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Asian banks and the international interbank market[1]

Banks in the Asian economies most affected by the Asian financial crisis generally continue to enjoy comfortable liquidity in the international interbank market. The apparent international illiquidity of banks in Korea is concentrated in foreign banks. Foreign banks' offshore funding of local currency assets may in places have created a new vulnerability of local markets and banks to global bank liquidity crunches.

JEL classification: E58, F32, F34, G15, G18, G21.

Ten years ago, Asian banks were vulnerable to a change in the risk perceptions of global bankers because Asian banks had borrowed dollars at short term to finance long-term projects. Despite the build-up of official foreign exchange reserves since the crisis, growing international interbank claims on Asian banks raise the issue of the resilience of their own operations in the international interbank market. Liquidity could be tested not only by global banks' reassessment of Asian banks' creditworthiness but also by global banks' response to their own liquidity difficulties.

The combination of BIS banking data and national data suggests that banks in Malaysia, the Philippines and Thailand enjoy a comfortable excess of international interbank placements over their borrowing from this market. Their international liquidity mirrors that of their domestic banking systems. The practice of central banks there of managing domestic liquidity by selling dollars spot and buying them back forward has also boosted the international liquidity of banks. Banks in Korea do show a rapid build-up of international interbank debt, which stands well in excess of claims on banks abroad. Even so, this apparent international liquidity mismatch is concentrated in *foreign* banks operating in Korea, and hence the situation differs from that in 1996–97. Korean banks are thought by market participants to manage their dollar liquidity prudently.

Events since the middle of 2007, however, have thrown into relief new vulnerabilities. A curtailment of international interbank credit to Asian banks could reflect more the liquidity needs of the major international banks

[1] Our thanks go to Eric Chan for research assistance and to Ben Craig, Corrinne Ho, Heinz Herrmann, Kyungsoo Kim, Patrick McGuire and Philip Wooldridge for discussion. All errors remain the responsibility of the authors. The views expressed are those of the authors and not necessarily those of the BIS or the Deutsche Bundesbank.

themselves than any change in Asian banks' creditworthiness. More subtly, to the extent that foreign banks use offshore dollars to fund Asian local currency claims on non-banks, Asian banks and fixed income markets could be adversely affected in the event that global banks were to call dollar funding home. Again, such offshore funding bulks largest in Korea among the economies most affected by the Asian crisis. In 2007, Korean policy sought to limit such offshore funding in order to attenuate the associated liquidity risk, albeit at the expense of segmenting the onshore and offshore won markets.

This special feature combines BIS and national data to produce measures of the international interbank liquidity of banks in the economies most affected by the Asian crisis and qualifies the measure in the case of Korea. It then identifies a hitherto less appreciated vulnerability that can arise in a global banking liquidity crunch.

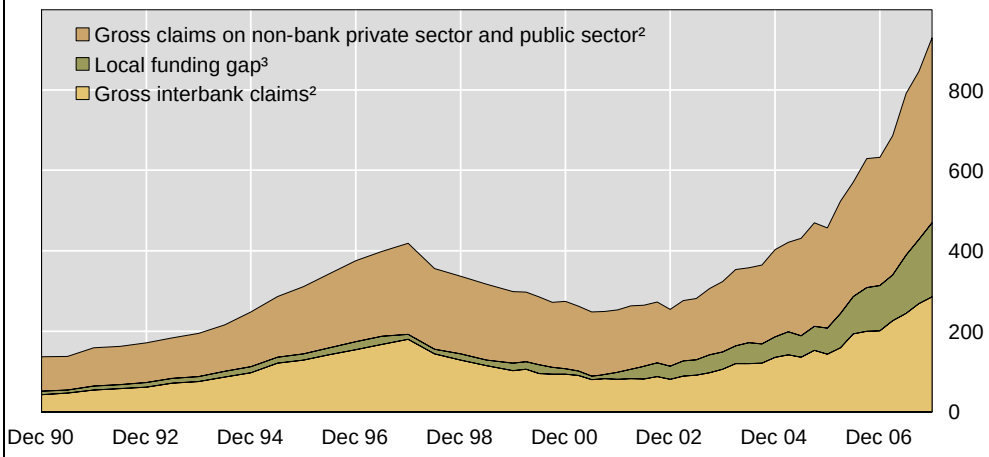
Asian banks' international interbank liquidity: where do we stand?

Asian banks built up their borrowing from the international interbank market in the early 1990s, suffered a run in 1997–98 (Radelet and Sachs (1998), Bussière and Mulder (1999)) and spent the next five years paying down their debts to banks abroad. Since the US dollar's peak in 2002, Asian banks have once again begun to increase their borrowing from banks abroad. By 2006, Asian banks had reached pre-crisis levels of borrowing, raising the question of where their liquidity position stands (Graph 1).[2]

To assess the vulnerability of Asian banks to a curtailment of funding in the international interbank market, one would ideally like to have the time profiles of maturing foreign currency obligations. Against this, one would set

Consolidated claims vis-à-vis major Asian economies[1]

In billions of US dollars



[1] China, India, Indonesia, Korea, Malaysia, Taiwan (China) and Thailand. [2] Cross-border claims and local claims denominated in foreign currency. [3] Excess of local currency assets over local currency liabilities.

Sources: BIS; authors' calculations. Graph 1

[2] See Turner (2007) for a review of Asian banks' income, costs and non-performing loans.

holdings of maturing interbank deposits with high-quality counterparties and top-quality, liquid securities. In practice, neither such time profiles, nor holdings of liquid securities such as US Treasury bills, nor measures of off-balance sheet commitments in foreign currency are available. Our measure is thus restricted to international interbank assets and liabilities, which are all taken to be short-term. The gap between an ideal measure and the proxies used should be borne in mind in interpreting the results of the present analysis.

Comparing international interbank assets and liabilities ...

What follows uses a combination of BIS and national data to measure the position of banks in Asia vis-à-vis the international interbank market. BIS data are relied on for the claims of international banks on Asian banks.[3] The liabilities to these banks reported by BIS area banks, however, include deposits from the official sector, notably official reserves. Some 30% of reserves are deposited in banks (Wooldridge (2006)), and less than 25% of identified holdings of dollar reserves (McCauley (2007)). Official reserves can be purged from the BIS data using the data disclosed under the Special Data Dissemination Standard (SDDS), which identify the location of bank deposits.[4]

Malaysia, the Philippines and Thailand

... suggests liquid positions for banks in three countries ...

By these measures, banks in Malaysia, the Philippines and Thailand enjoy a comfortable excess of interbank assets over liabilities. In Graph 2, global banks report larger liabilities to banks in these countries (blue lines) than consolidated claims on these banks (green lines). Both the overall liquidity of their banking systems and central bank liquidity management have contributed to the international liquidity of banks in these countries.

First, these banking systems have tended to feature excess liquidity owing to weak credit growth in relation to domestic deposit growth. This can be seen in the ratios of loans to deposits standing well below 1 (Graph 3). Such relatively restrained loan growth does not draw in offshore funding the way rapid loan growth tends to do (IMF (2007, p 24)).

... owing in part to the use of swaps for domestic liquidity management

A second factor is the practice of the central banks in these countries of using foreign exchange swaps to manage domestic liquidity.[5] Injections of

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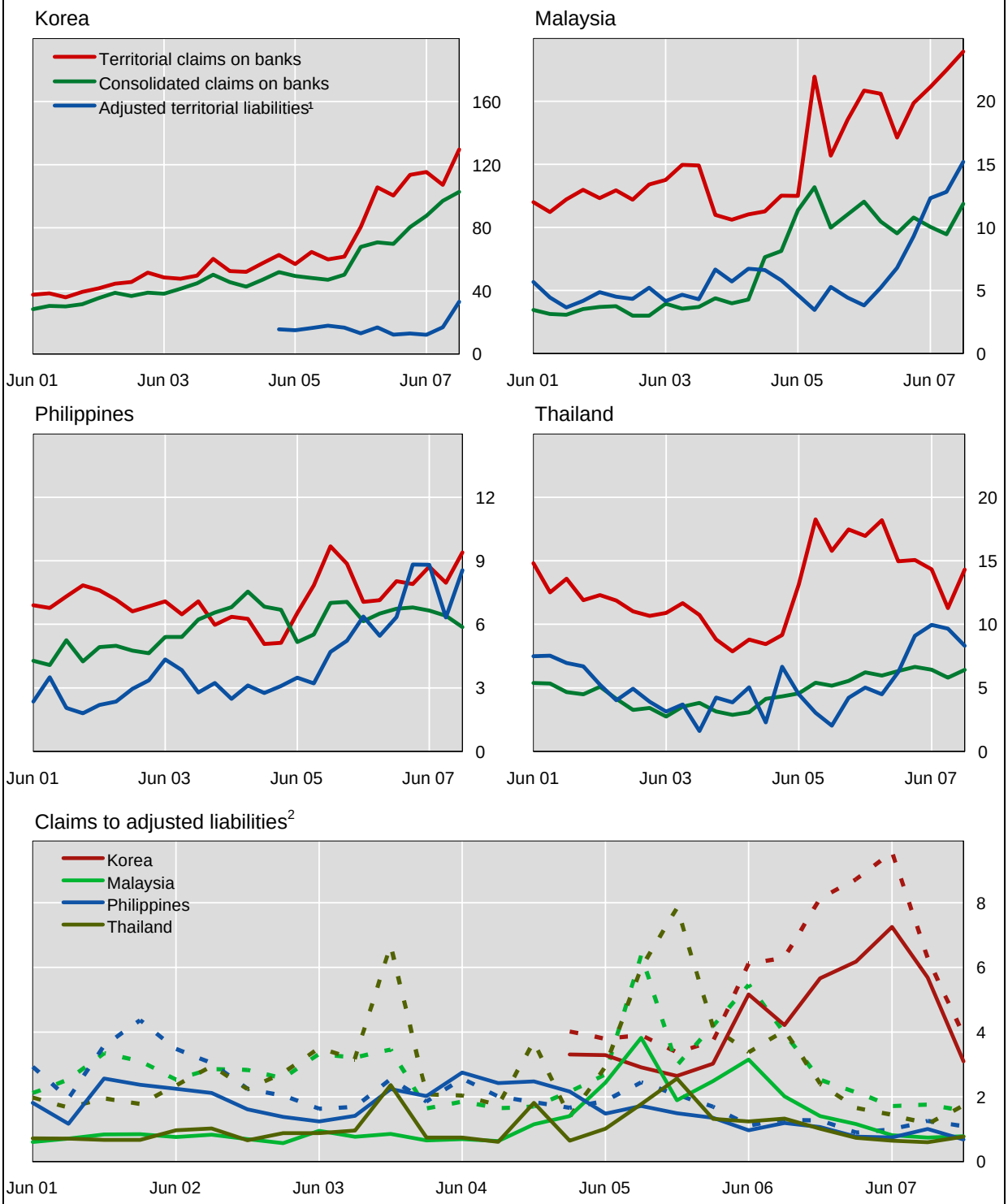
[3] The international banking statistics of the BIS provide internationally comparable measures of exposure to national banking systems of the contributing banks on a locational and a consolidated basis. Banks from most of the major financial centres around the world (the so-called "BIS reporting banks" headquartered in more than 30 participating jurisdictions) report their claims on entities abroad either based on their "locational" residency, including positions vis-à-vis banks' foreign offices, or on a consolidated basis. Whereas the locational set is compatible with data compilation for balance of payments statistics, the consolidated set nets out intragroup positions. Thus consolidation means that cross-border lending – representing an important part of overall international banking – is captured as lending to unaffiliated end borrowers in a given jurisdiction abroad. For an introduction on how to use the international banking statistics of the BIS, see Wooldridge (2002). For information on recent enhancements to the statistics, see McGuire and Wooldridge (2005); for a guide, see BIS (2006).

[4] Thailand reports substantial repos with banks outside Thailand, and Malaysia a small amount with banks outside Malaysia, that are also excluded from the cross-border liabilities compiled by the BIS.

[5] G10 central banks used to do likewise, in some cases with the intention of providing dollar liquidity to domestic banks. BIS (1964, p 132) identifies "certain central banks [that] have

Interbank exposure for selected Asian countries

In billions of US dollars



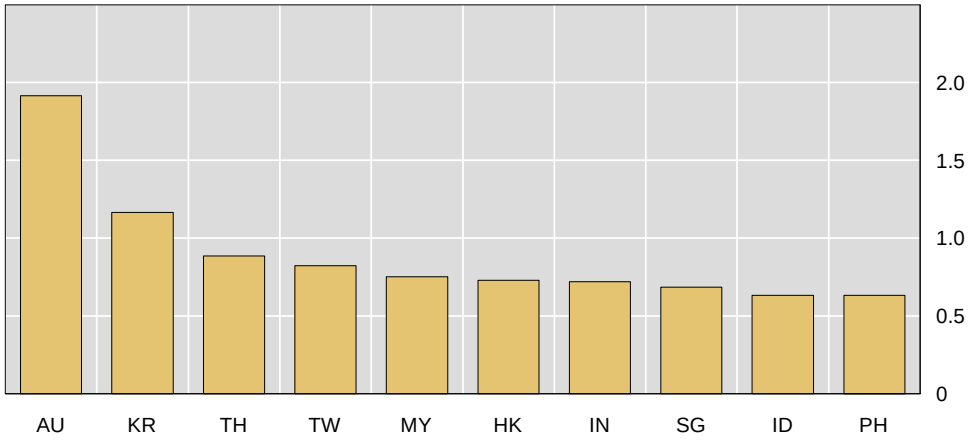
[1] Territorial liabilities less SDDS reported reserve holdings in banks outside the country. [2] Dotted lines represent the ratio of territorial claims to adjusted territorial liabilities, while solid lines represent the ratio of consolidated claims to adjusted territorial liabilities.

Sources: IMF, SDDS templates; BIS; authors' calculations. Graph 2

facilitated the holding of dollars by their commercial banks – by way of swaps or deposits – for reasons connected to domestic monetary policy".

Loan/deposit ratio of banking systems in Asia and the Pacific

At end-November 2007



AU = Australia; HK = Hong Kong SAR; ID = Indonesia; IN = India; KR = Korea; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand; TW = Taiwan, China.

Sources: Bloomberg; CEIC; authors' calculations. Graph 3

bank reserves resulting from purchases of dollars are sterilised through various means, including by selling the dollars spot for domestic currency and by buying the dollars forward. Swap counterparties, including banks in the country, end up holding dollar liquidity until the dollars are sold back to the central bank in the forward leg of the swap. Central banks in all three countries have reported substantial increases in forward purchases of dollars as a result of using swaps to sterilise dollar purchases over the last two years (Table 1).

That foreign exchange swaps provide dollar liquidity to local banks may be an unappreciated beneficial side effect of the use of this instrument. Asian central banks have in recent years tended to prefer to drain liquidity through repurchases against domestic government paper or the issue of central bank paper, in part in order to develop domestic bond markets. Foreign exchange swaps have often almost been treated as an instrument of last resort, used when other instruments were limited or the need to drain urgent. Rate of return may also be an important consideration – central bank paper would normally pay a lower rate than that implied by swaps. Against these considerations, foreign exchange swaps may seem a more attractive option if the boost to the international liquidity of banks headquartered in the country is taken into

Net positions in forwards in foreign currencies vis-à-vis domestic currency

In billions of US dollars

	End-2005	End-2007
Indonesia	0.0	0.0
Korea	28.4	22.5
Malaysia	0.0	13.8
Philippines	0.5	10.8
Thailand	3.8	19.1

Source: IMF, SDDS templates. Table 1

account. However, policymakers may view bank dependence on the official sector for foreign currency liquidity as undesirable.

Korea

Banks in Korea do not appear to be in such a comfortable position. To some extent, faster credit growth, boosting loans above deposits, has attracted offshore funding. And the Korean authorities have recently reported a decline in forward purchases of dollars (Table 1). Two factors need to be taken into account, however, before drawing any conclusion.

Foreign banks' operations account for the less comfortable liquidity position of banks in Korea

First, foreign banks operating in Korea account for more than 40% of the cross-border interbank liabilities of banks in Korea. Moreover, Korean data by maturity show that foreign banks account for the bulk (60%) of short-term external liabilities of banks in Korea (Table 2). This sharply contrasts with the situation before the Asian financial crisis, when domestic Korean banks accounted for about 70% of short-term external liabilities. Were the loan books of banks in Korea to deteriorate, as in 1996–97, one would not expect foreign banks suddenly to withdraw dollar funding from their own affiliates as they did from unaffiliated Korean banks 10 years ago (CGFS (2004, pp 1, 14)).

Second, Korean bank supervisors' rules requiring that Korean banks maintain strong foreign currency liquidity are seen by market participants as effective. After the crisis, Korea's prudential authority, the Financial Supervisory Service, introduced regulations to limit the maturity mismatches in banks' foreign currency books (Chung (2000)). In particular, foreign currency assets of less than three months' maturity must represent a minimum of 80% of such liabilities, while such assets maturing in a month must be 90% of corresponding liabilities and such assets maturing in seven days must exceed corresponding liabilities. Half the funding of foreign currency assets of over three years' maturity must be done with liabilities of similar tenor. "Fitch notes that in regards to the […] three-month ratio, over the period [from] end-2002 to 30 September 2007, Korea's banks predominantly maintained a ratio of just over 100% – well above the minimum 85% required" (Tebbutt et al (2008, p 3)).

In sum, the combination of BIS international banking data and disclosures on reserve holdings suggests that banks in Malaysia, the Philippines and Thailand have the foreign currency liquidity to withstand a change in counterparty risk assessments. Of course, without finer data by maturity, and information on possible liquidity drains from off-balance sheet commitments, the data reviewed provide only a broad indication. In the case of banks in

Nationality and short-term external position of banks in Korea

In billions of US dollars

Bank nationality	June 1997			December 2007		
	Liabilities	Assets	Liabilities/ assets	Liabilities	Assets	Liabilities/ assets
Korean	47.2	34.3	1.4	53.5	34.1	1.6
Other	20.9	6.1	3.4	78.8	9.4	8.4
Total	68.1	40.4	1.7	132.3	43.5	3.0

Source: Bank of Korea. Table 2

Korea, foreign banks account for much of the interbank borrowing from abroad.

Foreign banks and the local funding gap

An unappreciated vulnerability …

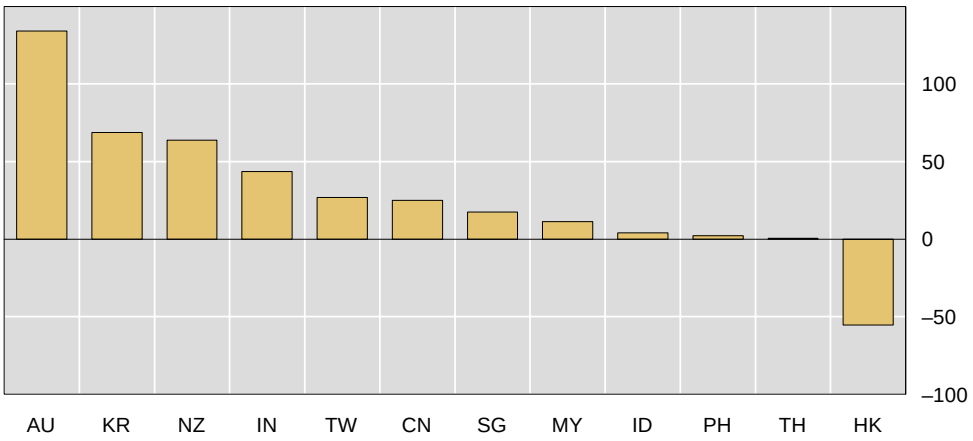
The international financial turmoil of the past year has highlighted a new vulnerability associated with foreign bank operations in Asian countries that are funded offshore. In 1997, foreign banks curtailed their lending to Asian banks as evidence accumulated of their deteriorating loan quality. More recently, global banks have faced the prospect of a sudden need for dollar liquidity and increased difficulty raising it from the interbank or capital markets. Under these circumstances, global banks might not only try to reduce their foreign currency claims on local banks, in a manner similar to, though for a reason other than, their behaviour in 1997. In addition, foreign banks might seek to reduce their funding of their own offices in local markets or even raise funds locally through such offices. Such a withdrawal of funding of own offices could produce instability in domestic money and capital markets.

… from dollar funding of local currency assets …

To better understand this vulnerability, it is necessary to appreciate why foreign branches in local markets finance local assets with dollars borrowed offshore. Some foreign banks enjoy relatively strong local currency asset growth while others respond to arbitrage opportunities. Some foreign banks succeed more in selling local currency loan products – mortgages, personal or credit card loans, for instance – than they do in selling deposits. Rather than relying on uncollateralised interbank funds, the foreign bank may find it cheaper to borrow dollars from abroad and to swap them for local currency, thereby funding the local currency assets. In other cases, foreign branches acquire local currency assets almost incidentally as part of an arbitrage. For

Foreign banks' net local claims in Asia and the Pacific[1]

In billions of US dollars

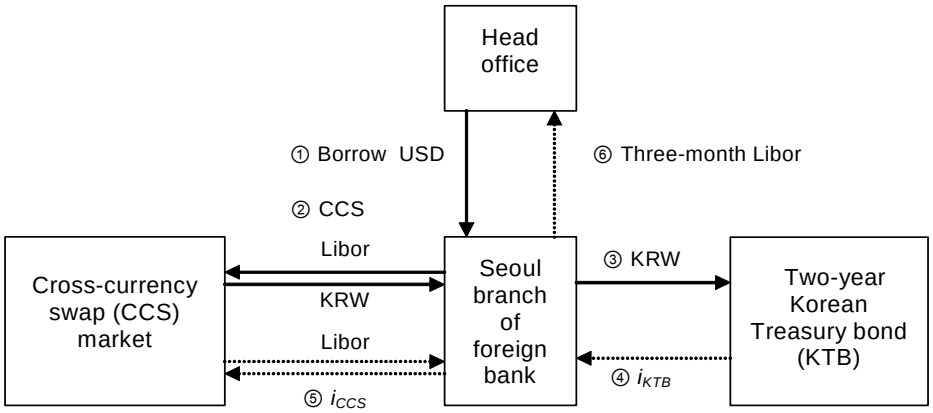


AU = Australia; CN = China; HK = Hong Kong SAR; ID = Indonesia; IN = India; KR = Korea; MY = Malaysia; NZ = New Zealand; PH = Philippines; SG = Singapore; TH = Thailand; TW = Taiwan, China.

[1] Positions of foreign banks' local affiliates denominated in local currencies and vis-à-vis local residents; claims minus liabilities, at end-December 2007.

Source: BIS. Graph 4

Foreign bank in Korea funds won government bond with dollars



1. Seoul branch of foreign bank borrows three-month dollars from its head office. 2. Seoul branch of foreign bank enters cross-currency swap, exchanging floating rate US dollars for fixed rate won. 3. Seoul branch of foreign bank invests won in two-year Korean Treasury bond. 4. Seoul branch of foreign bank receives fixed rate won on two-year Korean Treasury bond. 5. Seoul branch of foreign bank pays fixed rate won to counterparty in cross-currency swap market, profiting by the difference between the yield on the Korean Treasury bond and the fixed rate agreed with the swap counterparty ($i_{KTB} - i_{CCS}$). 6. Seoul branch of foreign bank receives three-month Libor from swap counterparty and passes it on to head office. Figure 1

example, if exporters seek to hedge their cash flows by selling US dollar receipts forward in great volume, the local currency interest rate implied in forwards can fall relative to domestic money and market yields. Then, a foreign bank branch can profit by borrowing dollars offshore, swapping them for local currency and investing the proceeds (in what might be seen as a carry trade).

For both reasons, BIS reporting banks' net local currency assets, dubbed the local funding gap, have increased substantially in the region (Graphs 1 and 4). Looking across countries, the sums involved are small for Malaysia, the Philippines and Thailand. Again, Korea, with its robust bank credit growth and strong hedging pressure from exporters, has seen foreign banks' net won assets expand sharply. This has given rise to several policy concerns.

… leading to policy concerns …

The widening of the local funding gap has been seen as weakening the monetary transmission mechanism and apparently adding risk to Korea's international balance sheet. Korean exporters, especially shipbuilders, have sold forward their dollar receipts from contracts extending over several years (Bank of Korea and FSS (2008)). These long forward sales of dollars against won pushed down won yields in cross-currency swaps. Foreign banks responded by borrowing dollars offshore, swapping them for won and acquiring government bonds (Figure 1, adapted from Kim (2007)). As a consequence, foreign banks came to own 15% of Korean government and monetary stabilisation bonds (Kim (2007)). This heavy buying was thought to have kept Korean bond yields from rising in response to higher policy rates and thereby to have limited the effectiveness of the policy tightening. The concern with the liquidity of the Korean external balance sheet arose because the foreign banks were funding their holdings of Korean public securities with dollars borrowed offshore at short term. The Korean authorities took the view that the resulting

build-up of short-term external debt[6] was leading to a deterioration of the international liquidity of Korea (see box).

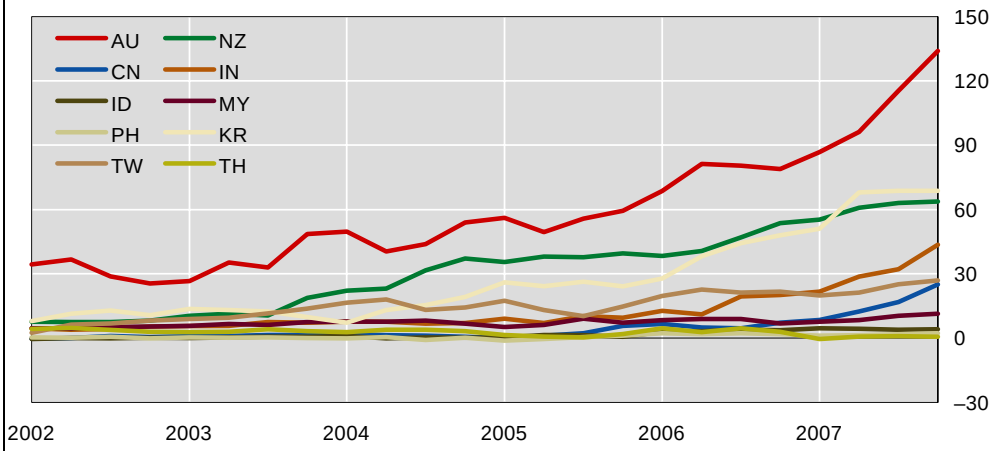
... and policy responses

The Korean authorities took several measures in April 2007 to stem the build-up of short-term interbank debt by foreign banks (IMF (2007), Bank of Korea and FSS (2008), Tebbutt et al (2008)). Moral suasion induced foreign banks not to respond to strong incentives to swap dollars borrowed abroad for Korean won. Moreover, limits were reinstated on lending in foreign currency to Korean firms, another source of demand for funds from abroad. Finally, starting in 2008, limits on tax deductibility of debt to affiliates, originally intended to limit the opportunities for shifting income offshore, would be reduced, as a further measure to limit bank inflows (but only borrowings from affiliates).

These policies appear to have worked, although at a cost. Foreign banks in Korea expanded their net won assets sharply in the second quarter of 2007, but these levelled off in the remainder of the year (Graph 5). Huge arbitrage opportunities opened up between the offshore forward or cross-currency swap, on the one hand, and the onshore certificate of deposit or government bond yield, on the other (Graph 6).[7] Even before the strains in global interbank markets, a foreign bank could borrow won against dollars at rates 100 basis points below money market or government bond yields – and 200 basis points since then. Foreign investors, including hedge funds, picked up the slack to

Foreign banks' net local claims on banks in Asia and the Pacific[1]

In billions of US dollars



AU = Australia; CN = China; ID = Indonesia; IN = India; KR = Korea; MY = Malaysia; NZ = New Zealand; PH = Philippines; TH = Thailand; TW = Taiwan, China.

[1] Positions of foreign banks' local affiliates denominated in local currencies and vis-à-vis local residents; claims minus liabilities.

Source: BIS. Graph 5

[6] Strictly speaking, net domestic assets have as their counterpart net foreign currency liabilities, including locally borrowed dollars. In practice in the countries under examination in Asia, net domestic currency assets can be taken as a proxy for net foreign currency external liabilities.

[7] These deviations from covered interest rate parity arise from insufficient swapping of dollars for won. See Baba et al (2008) for deviations from covered interest rate parity arising from heavy swapping of euros for dollars in late 2007.

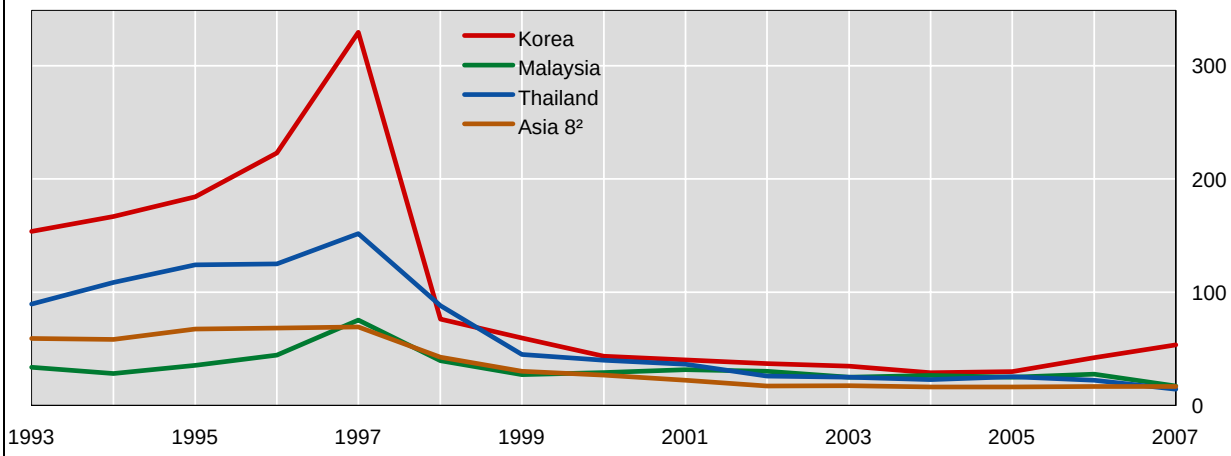
The Asian financial crisis: international liquidity lessons

While the debate continues over the role played by such underlying factors as excessive investment, currency appreciation, overleveraging of banks and firms, and corporate governance in the Asian financial crisis (eg Ito et al (2007)),[①] the importance of international liquidity management commands wide agreement. Economies with stronger international liquidity weathered the risk reassessments, while those with weaker positions suffered an international run. Since short-term international interbank borrowing often represents the bulk of a country's short-term foreign debt, lessons drawn regarding national liquidity relate closely to the position of banks in the international interbank market.

An often cited measure of international liquidity shows a very different position today than in 1997–98 for Asian economies. Consider international short-term debt, defined as international claims of BIS reporting banks with a maturity of one year or less (on not only banks, but also firms and governments) plus international debt securities with a remaining maturity of one year or less in relation to foreign exchange reserves. (There can be double-counting in this measure to the extent that BIS reporting banks hold the short-term and maturing securities.) For an average of eight Asian countries, namely China, India, Indonesia, Korea, Malaysia, the Philippines, Taiwan (China) and Thailand, short-term debt was climbing more rapidly than reserves before the 1997 crisis (see graph). In Indonesia, Korea and the Philippines, foreign exchange reserves eventually covered less than half of overall foreign short-term debt. Since the end of 1998, this coverage has diametrically changed. As current accounts have swung into surplus and foreign exchange reserves have climbed, short-term debt has fallen well below official reserves.

Total short-term debt to foreign exchange reserves[1]

In per cent



[1] Short-term debt is the sum of such debt in the consolidated banking statistics (Table 9A, column B) and short-term securities (Table 17B); there may be double-counting, but see text regarding short-term debt not included. [2] China, India, Indonesia, Korea, Malaysia, the Philippines, Thailand and Taiwan (China).

Sources: IMF; BIS; authors' calculations.

This measure, however, is subject to two important qualifications. First, it does not capture the short-term debt that overseas affiliates of domestic banks and firms have contracted offshore. At a certain point in the Korean crisis, the revelation of a very substantial sum in offshore borrowing by Korean banks and chaebol outside Korea shook sentiment as market participants understood that this borrowing also represented a claim on Korean reserves and borrowing capacity (Blustein (2001)). Such data, even when collected by the authorities, are rarely published, with the result that the relevant short-term debt is usually understated.

BIS consolidated banking data can be used to obtain a partial measure of offshore loans that are guaranteed by residents of a given country. So-called inward risk transfers capture, inter alia, global banks' claims on the branches of a given country's banks that are located in London or New York. While these data do not come with a maturity breakdown, the amounts involved provide some indication of short-term debts contracted offshore by offshore affiliates. In the cases of Korea, the Philippines and Thailand, inward risk transfers are less than 10% of short-term debt on an

immediate borrower basis. Only in the case of Malaysia do inward risk transfers (at $6 billion) represent a substantial fraction (28%) of short-term debt on an immediate borrower basis ($21 billion).

Second, and more fundamentally, juxtaposing international reserves of the official sector and the short-term debt largely contracted by the private sector ignores all the issues that arise when the official sector has to provide liquidity to the private sector (Hawkins and Turner (2000)). While the existence of large official reserves doubtless makes less likely a run on private banks perceived to be benefiting from an umbrella, the first line of defence of a nation's banks against international illiquidity is, and should be, their own asset-liability management (BCBS (2008)).

[1] The pervasiveness of an aggregate currency mismatch has been questioned (Cho and McCauley (2003)).

some extent. Despite a 15% withholding tax, they purchased $33 billion of Treasury and monetary stabilisation bonds in 2007, up from less than $2 billion in 2006. Nevertheless, the won fixed income markets remained segmented.

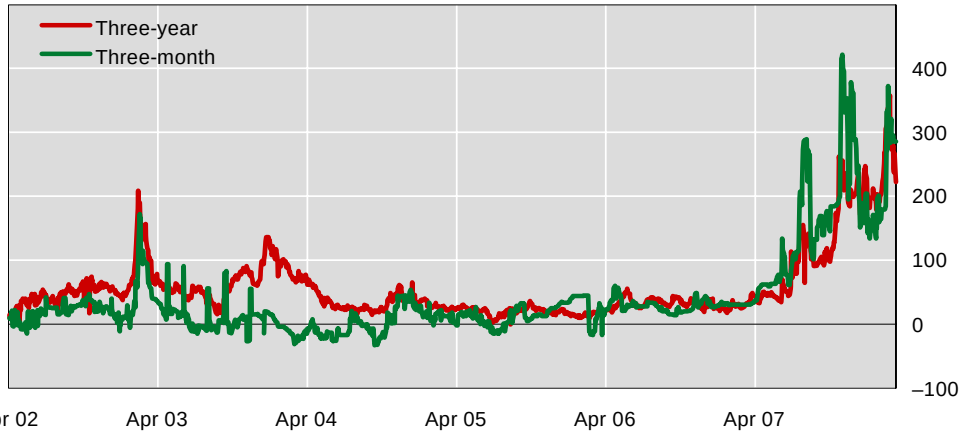
The vulnerability arising from a withdrawal of foreign banks' international funding of domestic assets could show up in domestic bank funding markets or in domestic bank asset markets. Were foreign banks to seek to replace international funding with domestic funding, domestic bank funding markets could be disturbed. In addition, foreign branches could be forced to liquidate holdings of government bonds in the domestic market.

Some observers discerned elements of such a scenario in the strains in Korean fixed income markets in December 2007. As the 2008 limit on tax-deductible debt to offshore affiliates approached, the response of foreign banks was said to have contributed to sharp volatility in the government bond market, where, as noted, foreign bank holdings were substantial. Moreover, 90-day certificate of deposit yields ratcheted up from 5.4% to almost 5.9%.

In sum, external foreign currency funding of local currency assets represents a potential, and hitherto not well appreciated, vulnerability. In the

Gap between Korean won on- and offshore yields

In basis points



Offshore won yields are derived from either the offshore cross-currency swap (three-year) or the non-deliverable forward (three-month). Onshore won yields are the three-year Treasury bond yield or the three-month certificate of deposit yield.

Sources: Bloomberg; authors' calculations. Graph 6

event of a liquidity squeeze on the major global banks represented among foreign banks, liquidity and pricing strains could be transmitted to domestic bank funding markets and the bond market. For some purposes, the local funding gap should be added to the short-term debt from the BIS consolidated banking statistics (Graph 2 or box graph).

Conclusions

Banks in Malaysia, the Philippines and Thailand appear to enjoy comfortable liquidity in the international interbank market. The apparent international illiquidity of banks in Korea is concentrated in foreign banks, while Korean banks are considered to manage near-term foreign currency cash flows cautiously. Foreign banks' funding of local currency assets with funds sourced offshore may in places have created a new vulnerability of local markets and banks to a global bank liquidity crunch.

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