the banking and financial sector but also for the entire economy, implementing such a policy makes a lot of sense.

Conclusions

The current global economic and financial conditions are the result of both complacency and inactions of policy makers reflected in how events evolved to generate the 'Four-Gs': Great Moderation (GM), Global Imbalances (GI), Global Financial Crisis (GFC), and Great Divergence (GD). Complacency built during the two decades of GM and the emergence of China, along with a false perception that markets will correct imbalances, eventually led to GI. The resulting depreciation of the US dollar was surprisingly limited despite a surging CAD because of valuation effects in portfolio balances. This partly influenced the Fed's decision to keep interest rates low. In the end, the combination of believing that housing prices will always move north, permissive liquidity, and lack of proper oversight led to the sub-prime crisis in the US.

But it was the Lehman Brothers moment that marked the onset of the GFC. As the fall in the housing market spread across borders, global banks operating in the US—particularly those headquartered in Europe—were forced to deleverage. Since a considerable amount of the funds raised by them in the US money market was invested in EM, the deleveraging squeezed EM liquidity. Globally, financial and goods markets took a severe hit. Confidence in financial markets reached an all-time low, and global trade collapsed. What started as a domestic sub-prime crisis in the US ended with the GFC.

For EM, the repercussions of low interest rates and AE's policy response to GFC have been very significant. Massive capital inflows, first through the banking sector (bank-led flows in phase-1) then via the capital market (debt-led flows in phase-2), helped improve EA's liquidity and spurred growth. But they also elevated risks of financial instability. Bank-led flows increased the risks of pro-cyclicality and encouraged riskier behavior; debt-led flows elevated the risks of capital flow reversals. Giving a false impression of low risks, the currency appreciation prompted more risk-taking activities, amplifying the actual risks. The 'taper tantrum' episode in May 2013 provided a glimpse of what was coming (flow reversals in phase-3).

Since QE succeeded in lowering long-term interest rates but failed to generate robust growth of business investment and real sector activities in AE, it is hard to conjecture about the net-outcomes. What is clear is that eight years since the GFC and QE the growth in AE and EA remains lethargic, lower than trend growth, which itself has been falling persistently. Growing spare capacity and productivity slowdown are the major forces behind the disturbing trend. The emerging two-way contagion process where conditions in EA and AE are mutually reinforcing (contagion version 2.0) makes global recovery even more difficult.

Policy makers in EA are facing daunting tasks. External environments are no longer benign, and standard policies are less effective in countering massive capital flows and growing financialisation. Determining appropriate policy direction is also more difficult since central bank policies in AE are no longer synchronised: loosening in Europe and Japan—including NIRP—*vs* tightening in the US. This Great Divergence (the fourth 'G') creates a lot of uncertainties;

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not to mention the sharp disagreements among AE on strategies to stimulate global growth: Germany has advocated tight budgets, cautious monetary policy, and structural reforms; the rest of the G-7 want more fiscal stimulus. While the impact of NIRP on the adopters' economies is yet to be seen, it surely complicates reserves management in EM.

There are good reasons for EM to adopt policies to defend themselves, no matter how unorthodox the policies are. Putting a damper on the dangerous component of capital inflows, which is equivalent to discouraging risky behaviour, is a notable example. It lowers the risks of financial instability and mitigates the adverse impact on income inequality, since the latter depends critically on how agents manage and use capital inflows (Azis 2015).[30]

Imposing a levy on non-core liabilities could help deter risky behaviour. Outcomes from similar policies in Korea and others are encouraging. For a bank-dependent region with open capital accounts and having suffered from increased inequality, EA could reap the benefits from implementing such policies.

We live in extraordinary times. Amid financial nationalism in AE towards which international financial institutions (IFIs) including the IMF are curiously silent, despite the externalities felt around the world, volatile markets and the clash of national interests are gaining ground. It all strengthens the call for a more effective macro policy coordination as argued by Vines (2015). Yet, it also fuels popular frustration and cynicism about whether IFIs genuinely reflect global will and are fully accountable.

References

Azis, I.J., 2009. *Crisis, Complexity, and Conflict*, Emerald, London.

——, 2010. 'Predicting a recovery date from the economic crisis of 2008', *Socio-Economic Planning Sciences*, 44: 122–29.

——, 2015. 'Integration, contagion, and income distribution', in P. Nijkamp, A. Rose and K. Kourtit (eds), *Regional Science Matters*, Springer, Heidelberg, New York, Dordrecht, London.

Azis, I.J., Mitra, S. and Baluga, A., 2013. 'Global shock and regional spillovers', *Peace Economics, Peace Science and Public Policy*, 19(2): 1–29.

Azis, I.J. with Shin, H.S. 2015. *Managing Elevated Risk: Global Liquidity, Capital Flows, and Macroprudential Policy—An Asian Perspective*, Springer.

Azis, I.J. with Yarcia, D. 2015. 'How capital flows in the midst of excess savings affect macrofinancial vulnerability', *Asian Development Review*, 32 (2):115–52.

Bank for International Settlements (BIS). n.d. *Debt Securities Statistics* (various issues).

Bernanke, B., Gertler, M. and Gilchrist, S., 1996. 'The financial accelerator and the flight to quality', *Review of Economics and Statistics*, 78(1): 1–15.

Blanchard, O., Giavazzi, F. and Filipasa. 2005. 'International investors, U.S. current account, and the dollar', *Brookings Papers on Economic Activity*, No 1.

Blanchard, O., Giavazzi, F., Filipasa and Simon, J., 2000. 'The long and large decline in U.S. output volatility', *Brookings Papers on Economic Activity* no. 1:2001: 135–74.

Bruno, V. and Shin, H.S. 2012. 'Capital flows and the risk-taking channel of monetary policy', *BIS Working Papers* No 400, December.

—— and ——, 2014. 'Assessing macroprudential policies: the case of South Korea', *Scandinavian Journal of Economics*, 116(1): 128–57.

Caballero, R. J., Farhi, E. and Gourinchas, P.-O. 2006. 'An equilibrium model of global imbalances and low interest rates', *NBER Working Paper* No. 11996.

Cetorelli, N. and Goldberg, L.S. 2010. 'Organizational complexity and balance sheet management in global banks', *NBER Working Paper* No. 22169.

Eichengreen, B., 2015. *Hall of Mirrors: The Great Depression, the Great Recession, and the Uses-and Misuses-of History*, Oxford University Press, Oxford.

Feldstein, M. 2015. 'The Fed's Stock–Price Correction', *Wall Street Journal*, August 24.

Forbes, K. J. and Warnock, F.E. 2012. 'Debt-and equity-led capital flows episodes', *NBER Working Paper*, 18329.

Ghosh, A., Ostry, J.D. and Qureshi, M.S., 2016. 'When do capital inflow surges end in tears?', *American Economic Review: Papers and Proceedings*, 106(5): 581–5.

30 After decades of promoting unrestricted capital flows, the IMF has finally acknowledged the merit of capital controls of this sort (Ostry et al. 2012; Gosh et al. 2016).

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Gourinchas, P.O. and Obstfeld, M., 2012. 'Stories of the Twentieth Century for the Twenty-First', *American Economic Journal: Macroeconomics*, 4(1): 226–65.
Kim, C.-J. and Nelson, C.R., 1999. 'Has the U.S. economy become more stable? A Bayesian approach based on a Markov-Switching model of business cycles', *Review of Economics and Statistics*, 81(4): 608–16.
McConnell, M.M. and Perez-Quiros, G., 2000. 'Output fluctuations in the United States: what has changed since the early 1980s?', *American Economic Review*, 90(5): 1464–76.
Mills, T.C. and Wang, P., 2003. 'Have output growth rates stabilized? Evidence from the G-7 economies', *Scottish Journal of Political Economy*, 50(3): 232–46.
Ostry, J., Ghosh, A., Chamon, M. and Qureshi, M., 2012. 'Tools for managing financial-stability risks from capital inflows', *Journal of International Economics*, 88(2): 407–21.
Schularick, M. and Taylor, A., 2012. 'Credit booms gone bust: monetary policy, leverage cycles, and financial crises, 1870–2008', *American Economic Review*, 102: 1029–61.
Siegel, J.J., 2010. *'Efficient Market Theory and the Recent Financial Crisis', Presented at the Inaugural Conference of the Institute for New Economic Thinking*, King's College, Cambridge UK.
Stiglitz, J. and Greenwald, B., 2003. *Towards a New Paradigm in Monetary Economics*, Cambridge University Press, Cambridge, England.
Summers, L.H., 2016. 'The age of secular stagnation: what it is and what to do about it', *Foreign Affairs*, March-April issue.
Summers, P.M. 2005. 'What caused the Great Moderation? Some cross-country evidence', *Economic Quarterly*, 3rd Quarter, Federal Reserve Bank of Kansas City.
Vines, D., 2015. 'Cooperation between countries to ensure global economic growth: a role for the G20?', *Asian-Pacific Economic Literature*, 29(1): 1–24.

Appendix

Consider the following expression capturing the dynamics of US debt:

$$D_{t+1} = (1+i)D + TB(e_{t+1}, m_{t+1}) \qquad (1)$$

where future debt position (D_{t+1}) is determined by the current debt (D) and the interest rate (i) plus the trade deficit (TB). The latter is influenced by the exchange rate (e) and the shift parameter (m). Higher m reflects greater preference for foreign goods. But since US gross liability is largely denominated in US dollars, the future debt position is also influenced by what happens to the value of assets (assets revaluation).

To arrive at the equilibrium current account, denote W as the wealth of US investors, W^* is foreign wealth, $EXP(R)$ is the expected rate of return, and δ is the share of US assets to which US investors allocate their wealth; thus, $(1-\delta)$ is a share allocated to foreign assets, and i is the interest rate. If foreign investors invest a share (δ^*) of their wealth W^* in foreign assets and $(1-\delta^*)$ in US assets, the future net debt position of the US can be written (see Blanchard et al. 2005; and Azis 2009):

$$\begin{aligned} D_{t+1} = {} & [1-\delta^*(EXP(R),p)]^{W^*}\!/_{e}(1+i) \\ & + TB(e_{t+1}, m_{t+1}) \\ & - [1-\delta(EXP(R),p]W(1+i^*)e/e_{t+1} \end{aligned} \qquad (2)$$

where the last term represents the valuation effect, and p denotes a shift variable capturing all forces that can shift portfolio shares for a given relative return. An increase in p leads to US and foreign investors' decisions to increase the share of US assets in their portfolio.

Equation (2) implies that net debt in the next period equals the value of US assets held by foreign investors next period, plus the trade deficit next period, minus the value of foreign assets held by US investors next period. Note that the value of US assets held by foreign investors next period equals this period's wealth in terms of US goods times the share of US assets they are holding, times the gross rate of return on US assets. Meanwhile, the value of foreign assets held by US investors next period equals this period's US wealth times the share they invest in foreign assets, times the rate of return on foreign assets in terms of US goods. Note that D, δ^*, and δ are not independent. Thus, D_{t+1} can be expressed in terms of any two of the three. With this mind, the current account balance relation is:

$$\begin{aligned} D_{t+1} = {} & (1+i)D + TB(e_{t+1}, m_{t+1}) \\ & + \left[(1, -\delta, (EXP(R),p)](1+i)\left[1 - \frac{1+i^*}{1+i}\frac{e}{e_{t+1}}\right](S-D)\right]. \end{aligned} \qquad (3)$$

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The larger is US net debt, the greater the probability that there will be a shift of demand away from US asset (home bias), and the larger the trade surplus required for interest payments, eventually causing the US dollar to depreciate.

To arrive at the equilibrium in assets markets, begin with establishing total supply of US assets (S) equal to total demand of US assets by both US investors and foreigners:

$$S = \delta[EXP(R), p]W + [1 - \delta^*(EXP(R), p)](W^*/e). \tag{4}$$

By definition $W = S - D$, and $W^*/e = S^*/e + D$. Hence, the portfolio balance relation would be

$$S = \delta[EXP(R), p]W + [1 - \delta^*(EXP(R), p)][(S^*/e) + D]. \tag{5}$$

Under a scenario of no substitution between US assets and foreign assets, δ and δ^* are independent of the rate of return R, in which case the equilibrium exchange rate is determined solely by the world distribution of wealth or the portfolio preferences, not by the current account balance (deficits).

It is clear from Eqns (3) and (5) that the lines relating net debt position D and exchange rate r have a negative slope as displayed in Fig. 3 in the text. More precisely:

$${}^{d}e/e\big/_{d}D = -\frac{\delta + \delta^* - 1}{(1 - \delta^*)S^*/e} < 0. \tag{6}$$

From the above model specifications, an accommodative policy will raise demand. However, given a low domestic supply elasticity in the US, import demand, including from Asia, particularly China, will increase more than the increase in domestic production. In Eqn (3), this is captured by an increase in m. Thus, for any given D the locus of the current account balance will shift downward as depicted in Fig. 3. The resulting shift in trade deficit because of higher m is shown by the movement from A to B where expected depreciation increases. As debt accumulates, the currency depreciates even further, represented by a shift from B to C, while the CAD worsens because of rising m. Note that at a lower degree of substitutability the depreciation will be smaller, although expected (future) depreciation can be large. But since p in Eqns (3) and (5) also increases, the resulting inflows of capital that cause the currency to appreciate restrain the depreciation pressure from rising m. This explains why the actual US dollar depreciation was smaller-than-expected despite the persistently growing CAD.

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