International capital flows have been a major threat to SEACEN member economies, and as our capital markets continue to open, capital flow management inevitably will be a more complex issue. According to Table 1, NTD (New Taiwan Dollar) spot transactions have become less relevant to international trade. The share of spot transactions for international trade was down to 5.3% in 2013 from 52% in 1991. The main reason behind this drop is that Chinese Taipei companies learned to offset their foreign exchange exposures from upstream to downstream business. In addition, during this period Taiwan gradually opened up its financial account.

On the other hand, activities involving foreign portfolio investment and foreign currency deposits dominate the NTD spot market. Shares of foreign portfolio investment and foreign currency deposits had rose enormously to 18.7% and 24.4%, respectively, in 2013.

<table>
<thead>
<tr>
<th>Year</th>
<th>Foreign Portfolio Investment</th>
<th>Foreign Currency Deposits</th>
<th>International Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>0.4</td>
<td>8.6</td>
<td>52.0</td>
</tr>
<tr>
<td>1995</td>
<td>2.6</td>
<td>15.3</td>
<td>41.9</td>
</tr>
<tr>
<td>2000</td>
<td>12.5</td>
<td>21.2</td>
<td>19.4</td>
</tr>
<tr>
<td>2005</td>
<td>18.1</td>
<td>21.2</td>
<td>8.5</td>
</tr>
<tr>
<td>2010</td>
<td>22.1</td>
<td>22.7</td>
<td>5.6</td>
</tr>
<tr>
<td>2013</td>
<td>18.7</td>
<td>24.4</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Source: Central Bank, Chinese Taipei.
Capital flows have been a key driver behind the volatilities of NTD exchange rate and stock market (TAIEX) based on Figures 1 and 2. Like many Asian economies, the TAIEX rises with NTD appreciation when capital flows in, and vice versa.

**Figure 1**
Inflows of Foreign Capital vs. NTD/ USD

**Figure 2**
Inflows of Foreign Capital vs. TAIEX

When Bernanke triggered a “taper tantrum” from May 22, 2013, there was non-trivial selloff in Chinese Taipei’s stock market by foreign investors, which lasted around three months. After that, foreign capital started to flow back according to Figure 3 and 4. The reason behind this is that international investors were soothed by Fed towards a dovish stance of QE tapering and policy rate path; moreover, Chinese Taipei’s corporate earnings and economy grew even healthier than before.

**Figure 3**
Foreign Net Monthly Purchases of Chinese Taipei Stocks

**Figure 4**
Foreign Cumulative Purchases of Chinese Taipei Stocks

Source: Central Bank, Chinese Taipei.

Source: Bloomberg, authors’ calculation. Unit: USD million.
Since one of the CBC’s operational objectives is to “maintain the stability of the internal and external value of the currency”, its exchange rate policy has three characteristics as follows:

(1) The regime is a managed float;
(2) The exchange rate is principally determined by supply and demand in the foreign exchange market;
(3) If the market is disrupted by seasonal or irregular factors, like large short-term capital flows, which causes the exchange rate to become excessively volatile, the Bank may step in to maintain an orderly foreign exchange market.

As a result, for policy responses to capital flows in Chinese Taipei, the Bank has taken long-term measures and short-term tools. Long-term policy measures are used to “maintain sufficient flexibility of exchange rate to reflect real economic conditions”. It is easy to find two-way fluctuations in the NTD exchange rate over longer periods of time. From the balance of payment perspective, Chinese Taipei moves towards more balanced trade and provides domestic residents with wider access to overseas investment.

Chinese Taipei welcomes foreign direct investment and securities investment, but not currency speculation. Therefore, the Bank has adopted the following short-term policy tools to deal with that situation after the 2008 global financial crisis:

(1) Examine the final destination of capital inflows compared with their original declaration;
(2) Raise the required reserve ratio of foreigners’ NTD demand deposits exceeding their end of 2010 balances from 25% to 90%;
(3) Constrain foreigners’ government bond holdings to less than 30% of their net capital inflows;
(4) Require foreigners’ cash collateral of securities borrowing in USD, not NTD;
(5) Regulate offshore foreign investors participating in the domestic futures market to deposit margins in non-NTD currencies.

All of these policy tools mentioned above are used to confront short-term capital inflows for currency speculation.

Because of the CBC’s long-term policy measures and short-term management tools, Table 2 demonstrates that the NTD exchange rate enjoys long-term stability, and this outcome is highly praised by rating agencies. In addition, the Bank’s internal empirical study proves that the NTD exchange rate shows anti-inflationary and counter-cyclical characteristics.
During the recent global financial crisis, it was observed that a great amount of foreign capital flowed out of Chinese Taipei due to the contagion effect of a regional credit crunch and liquidity drain. Once the financial market cooled down, Chinese Taipei normally attracts foreign investors again because of its solid economic fundamentals, stable exchange rate, low foreign liability, etc.

In the future, when central banks of advanced economies, especially Fed, start policy normalization, the impact of capital flows should be limited in Chinese Taipei as long as that process goes with vigorous global economic growth.

What worries us is that the recovery cycle diverges in the U.S. from the rest of world. Since the U.S. share of the global GDP is not as large as before but the US dollar still plays the superior role of international reserve currency, the rest of world will definitely suffer from its spillover effects if the Fed speeds up or slows down the policy normalization process without taking into account other countries’ conditions.

Considering this situation, the CBC has been fine-tuning those tools as mentioned previously to avoid abnormal fluctuations of the NTD exchange rate. In the meantime, the Bank keeps cooperating with other financial supervisory authorities to implement macro/micro-prudential policies in order to maintain the soundness of the domestic financial system.

<table>
<thead>
<tr>
<th></th>
<th>NTD</th>
<th>KRW</th>
<th>SGD</th>
<th>JPY</th>
<th>EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2011</td>
<td>5.80</td>
<td>15.65</td>
<td>6.91</td>
<td>10.98</td>
<td>13.34</td>
</tr>
<tr>
<td>2012-2014</td>
<td>4.46</td>
<td>8.79</td>
<td>6.60</td>
<td>8.76</td>
<td>8.90</td>
</tr>
</tbody>
</table>

Table 2
Volatilities of Real Effective Exchange Rates*

<table>
<thead>
<tr>
<th></th>
<th>NTD</th>
<th>KRW</th>
<th>SGD</th>
<th>JPY</th>
<th>EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2011</td>
<td>4.77</td>
<td>9.06</td>
<td>3.18</td>
<td>9.39</td>
<td>5.87</td>
</tr>
<tr>
<td>2012-2014</td>
<td>2.60</td>
<td>5.03</td>
<td>2.59</td>
<td>8.60</td>
<td>4.27</td>
</tr>
</tbody>
</table>

*Volatilities here are the averages of annualized monthly standard deviations.
Source: Bloomberg.
It is anticipated that the opening process of regional capital markets will continue, since this is still the best way to allocate resources and capital. While the process is going on, member economies will mainly face several challenges, e.g., financial deregulation, capital flow management, building clearing and settlement infrastructure, and financial supervisory system overhaul, etc. Member economies should assess their individual degree of economic development to choose the suitable trade-off point between capital market efficiency and domestic financial stability. Meanwhile, deeper integration of cross-border capital markets manifests the importance of closer regional cooperation in economic policy to avoid beggar-thy-neighbor or negative spillover effects.

International capital flows have been a major risk to regional stability, especially for developing member economies. Through the platform of SEACEN, central banks of member economies should have the capacity and capability to deal with this risk. For example,

1. Help some member economies to reduce excessive levels of foreign debt;
2. Provide essential guidance and policy recommendations for economies where capital controls are required to stabilize the exchange rate;
3. Expand the scale of currency swap arrangements, e.g. Chiang Mai Initiative;
4. If necessary, SEACEN can even step forward to coordinate a regional policy response to help the region cope with large capital flows.

Furthermore, official initiatives designed to promote economic growth and financial stability in the region have to be inclusive. The selection criteria for inclusion in any regional cooperative framework should be based on economic and financial considerations rather than on political factors.
GLOBAL LIQUIDITY AND IMPACT OF CAPITAL FLOWS ON EXCHANGE RATE

By

Herbert Poenisch

Within the general theme of the seminar this contribution will focus on the transmission channels of global liquidity, through banks and capital markets, the impact on exchange rates and interest rates in EME, the impact on financial institutions, households and non-financial companies as well as possible policy responses to volatile capital flows.

The fallout from global liquidity developments on EME has been likened to a ‘financial tsunami’ with a rapid succession of devastating inflows and sudden reversals, inflicting damage on the domestic economies of EME in its wake.

1. Transmission Channels

Definitions of global liquidity were offered in the previous contribution by E. Poole. Global liquidity is transmitted to EME through a number of channels, price as well as quantity channels. Dong He and R McCauley distinguish 5 such channels of which 3 are price channels and 2 are quantity channels of transmission of monetary policy in advanced economies (AE) to emerging market in East Asia:

1.1. Central banks set lower policy rates than they would otherwise in response to very low interest rates in key currencies in order to lessen pressure for currency appreciation.
1.2. Large-scale bond purchases reduce bond yields not only in the bond market where the purchases are made but also to varying extents in other bond markets through portfolio balance effects.
1.3. Higher interest rates than in key currencies lead to upward pressure on exchange rates.
1.4. Low yields in key currencies lead to easier financial conditions given stocks of foreign currency credit and spur a shift of liabilities into foreign currency, especially if domestic currency is expected to appreciate.
1.5. Capital flows cross-border into local currency bond and equity markets.

5 SEACEN Consultant.
6 China repeatedly advances such a view of capital flows: International Monetary Institute of Renmin University China (2014): Internationalisation of RMB, the 2014 Report, p 2. www.imi.org.cn
Taking each one in turn they functioned even without necessarily triggering capital flows (except 1.5).

**Ad 1: Lower Domestic Policy Rates**

If one applies the Taylor rule as an indicator for the level of desirable interest rates, determined by domestic factors, such as the deviation of inflation from the targeted path of inflation and the output gap, the actual policy rates can be plotted with the Taylor rule rates. As the Graph 1 below shows, in both AE as well as EME policy rates have been below the Taylor rule rates for most of the time since the beginning of the millennium. The graph also suggests that the gap might be bigger and thus more scope for adjustment in EME than in AE.

**Graph 1: The Taylor (1999) Rule and Policy Rates¹**

![Graph 1: The Taylor (1999) Rule and Policy Rates](source)

Source: Dong He and R McCauley BIS WP 431.

**Ad 2: Global Bond Markets**

As global bond markets show strong substitution across currencies and maturities along the yield curve, the massive bond purchases in one country have major repercussions and spillover on other bond markets. Therefore the policy stance in one country has a strong effect on the policy rates in other countries.

The argument runs as follows: as central banks in AE purchase bonds with longer duration, this reduces the duration of private bond holdings. In order to balance their duration, asset managers increasingly purchase EME bonds which are close substitutes. Close substitutes are determined by market risk, credit risk and other decision parameters (such as vulnerability indicators) of asset managers investing in bond funds.
The Institute of International Finance distinguishes 3 categories of vulnerability indicators in EME. These are: (i) external financing vulnerabilities, (ii) domestic financing vulnerabilities, (iii) policy vulnerability. These indicators, together with the outlook for market risk determine the degree of substitutability of bonds.

Central banks in EME add to the bond purchases of AE by accumulating foreign exchange in order to resist appreciation. By investing these mostly in bond purchases in AE they thus stand ‘shoulder to shoulder’ with AE central banks. They re-enforce the first round effects.

Ad 3: Upward Pressure on Exchange Rates

Various AE central banks have applied different unconventional policies, either in quantitative terms (BoJ) or price (bond yield) terms (FED). Markets compare the relative policy stances of two central banks by applying two methods. Either they plot the bilateral exchange rates against the relative size of two central bank balance sheets (Graph 2: approach 1), or they use the interest rate differentials in the traditional form of carry trade (Graph 2: approach 2).

Graph 2: Approach 1: Compare Balance Sheets of Central Banks

Source: Dong He and R. McCauley, BIS WP 431.

In any case, the EME central banks are faced with a dilemma. They are under pressure to replicate the policy stance in AE to avoid excessive exchange rate appreciation. The further the yield curve in EME moves downward the lower the pressure on the exchange rate.

However, Asian central banks have resisted this mechanism, also avoiding increased pressure on the exchange rate, thus adding foreign exchange reserves which resulted in expanded central bank balance sheets with adverse domestic consequences (Graph 3).

**Graph 3: Central Bank Assets and Foreign Exchange Reserves**

Source: BIS Global Liquidity Indicators, October 2014.
The market reaction, mostly downward adjustment of interest rates measured in 10-year bond yields in various EME to the QE1 phase was far more severe than to the QE2 phase (Graph 4).

**Graph 4: Difference in EME Reaction to QE1 and QE2**

Cumulative two-day changes in 10-year bond yields around announcement days

![Graph 4: Difference in EME Reaction to QE1 and QE2](image)

Source: Dong He and R. McCauley, BIS WP 431.

During the recent tapering phase, a sudden withdrawal or even reversal of ‘carry trade’ risks had a profound impact on EME9. The exposed currencies were those which served as carry trade target currencies, such as the BRR the RUR and the INR, but also AE currencies such as the AUD and the NZD (see Graph 5).

The impact of reversal was stronger on those countries which accepted portfolio inflows to finance current account deficits. The proportion of government bonds under foreign ownership has risen to 45% in Malaysia, which is more than the 35% in Poland, Hungary, Mexico and Indonesia10.

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9 The Financial Times mentions that some USD 2 trn is invested in local EME debt.
10 Financial Times, 30 September 2014, pp. 2.
Graph 5: Carry Trade by Currencies and Net Positions

Source: BIS Global Liquidity Indicators, October 2014.

**Ad 4: Shift Into Foreign Currency Denominated Debt**

Low interest rates in major currencies provide an incentive for corporates (not households, as in emerging Europe) to substitute foreign currency credit, mostly dollar-denominated, for local currency credit. In addition, expectations of currency appreciation provide a further incentive in the form of potential capital losses on liabilities\(^1\).

Non-USD banks (in HK and other offshore centres) are able to provide these loans as their loan-to-deposit ratios in foreign currencies have been rather low. Most of the funding is provided by non-USD banks which obtain the funds directly from the QE of the FED, where they hold half of the banks’ reserves (Graph 6) by now\(^2\).

Exporters in Asia, notably Korea have been able to convert their local currency credit into USD credit by swapping their export returns.

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Graph 6: Non-US Banks’ Consolidated Claims on the US


Ad 5: Capital Flows through Bond and Equity Markets

The ample availability of USD and other AE currencies at historically low interest rates has motivated non-financial enterprises which straddle borders to borrow in these currencies and transfer the proceeds to subsidiaries in other parts of the world. Thus they have taken on the character of quasi financial intermediaries (Graph 7)\(^{13}\).

Graph 7: Non-banks as Financial Intermediaries

Source: Hyun Shin et al., WP 14/2014, IMF.

In addition, as international banks have been reluctant to expand lending for a number of reasons, borrowing through the bond market has expanded rapidly since the GFC. It is interesting to note that the borrowing by all sectors, notably the non-financials from EME on a nationality basis has expanded faster than that on a residence basis. This substantial offshore issuance was not captured by conventional external debt statistics\(^{14}\), only by BIS securities statistics (Graph 8). International debt securities\(^{15}\) amount to about 20% of total outstanding securities.

**Graph 8: Growth in EME Bond Issues**

![Graph showing growth in EME bond issues](image)


### 2. Channels of Dispersion of Global Liquidity

Whereas the banks were prominent before the GFC in channeling funds to EME, in the aftermath of the GFC the capital markets, both bonds and equity took over this role. Bearing in mind the push/pull framework\(^{16}\), the borrowers in EME as full factor, borrowed heavily in the international capital markets (see above). This borrowing was recorded as portfolio inflows in EME (Graph 9).

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\(^{15}\) International debt securities (IDS) are if any of the following characteristics is different from the country of residence of the issuer: country where the security is registered, law governing the issue, or market where the issue is listed. See BIS Securities Statistics www.bis.org/statistics.

\(^{16}\) See contribution by Bank Indonesia in Session 2.
Graph 9: Gross Capital Inflows into EME

The share of portfolio flows in gross capital inflows has grown since the global financial crisis.

1. Gross Capital Inflows to Emerging Markets
(Billions of U.S. dollars)

Source: IMF GFSR March 2014.

The Institute for International Finance (IIF) confirms this trend, distinguishing debt and equity flows (Graph 10).

Graph 10: EME Capital Inflows by Component


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The changing role of banks and capital markets in dispersing external financing to EME is well captured in the subsequent graph by Turner from the BIS, quoted by Hyun Shin (Graph 11)\(^\text{18}\):

**Graph 11: Sources of Financing in EME**

![Graph showing sources of financing in EME]


The type of institutional investors (the push factor) has changed as well, from national retail investors to global institutional investor. In 2013 the only flows were generated by global investors which are mostly operating out of offshore financial centres (see Graph 12).

On the investor side, mostly institutional investors in AE in search for yields absorbed EME bonds and equities. This resulted in surging portfolio inflows.

The IMF showed the rapid growth of funds under management of global and national institutional investors and mutual funds in its GFSR March 2014 (graph 13).

It has also compared the investment constraints of institutional investors. A comparison of risk tolerance, time horizon, need for liquidity and regulatory constraints shows a varied pictures which determined the investment behavior of these funds. Heavily indebted EME borrowers would be well advised to know the behavioral pattern of asset managers holding securities issued by them. They would be well advised to attract investors with a high risk tolerance, longer time horizon, less need for liquidity and high regulatory constraints.
3. **Impact of Capital Flow Surges and Reversals on EME Exchange Rates and Interest Rates**

During the period of surge of inflows in the aftermath of the GFC during 2010 and 2011 they caused upward pressure on exchange rates and downward pressure on domestic interest rates (Graph 14). Central banks often resisted appreciation, adding to their foreign exchange reserves. Central bank balance sheets expanded, causing more domestic liquidity, credit expansion and buoyant asset prices, notably in the real estate and stock markets. Occasionally inflationary pressures were building up.

During the reversal of these capital inflows, notably 2Q2013 and 1Q2014 (the tapering phase) the opposite happened. Exchange rates came under pressure and domestic interest rates started to rise (Graph 14). Central banks resisted depreciation and lost moderate amounts of foreign exchange reserves. In domestic asset markets, the sell-off of stocks and bonds caused a decline in stock and bond indices, partially cushioned by domestic purchases. As a result central bank balance sheets started to contract, adding to the credit squeeze.

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19 The figure of total assets in 2005 should be 55 instead of 5.
4. Impact of Capital Flows on Banks, Other Financial Institutions, Households and Non-Financial Corporations during Tapering

Banks and other financial institutions are set to suffer losses from the bond-market sell-off of the securities held in their portfolios. This will be partially made up by an improvement in the net interest margins and investment income.

Another negative effect might arise from the deterioration in the repayment capacity of households and non-financial corporates which might undermine the profitability of banks. Finally, the depreciation of the local currency will affect profitability of banks as well as add additional burden on households and corporates in servicing their foreign currency denominated debt.

Graph 14: Recent Developments of EME Exchange Rates and Interest Rates

Source: BIS Quarterly Review, March 2014.
Non-financial corporates who substituted foreign currency (see graph 7) debt for their local currency debt will suffer additional debt service burden from the depreciation. In addition they may face the rollover risk of their foreign currency loans. The deterioration in corporate leverage might have second round effects on banks.

Growth will also suffer from a slowdown in the housing market as a result of the moderation in residential mortgage credit growth. Higher interest rates will affect the price of existing mortgages and deter borrowers from subscribing new mortgages. The debt burden after the booming years preceding this reversal is likely to become heavier. This in turn will adversely affect the consumption of durable goods adding to the slowdown in economic growth.

5. Policy Options

A lot has been written about the policy options. The clearest presentation of available options is by Singh (2009)\(^{20}\). During the period of large capital inflows the basic choice is accepting exchange rate appreciation or face the monetary policy dilemma. During the capital flow reversal the same choice offers itself, allow the exchange rate to depreciate or face a monetary policy dilemma in the opposite direction.

During the period of tapering, central banks have resorted to the following measures:

5.1. Providing domestic liquidity by e.g., lowering reserve requirements.
5.2. Loosening macro-prudential measures to provide more credit and to prop up asset prices. These measures have not been very effective.
5.3. Encourage capital inflows, such as portfolio inflows; again these measures have not been very effective.
5.4. Supporting asset prices from domestic investors when foreign investors leave; has worked in some countries.

Conclusion

This contribution has highlighted the various channels of transmission for global liquidity to affect domestic economies in EME. The role of intermediary has shifted from the banking sector to the institutional investors and the non-financial enterprises. EME need to better understand the behavior of asset managers and the role of non-financials in channeling global liquidity to EME. The relative borrowing costs for the borrowers and the relative yields and risk premia for the investors seem to be crucial for understanding the new paradigm in global financial intermediation.

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References


Dong, He and Robert McCauley, (2013), Transmitting Global Liquidity to East Asia: Policy Rates, Bond Yields, Currencies and Dollar Credit, BIS WP 431, Available at: www.bis.org/publications.


