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THE INVESTOR BASE AND THE LIQUIDITY OF EME LOCAL BOND MARKETS: LEVERAGE AND DIVERSIFICATION

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The subject of this session is the impact of the investor base on the liquidity of local currency bond markets. This was a major question addressed by a recent report of a CGFS Working Group on "Financial stability and local currency bond markets". A major fact-finding effort was made in preparing this report to identify the investor classes buying these bonds. It became clear from this exercise that, in countries where such bonds were actively traded in secondary markets, there was a good deal of uncertainty about who held them. Not surprisingly, it was also clear that ownership changed over time.

This note provides a summary of some of the analysis in the CGFS report. The argument is organised as follows. The distinction between the microeconomic and macroeconomic dimensions of liquidity is essential to understand the links between liquidity and the investor base (Section A). Some classes of investor help to improve microeconomic liquidity but do not contribute to macroeconomic liquidity. With other classes of investor, the converse is true (Section B). A final section considers whether a more stable foreign investor base is emerging.

A. Liquidity: microeconomic and macroeconomic dimensions

The term "liquidity" when applied to the markets for financial instruments – or market liquidity, for short – has both microeconomic and macroeconomic dimensions. As will be further elaborated below, the micro-aspect covers normal market functioning, the macro-aspect, the reaction to macroeconomic shocks.

Most empirical investigations have concentrated on the microeconomic dimension. Typically, three elements are distinguished:

Depth: the market's ability to absorb large transaction volumes with small changes in price (measured by average turnover)

Tightness: cost efficiency (measured by low bid-ask spreads)

Resilience: ability to absorb random shocks (day-to-day price volatility)

The review in CGFS (2007) suggested that microeconomic liquidity in the markets for local currency bonds has improved substantially in recent years.

The macroeconomic dimension, to which Keynes gave so much importance, is much harder to define empirically. The basic idea is that an asset is more liquid when it preserves its value in those circumstances when its holder wants to liquidate it for cash (Tirole, 2008). Liquidity thus defined therefore depends both on the nature of the macroeconomic shock prompting the need to sell assets and on the identity of the asset holder. Taking the example of a corporation that needs to sell its financial assets in a recession, Tirole (2008) argues that a

Treasury bond, which typically does not fall in value in a recession, is in this macroeconomic sense more liquid than an equity index, which tends to fall in a recession – exactly when a firm or a household has greater need of liquidity.

This macroeconomic dimension has one obvious implication. Different economic agents will be subject to quite different economic shocks. This difference will mean that various agents will need to face different "needs" to sell their assets: the scale and the timing of sales will in general vary across agents.

Hence, other things equal, a diversified investor base makes financial markets more liquid. Indeed an ADB survey of market-makers found that developing a more diversified investor base was the single most needed element in improving liquidity in Asian local bond markets.[1]

There is also a further implication that is difficult to analyse. Two aspects are important:

(a) the analysis of a macroeconomic shock depends on the investor's balance sheet as a whole, and not just his assets. Liabilities also matter: this leads to consideration of leverage.

(b) how well assets are diversified across different products which are exposed to different macroeconomic risks will also affect liquidity. Diversification is key.

Leverage

On (a), the distinction is between non-leveraged and leveraged investors is key. How leveraged investors respond to a macroeconomic shock depends not only on the nature of their assets, but also on the impact of the shock on their liabilities. Mismatches on the balance sheet of a leveraged investor (equity vs debt; long- vs short-term debt; domestic vs foreign currency etc) can magnify the impact of a macroeconomic shock on its net worth and thus on its creditworthiness. An additional link arises because leveraged investors will post their assets as collateral for funding. In some cases, leveraged investors will be reliant on short-term financing from banks that will not be easily rolled over in adverse circumstances. For all these reasons, an adverse shock (or even the imminent prospect of such a shock) can force leveraged investors to rapidly deleverage and liquidate their positions. As this happens, assets widely regarded as liquid by the standard microeconomic measures can suddenly become illiquid.

[1] See p 52 of CGFS (2007). In addition, new players tend to bring with them greater sophistication and innovation, often invigorating market competition.

The recent debacle in the asset-backed commercial paper market illustrates this potential transience of liquidity very well. The banks in effect took highly leveraged positions (with little or no set aside capital) offering very liquid and short-term liabilities and holding illiquid, long-term debt claims on corporate and other borrowers viewed as highly creditworthy and backed-up with suitable collateral (Crockett, 2008).

The two dimensions create a paradox. In many markets, it is the leveraged investors who come to dominate liquidity in the microeconomic sense because they can use leverage to take very large positions, often trading frequently and in very sizeable lots. But such leveraged investors may not help macroeconomic liquidity – they may just bring "fair weather" liquidity.

Diversification

The second distinction relates to diversification. Investors with diversified portfolios will have a net worth that is more resilient to shocks. Thus they may be more able to "sit through" macroeconomic shocks without selling assets that have become illiquid. And investors with limited initial exposure will be able to step in and buy assets at "distressed" prices. By contrast, those investors whose initial exposure is highly concentrated will find that sharp actual or prospective falls in their net worth may force them to sell into a declining market that they expect will recover. In this sense, such investors can bring valuable (macroeconomic) liquidity to markets even when their measured stake in such markets is quite small.

These two elements – leverage and diversification – provide a useful focus for examining the impact of the investor base on liquidity in local currency bond markets.

B. The investor base

The following paragraphs outline the main classes of investors that invest in local currency bonds. The main purpose is to analyse how the balance sheets for different investors are affected by interest rate and other shocks, exploring in particular the implications for liquidity.

Local banks

The first striking fact about the ownership of local currency bonds in the EMEs is that the share held by banks is much larger, and that of other financial institutions is much smaller, in the EMEs than in the industrial countries (Table 1).

According to a CGFS survey, banks represent the largest class of domestic investor in local currency sovereign debt, holding 42% of all domestic debt securities in 2005. This share has increased substantially and is now nearly four times the average percentage seen in the

industrial countries. In several countries, holdings of government bonds account for a much greater proportion of the total assets of the banking system than in the past.

Banks are of course leveraged institutions. Large holdings of long-term government bonds on the asset side of their balance sheet combines with shorter duration liabilities to give them a significant duration gap. This exposes them to sizeable interest rate risk exposures.[2] Because in recent years long-term interest rates on local currency bonds have tended to fall, banks have registered capital gains. In addition, they face liquidity risks because the short duration of their borrowed funds exposes them to the risk that funding in money markets becomes more difficult. The combination of interest rate and liquidity risk exposures means that a macroeconomic shock could force the domestic banks to attempt to simultaneously sell their holdings of local bonds. This could lead to a sudden evaporation of liquidity in bond markets. Because of this, the heavy concentration of holdings on local banks may not be very conducive to macroeconomic liquidity.

Pension funds

Pension funds are usually not leveraged and do not have a large stock of short duration liabilities. Hence they are less likely to be induced to sell bonds in periods of a market stress. In this sense, they can provide more robust liquidity to the market. In most EMEs, however, local pension fund assets are still small (even if growing rapidly). Because pension funds need to hold long-dated paper in order to match annuity streams they can be seen as quintessential providers of liquidity in the macroeconomic sense. The expansion of pension funds has therefore often been seen as key for the development of liquid long-term local currency debt markets.

But forcing local institutional investors to hold too high a proportion of their assets in domestic government bonds has major drawbacks. Doing this may mean that new issues are not priced in a way that correctly reflects market conditions and that a high proportion of such paper does not subsequently trade in secondary markets. Such a "captive" market therefore works against the creation of a liquid market and keeps out other investors.[3]

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[2] See CGFS (2007) p 70 for a discussion of some large exposures in major EMEs.

[3] Such policies are also undesirable on financial stability grounds. Small countries typically have a greater need to diversify, and hence invest in foreign securities, than large countries. When a high proportion of institutional investor assets are held abroad (denominated in foreign currency), this provides a buffer against local or regional shocks and against the volatility of exchange rates.

Local mutual funds

Mutual funds are also comparatively underdeveloped in EMEs. Mutual funds allow households, in effect, to hold local currency bonds in more liquid and easily tradable ("indirect" debt securities) units. Because mutual funds tend to trade their "primary" securities actively in response to changes in market conditions, they bring additional (microeconomic) liquidity to local currency bond markets. This can be particularly important in those markets that would otherwise be dominated by local buy-and-hold investors.

These potential advantages, of course, can be realised in practice only if mutual funds are well-managed and households made aware of the risks. This is not always the case. There have been liquidity runs in the mutual fund sector of some major EMEs. Heavy redemption pressure at the retail level can easily force such funds to unload bonds in a falling market – causing illiquidity in the secondary markets.[4]

Non-resident investors

Non-resident investors are likely to bring both microeconomic and macroeconomic liquidity to local bond markets. Such investors tend to be more sophisticated and to trade more often: typically, their activities increase turnover and lead to lower bid-ask spreads. In addition, non-resident investors should be more willing and able to "sit through" local macroeconomic shocks than local investors because they hold local bonds as part of a diversified portfolio – hence they bring some macroeconomic liquidity. The robust attractiveness of such bonds to non-resident investors is well-established: see Table 2 for a summary of risk-return characteristics (CGFS, 2007).

One intriguing finding of the CGFS study was that foreign investors in many markets prefer to access local debt and currency market returns via derivative instruments. Several investment firms reported they find it more attractive to use derivatives as a way to more efficiently manage their presence in markets where underlying liquidity is poor. Often it is offshore derivatives that are preferred – typically non-deliverable forwards (NDFs). Whether such offshore activity contributes to or detracts from liquidity in local markets is still a matter of debate. On one side, it could be argued that offshore activity will still serve to improve the liquidity in the local derivatives and cash markets because local players will normally

[4] In Indonesia, mutual funds that had invested over 80% of their assets in government securities during a time of rising bond prices suffered heavy losses in 2005 following a sharp rise in the domestic interest rate. They faced heavy redemption pressure as net asset values fell. An illiquid secondary market magnified the price fall resulting from selling pressures from the mutual funds. Retail investors, who were unaware of this risk (and perhaps not adequately warned by financial intermediaries), were hit particularly hard. The crisis was averted by a large government bond buyback operation (p 49, CGFS (2008)).

arbitrage the two markets. In addition, participation in offshore markets could help acquaint new foreign investors with domestic markets, and perhaps encourage their eventual participation in local markets. On the other side, some argue that more efficient offshore markets drain liquidity from nascent local markets and hamper their development.

The way that exposures are taken does, however, mean that risk may be shifted onto or away from the domestic private sector in a non-transparent manner. Such risk-shifting may add to or offset the currency risk borne by the local private sector and financial system. If foreign investors in local currency bonds hedge their currency exposure (and the evidence is that foreign bond investors are generally hedged while equity investors are not) from their local investments, local investors as a group will end up holding short forex positions that could prove quite expensive in the event of market turbulence.

This reliance on derivatives could also be a reflection of the use of leverage by foreign investors. Certain foreign investors may have built up complex and potentially highly leveraged positions that might be suddenly unwound in the event of market turbulence.[5]

As discussed above, the use of leverage when firms are building up exposures often makes these markets appear quite liquid by the usual microeconomic criteria. But such liquidity can prove very vulnerable to macroeconomic shocks.

C. A more stable foreign investor base?

There are no precise data about the type of foreign investors active in local currency bond markets. In the early years, it was often asserted that the ability of hedge funds to use leverage and their capacity to manufacture exposures (even in markets hampered by extensive controls) through derivative structures meant that they were the major foreign players in local currency bond markets.

Leaving aside the holdings of convergence funds in central Europe and the local operations of internationally active banks, cross-border local currency investment did indeed appear (only a few years ago) to be dominated by hedge funds. It is clear that the recent turmoil in markets in the main financial centres has set in motion a major deleveraging throughout the financial industry. This is still underway but it is probably too early to assess the impact on local currency bond markets.

[5] The unwinding of large reverse-knock out structures on the Turkish lira seems to have aggravated turbulence in Turkish markets in 2006.

The importance of non-hedge fund investors has increased in recent years. The importance of dedicated emerging market bond funds is growing. Foreign pension funds are reported to be increasing their investments in emerging markets, and this is being reflected in the mandates being given to fund managers.

Benchmarking practices are important in this regard. As benchmark global bond indices gradually incorporate EME local bonds into their indices, the interest of "index-aware" institutional investors in these markets is likely to increase. This broadening of the foreign investor base to take in more "real money" investors should improve liquidity in these markets.

Much has been written about how EM local currency bonds are gradually becoming "normal" assets for regular inclusion in the portfolio of international investors. But three pieces of circumstantial evidence suggest this has not yet happened.

The first is that the correlation of month-to-month yields on the bonds of most EMEs with the international benchmark (US Treasury) is still much lower than that for bonds of any large industrial country (including countries facing quite diverse macroeconomic shocks – such as Australia, the euro area and the United Kingdom). This suggests that EME bond yields do not respond strongly to shifts of sentiment in international capital markets.[6]

The second is that trading of interest rate risk in EM currencies is still very thin. The BIS's Triennial Central Bank Survey, for instance, finds that the development of interest rate derivatives in EMEs has lagged well behind the development of forex derivatives (Table 3).

The third is that bid-offer spreads are highly dependent on the willingness of the big market makers to assume the warehousing risk of two-way quotes. Discussions with traders reveal that the prolonged financial market turmoil that has put the major banks under pressure has, since November 2007, led these banks to quote much wider bid-offer spreads for trading local currency bonds than earlier.

In conclusion, it should be noted that holding EME local currency bonds has, during the recent period of turmoil served investors better than high yield corporates (Graph 1). Once again this reflected exchange rate gains – investors who had hedged their exposures had lower returns. A better investment, however, would have been the government bonds of the advanced countries.

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[6] See, for instance, Annex 3, Table 2 of CGFS (2007), p106.

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Table 1

Holders of domestic debt securities in 2005

In %

	Banks	Other financial firms	Other residents	Non-resident
EMEs	11	46	17	26
Advanced economies	42	38	14	2

Source: CGFS (2007).

Table 2

Risk return characteristics and diversification of EME local currency bonds

January 2002 to March 2008

Description	Annual return (%)	Annual volatility (%)	Sharpe ratio[1]	Correlations			
				vs GBI-G[2]	vs US High-yield[3]	vs Global corporates[4]	vs EMBI+[5]
GBI-EM, unhedged	16.7	1.4	9.0	0.20	0.42	0.33	–0.12
Hedged into $	5.6	0.5	3.2	0.51	0.37	0.53	0.14
GBI-G, unhedged	9.6	0.8	7.4	0.67	0.06	0.67	0.05
Hedged into $	5.1	0.4	3.1	0.97	–0.05	0.88	0.27

Notes: GBI-EM = JPMorgan Chase's Government Bond Index – emerging markets. GBI-G = JPMorgan Chase's Global Government Bond Benchmark of developed countries.

[1] Ratio of the excess returns of the index to the risk free return in US dollars and the index return volatility. [2] Total return correlation versus global government benchmark of developed countries hedged into US dollars. [3] Total return correlation versus US high-yield benchmark. [4] Total return correlation versus Lehman Aggregate benchmark. [5] EMBI+ comprises US dollar-denominated bonds and traded loans issued by sovereign entities rated BBB+ or lower.

Sources: JPMorgan Chase; Lehman Brothers; BIS calculations.

Table 3

Market activity of OTC derivatives[1]

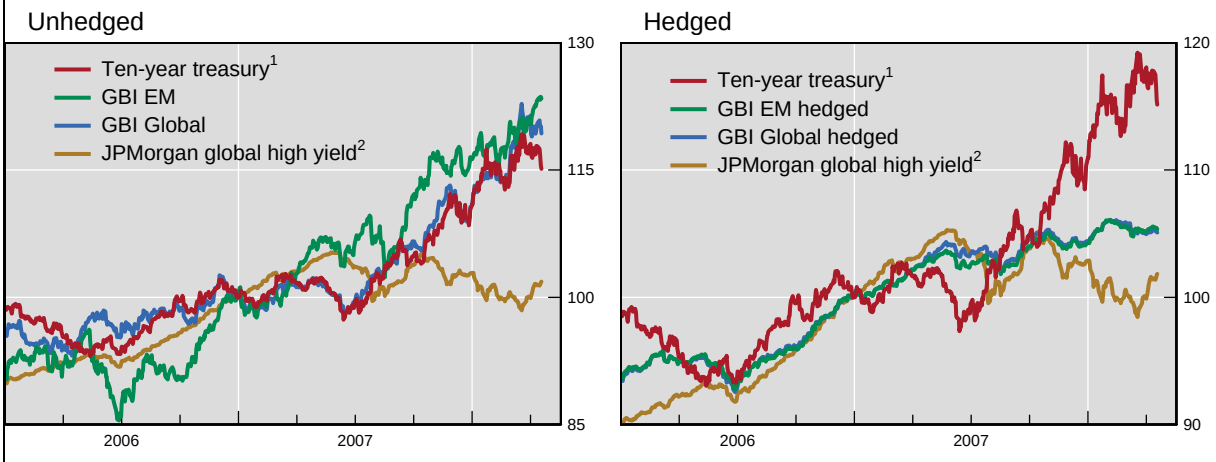
$ billion

	Total			Foreign exchange[2]			Interest rate[3]		
	2001	**2004**	**2007**	**2001**	**2004**	**2007**	**2001**	**2004**	**2007**
Industrial countries	1701	2847	4621	1033	1546	2546	668	1301	2075
Asian financial centres[5]	125	182	370	118	116	296	6	20	74
Other EMEs	35	66	146	33	56	127	2	11	21

[1] Adjusted for local double-counting ("net-gross"). [2] Including outright forwards and foreign exchange swaps. [3] Single currency contracts only. [4] Revised for 2001. [5] Hong Kong and Singapore.

Graph 1: Fixed income returns

Dec 2006 = 100



[1] Lehman US Treasury Bellwethers 10 year bond index. [2] JPMorgan Global high yield market index.

Sources: DataStream; JPMorgan Chase.