

Economics

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Asia Macro View

Re-Assessing Foreign Currency Reserve Adequacy Metrics

■ **Current account deficit countries have seen the biggest pressure on reserves.**

During periods of risk-off, the central banks' combined official FX reserves and forward book declined the most in the current account deficit countries of Sri Lanka, Pakistan, India, Indonesia, and to a lesser extent, Korea (which has a CA surplus but a small basic balance deficit). Excluding frontier markets, India and Indonesia have seen the biggest in their combined FX reserves and forward book on a percentage basis during risk-off periods, while on an absolute basis, Singapore and Korea have seen sizeable declines. BoK's net forward book declining significantly more than its official reserves during risk-off period.

■ **We look at various FX reserve adequacy metrics across EM Asia.** After incorporating the net forward book in Philippines, Thailand and Malaysia, we find that FX reserve adequacy looks strong in China, Philippines, Taiwan, Malaysia, Thailand and Vietnam regardless of whether one looks at FX reserves over ST external debt by remaining maturity, over total external financing requirements, or over potential drains from foreign holdings of stocks and bonds. However, we note that Vietnam's recent improvement in external liquidity ratios could be undermined by its recent aggressive on policy easing. Malaysia's relative standing in FX reserve coverage has improved recently with the help of its resilient CA surpluses and BNM's relatively limited approach to FX intervention.

■ **Korea is a mixed case** – FX reserve coverage relative to ST external debt looks relatively weak, but when factoring in total external financing requirements, Korea's standing strengthens, especially vis-à-vis India and Indonesia.

■ **Sri Lanka, Pakistan, India and Indonesia look externally vulnerable in the region**, especially when we take into account the current account financing needs. The relative ranking of India and Indonesia will depend on whether one takes into account the relatively high non-resident deposits with >1yr maturity in India as vulnerable type of external liability of its banking system. With the exception of Sri Lanka, all three vulnerable Asian countries are expected to see a weaker FX reserve coverage ratio in 2012F than 2011, given the widening current account deficit forecast for Indonesia & Pakistan and sharp rise in short-term external debt vis-à-vis stagnant reserves in India.

■ **Market implications:** Relative FX reserve coverage can explain, to some extent, the disparity of spot FX performance during recent risk-off episodes. However, a central bank's "ability" to intervene to cap FX weakness is not always consistent with its "willingness" to intervene. The latter will likely be a function of inflation concerns from exchange rate pass thru and balance sheet concerns from the country's FCY exposures being weighed over the benefit of loosening monetary conditions and supporting external competitiveness from a weaker currency. This may help explain the underperformance of MYR given BNM's seeming indifference to ringgit weakness.

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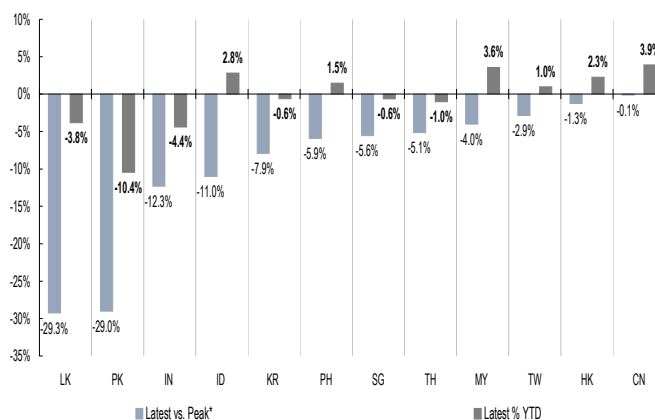
Updating FX Reserve Adequacy

Recent Trends in FX reserves & forward book

Pressures from global risk-off exacerbated by European bank deleveraging concerns and sell off in risk assets have had varying impact on Asia's external liquidity position. Most Asian countries have experienced a very modest adjustment in their FX reserves during periods of risk-off, most of which is likely accounted for by revaluation losses from the depreciation of G10 FX vs. USD (DXY rose 6% in Sep 2011, 5.3% from Nov-Dec 2011 and, more recently, 5.3% in May 2012) as well as losses incurred from holding risky assets. Among the major countries in Asia, we think only Korea, Taiwan, Indonesia and India have recently intervened heavily in the FX market to cap volatility in its currency.

Countries with current account and/or basic balance deficits have seen the biggest pressure in central banks' international liquidity position. Since the recent peak of official FX reserves (for most countries except China-HK, in Jul-Aug 2011), – Sri Lanka, Pakistan and India – have seen the steepest decline in official reserves (and forward book), closely followed by Indonesia, which is also seeing a rising current account deficit – we recently upgraded our current account deficit forecast to 1.9% of GDP in 2012F from 1% of GDP.¹ However, Indonesia's FX reserves and forward book are still slightly up year-to-date, likely aided by sizeable sovereign/quasi-sovereign dollar bond issuance in this period of US\$7.25bn.² Korea has also seen relatively larger pressure on FX reserves and forward book (especially the latter) – while its current account is still projected to be in small surplus, when combined with its negative net FDI, the basic balance is also projected to be in small deficit this year (-0.6% of GDP, similar to Indonesia), highlighting Korea's relative vulnerability to portfolio flows.

Figure 1. Change in Central Banks' Combined Official FX Reserves & Net Forward Position, Latest vs. Peak and Latest Ytd (%)



Source: CEIC, IMF, BI, RBI, BoK, SBP, BSP, MAS, CBSL, BoT, and CBC.

Note: Latest official FX reserve figures are from end May 2012 except in India, Pakistan and Thailand where we use 1st of June data (official reserves are reported weekly) and China and Sri Lanka where the latest data is as of March 2012; Net forward books are all as of April 2012 (zero in China, HK, Sri Lanka and Taiwan)

¹ See [Indonesia Macro Flash - The Widening Current Account Deficit and Its Implications](#) (8 June 2012)

² Indonesia sovereign has issued \$4.25bn in global bonds, Pertamina another \$2.5bn and Indonesia Eximbank another \$500mn.

We think official FX reserve trends mask the degree of intervention. Relative to the size of official FX reserves, net forward book of central banks tend to be relatively small with the exception of Singapore (given its use as a sterilization instrument), where net forward book is 47% of its official FX reserves -- this share has been elevated and relatively stable since 2011. In absolute size, Singapore's net forward book is followed by Korea's, but in terms of relative size to FX reserves, Thailand is next to Singapore -- Thailand's net forward book is on a rising trend-- now accounting for 18.8% of official reserves. Meanwhile net forward books have been on the decline (or increasingly in net short position) for others -- State Bank of Pakistan's *negative* net forward book (previously in positive territory in mid-2011) is almost 11% of its officially reported reserve figures, while Philippines and Korea have also seen declining trend in their net forward book, especially the latter. For example, in the risk-off environment for the most part of Sep-Dec 2011, Bank of Korea's official FX reserve figure declined by only \$5.7bn but its net forward book declined by \$16.35bn in the same period. RBI has also been increasingly a net *short* position in its forward book to the tune of \$3.5bn as of April 2012 versus a flat position in Oct, but still relatively small to its official reserves (we suspect this increased markedly in May).

Figure 2. Details on Change in Central banks' Official FX Reserves & Net Forward Book during Recent Risk-off Episodes*

In US\$mn	Risk-off Episode #1						Risk-off Episode #2						Risk off Episode #3			
	Aug-11		Sep-11		% Change		Oct-11		Dec-11		% Change		Apr-12		May-12	
	Official Reserves	Fwd Book	Official Reserves	Fwd Book	Official	Combined	Official Reserves	Fwd Book	Official Reserves	Fwd Book	Official	Combined	Official Reserves	Fwd Book	Official Reserves	% Change
CN	3,262,499	-	3,201,683	-	-1.9%	-	3,273,796	-	3,181,148	-	-2.8%	-	n/a	-	n/a	n/a
HK	279,569	-	277,700	-	-0.7%	-	281,711	-	285,400	-	1.3%	-	295,600	-	291,900	-1.3%
IN	321,982	-	311,482	-	-3.3%	-	316,210	-	296,688	(1,370)	-6.2%	-6.6%	295,361	(3,453)	285,857	-3.2%
ID	124,638	565	114,502	(299)	-8.1%	-8.8%	113,962	(844)	110,123	(1,737)	-3.4%	-4.2%	116,413	(110)	111,530	-4.2%
KR	312,195	51,920	303,384	47,004	-2.8%	-3.8%	310,976	38,160	306,402	35,568	-1.5%	-2.1%	316,837	29,041	310,870	-1.9%
MY	136,275	15,055	130,978	12,700	-3.9%	-5.1%	134,784	7,270	133,642	6,600	-0.8%	-1.3%	135,916	9,234	136,000	0.1%
PK	19,315	100	17,952	(750)	-7.1%	-11.4%	17,843	(700)	17,020	(1,625)	-4.6%	-10.2%	16,538	(1,750)	15,536	-6.1%
PH	75,941	12,798	75,174	9,337	-1.0%	-4.8%	75,832	7,700	75,135	7,125	-0.9%	-1.5%	75,965	7,461	76,016	0.1%
SG	249,177	125,849	233,621	124,691	-6.2%	-4.5%	245,420	122,644	237,737	118,714	-3.1%	-3.2%	246,107	116,498	237,710	-3.4%
LK	8,051	-	7,095	-	-11.9%	-	6,896	-	5,958	-	-13.6%	-	n/a	-	n/a	n/a
TW	400,294	-	389,174	-	-2.8%	-	393,327	-	385,547	-	-2.0%	-	395,072	-	389,275	-1.5%
TH	188,317	27,037	180,113	27,284	-4.4%	-3.7%	182,008	28,924	175,124	31,246	-3.8%	-2.2%	178,962	30,400	171,900	-3.9%

Source: CEIC, IMF, BI, RBI, BoK, SBP, MAS, CBSL, BoT, CBC.

Note: Bank of Thailand's net forward book as of June 1st is \$32.4bn, which would imply the combined spot and forward book declined by 2.7% since end of April, less than what is implied by looking at official FX reserve figures alone.

Asia's FX reserve coverage vs. rest of EM

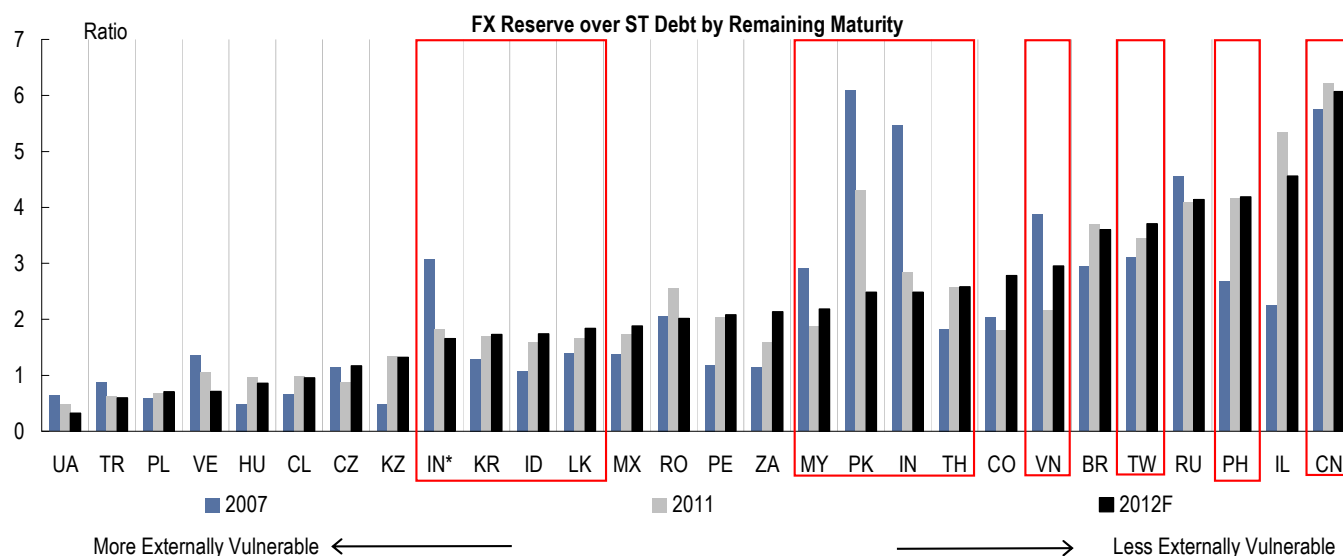
Relative ranking of Asia vis-à-vis EM on FX reserve adequacy has varied significantly from previous analysis.³ China, Philippines, Taiwan, Malaysia, Thailand and Vietnam have relatively strong FX reserve coverage ratios when one looks at ST external debt by remaining maturity or relative to total external financing requirements. Vietnam has seen a recent shift, where FX reserves were revised up and current account deficit revised significantly down from the last more extensive analysis we did back in October 2011 on the back of the lagged impact of significant tightening that is stabilizing external finances.⁴ Another more marginal shift has

³ While we've done more recent work, we refer to the more in depth analysis we did in 2011 -- see [Asia Macro Flash - Limited Damage \(so far\) to External Liquidity Ratios in September](#) (11 Oct 2011) and [Asia Macro Flash - Asia -- Updating and "Correcting" FX Reserve Adequacy Metrics](#) (30 Sep 2011).

⁴ However, we are more cautious recently as policy easing has been more aggressive than we thought. See [Vietnam Macro Flash - Turning More Cautious on Vietnam](#) (8 June 2012).

been in the case of Malaysia – we previously noted that Malaysia's FX reserve coverage was not as strong when taking into account ST debt by remaining maturity given sizeable foreign holdings of short-term bills, but since late last year, this ratio has improved and is expected to rise in 2012 on resilient current account surpluses and relatively limited FX intervention by BNM which has limited FX reserve losses. Korea is a mixed case – it looks relatively vulnerable when looking at FX reserves over ST debt by remaining maturity, but when we take into account its current account surplus, its reserve coverage looks decent relative to some Latam peers and has widened its gap with the more vulnerable Asian countries.

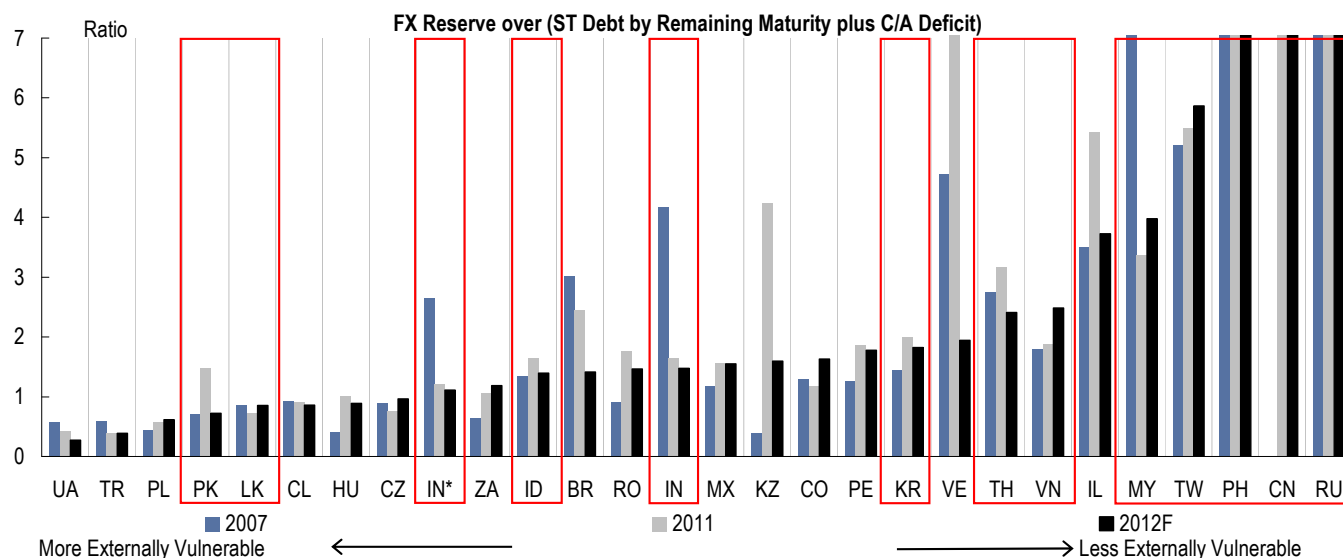
Figure 3. Official FX Reserves over Short-term Debt by Remaining Maturity (*Also including NRI deposits >1yr for India), 2007, 2011 & 2012F



Source: CIRA, Moody's, India Ministry of Finance

Notes: *In India's case, we also construct the ratio including non-resident deposits with >1yr maturity as part of ST external debt. Relative to other countries in EM, this is a particularly significant amount in India that, while classified as long-term external debt, could become a short-term liability of banking sector in times of significant stress.

Figure 4. Comparing Official FX Reserves over Total External Financing Requirements (*ST Debt by Remaining Maturity+ Current Account Deficit), 2007, 2011 and 2012F



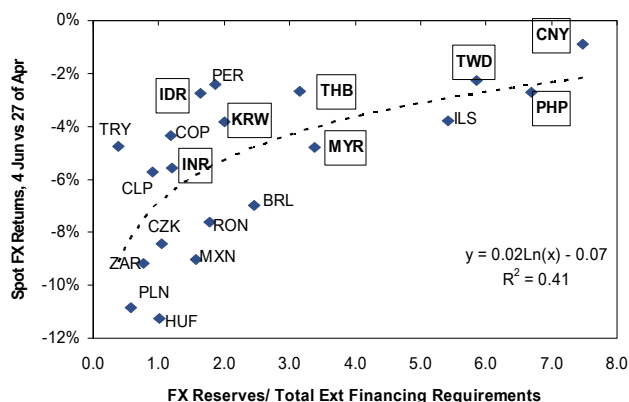
Source: CIRA, Moody's, India Ministry of Finance

Note: *In India, we create two ratios – the one with the asterisk includes non-resident deposits >1yr maturity as part of ST external debt. To prevent widening the scale of the chart, we truncate the FX reserve ratio once it exceeds 7x. China's FX reserve ratio over total External Financing requirements in 2007 is negative owing to a negative external funding requirement as the CA surplus is larger than the short-term debt by remaining maturity.

The external liquidity position of India, Indonesia, Sri Lanka and Pakistan look relatively vulnerable to a protracted period of global capital flows, even relative to many in EM. Our FX reserve coverage metrics for these countries deteriorated from our earlier analysis last year given sizeable increase in current account deficit forecasts, plus significant FX reserve erosion, especially amidst unsustainable FX intervention as we saw in the case of Sri Lanka and Pakistan, and domestic policies risks that further exacerbated confidence in India and Indonesia.

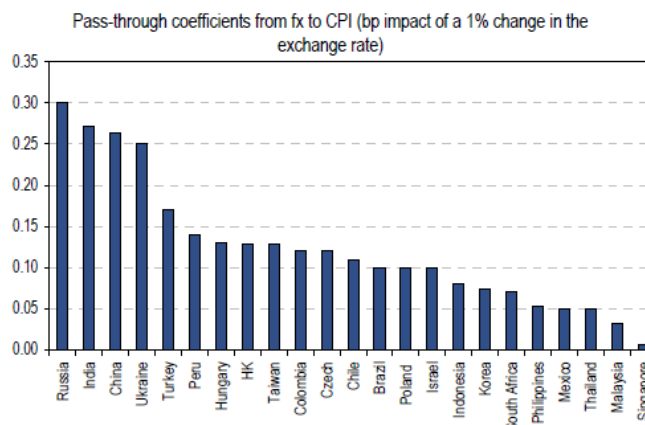
Relative strength in FX reserve coverage can explain, to some extent, the disparity in spot FX performance during the recent risk off, though Asia's ability and willingness to intervene in the FX market can vary. During the DXY bounce from late April to early June, the externally more vulnerable countries saw more significant FX weakness vis-à-vis USD relative to others, and within Asia, a number of central banks, such as in Korea, Indonesia, India and possibly Singapore (judging from FX reserve/forward book changes), have intervened more to cap FX volatility. We think this is motivated by concerns over exchange rate pass through on inflation, as well as concerns over balance sheet implications from foreign currency liabilities and risks to destabilizing portfolio flows. Meanwhile, despite relatively ample FX reserves, we think the relatively weak performance of MYR (even in the absence of significant foreign unwinding of fixed income positions) is a reflection of BNM's relatively relaxed attitude towards MYR weakness given relatively low costs vs. benefits; i.e., low inflation and low exchange rate pass through on inflation and limited foreign currency liability exposure of the sovereign and corporate sectors vis-à-vis the benefits of loosening monetary conditions to support the economy.

Figure 5. Spot FX Return vs. USD (4-Jun-2012 vs 27-Apr-12) and FX Reserves over Total External Financing Requirements



Source: Bloomberg, and CIRA

Figure 6. Estimates of Exchange Rate Pass Thru on Inflation from FX weakness



Source: CIRA

Detailed FX Reserve Adequacy Ratios

There are many ways to analyze FX reserve coverage ratios as a predictor for external liquidity/funding pressures. In recent risk-off episodes, we think external liability-based types of metrics of external vulnerability, including non-resident deposits, are relatively useful. However, we think this should also be complimented by the drains from current account flows to get a more complete picture of total external financing requirements. The relative FX underperformance and sharp deterioration in FX reserve coverage ratios of CA deficit countries since last year highlight this importance.

We also include other potential sources of external drains from portfolio liabilities not counted in ST external debt (i.e. foreign holdings of local currency bonds with >1yr tenor and foreign holdings of securities). However, we would be cautious about interpreting this data – we don't have up to date information on non-strategic equity stakes, and thus, much of these foreign holdings of equities are likely immobile. Moreover, the valuation effect of unwinding equities will significantly reduce the dollar-equivalent capital outflows. For simplicity, we stress test the case of unwinding 20% of the outstanding value of stocks and bonds, as well as target the more recent net foreign inflows into equities since August 2011.

Another measure of external liquidity is to compare foreign reserves with liquid monetary assets (M2) which represents the potential demand for foreign assets from domestic sources. It is an indicator of the extent in which foreign reserves back the liquid domestic liabilities of the banking system. This indicator is useful to the extent that money demand is unstable and a weak banking system raises the possibility of a run on domestic liquidity and capital flight when a financial crisis is triggered. However, we note that this reserve adequacy measure has drawbacks as countries where there is a high degree of confidence in this currency may tend to have relatively high M2 over FX reserves and is not necessarily a good predictor of capital flight. Moreover, varying capital account regimes, especially in the case of tight restrictions found in China and India, also make this indicator not as useful for cross-country comparisons. These FX reserve adequacy metrics are summarized on Figure 7 using latest available data.

Figure 7. Asia – Selected FX Reserve Coverage Ratios

In US\$bn	CH	ID	IN	KR	MY	PK	PH	LK	TH	TW	VN
Latest Official FX Reserves	3,305.0	111.5	285.9	310.9	136.0	16.0	76.0	5.8	179.0	389.3	20.0
Net Forward Book	0	-0.1	-3.5	29.0	9.2	-1.8	7.5	0.0	32.4	0.0	0.0
FX Reserves+Net Fwd Book = Total Res (TR)	3305.0	111.4	282.4	339.9	145.2	14.3	83.5	5.8	211.4	389.3	20.0
ST Debt by <1yr Maturity*	475.7	31.1	78.1	136.3	63.9	1.1	9.0	2.6	48.6	107.8	6.7
Amortizations	38.8	29.3	15.6	46.0	9.3	2.0	8.5	1.4	8.7	6.2	2.5
ST Debt by Remaining Maturity (a)	514.5	60.4	93.7	182.3	73.2	3.1	17.5	4.0	57.3	114.0	9.2
CA Deficit (Average of 2012F & 2013F) (b)	-155.8	16.4	76.6	-10.4	-30.5	10.0	-7.3	4.2	3.5	-42.4	3.7
Total Ext Financing Requirements (a) + (b)	358.7	76.8	170.2	172.0	42.7	13.0	10.3	8.2	60.8	71.6	12.9
TR /ST Debt By Rem. Mty	6.4	1.8	3.0	1.9	2.0	4.7	4.8	1.4	3.7	3.4	2.2
TR /Total Ext Fin Requirements	9.2	1.4	1.7	2.0	3.4	1.1	8.1	0.7	3.5	5.4	1.6
Foreign Holdings of Bonds >1yr tenor**	0.0	22.3	43.0	69.0	36.7	n.a.	1.5	1.4	8.0	0.0	n.a.
FH of equities including strategic stakes	30.0	162.7	174.1	288.0	91.3	n.a.	95.3	2.0	77.1	140	n.a.
<i>Net foreign equity inflows since Aug 2011</i>	--	1.4	7.9	3.7	1.5	n.a.	1.7	n.a.	2.6	-2	n.a.
TR/ (TEF + 20% of FH of bonds & stocks)	9.1	1.0	1.3	1.4	2.1	n.a.	2.8	0.7	2.7	3.9	n.a.
TR/ (TEF+20% Bonds+Eqty inflows since Aug)	n.a.	1.3	1.5	1.8	2.8	n.a.	6.8	n.a.	3.3	5.4	n.a.
Latest M2	14,111	319	344	1556	416	80	105	21	447	1,118	134.8
Total Reserves/M2	0.23	0.35	0.82	0.22	0.35	0.18	0.79	0.27	0.47	0.35	0.15

Source: CIRA estimates, Central Bank data (using SDDS template where available), CEIC, IIF, BIS, Moody's, Korea FSC

Note: *Short term debt by remaining maturity includes non-resident deposit (in accordance with IMF SDDS template in most countries where data is available) We adjust Malaysia's SDDS data to include foreign holdings of BNM bills and Treasury bills. Without data, we assume that foreigners hold about \$1bn in PHP Tsy bills and adjust ST external debt accordingly. The ST external debt in Indonesia deducts "standstill" debt (or debt under litigation) which we estimate to be about US\$6bn. **The foreign holdings of bonds in Indonesia, Malaysia and Thailand only reflect government bonds, and we net out the ST external debt component classified as "money market instruments" under general government debt to avoid double-counting. In Korea, we include foreign holdings of corporate and other investment bonds which is not available for other countries.

***We use the previous \$30bn QFII limit for China's foreign holdings on equities and use latest foreign holdings of stocks from our equity strategists, including strategic stakes.

Appendix A-1

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