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Financial Deepening and International Monetary Stability

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EXECUTIVE SUMMARY

Recent discussions at the IMF and the G-20 on strengthening the international monetary system have emphasized, among other efforts, increasing the financial depth of emerging markets. Such deepening is widely believed to confer important stability benefits, helping countries limit swings in asset prices, find alternative sources of funding, and attenuate the need for reserve accumulation.

This paper seeks to shed light on the role of financial deepening in promoting the stability of the system as a whole. A simple balance sheet metric of financial depth shows a growing *divergence* in the financial depth of advanced versus emerging markets, pointing to scope for catch-up. But catch-up has implications for global imbalances, insofar as international adjustment requires slower growth of domestic claims in advanced deficit countries (slower credit growth lowers domestic demand) and faster growth in surplus economies and emerging markets (which would raise domestic demand). Deepening is also related to crisis incidence and costs. Crisis risks and costs are high in the initial stages of deepening, during which policymakers tend to build reserve buffers, constrain capital mobility, and limit exchange rate flexibility. In later stages, alongside flexible exchange rates, open capital accounts and smaller reserve buffers, crisis incidence is found to decline.

Although financial deepening can contribute to lowering imbalances and crisis incidence and costs, it is a long-term process. Therefore, it remains crucial to make progress in the near term to strengthen the international monetary system, including building a strong global financial safety net and developing a framework for coping with capital flows.

I. MOTIVATION

Context. The reform of the international monetary system (IMS) has been high on the agenda of policymakers (see the April 2011 IMFC and G-20 communiqués). Key areas of reform have included improving the surveillance of macroeconomic and financial policies, strengthening the global financial safety net, and progressing toward a comprehensive and balanced approach for coping with volatile capital flows. In that context, attention has also been given recently to deepening the financial sectors of emerging markets (EMs).

Deepening. Conceptually, financial depth is often understood to mean that: (i) sectors and agents are able to use a range of financial markets for savings and investment decisions, including at long maturities (*access*); (ii) financial intermediaries and markets are able to deploy larger volumes of capital and handle larger turnover, without necessitating large corresponding movements in asset prices (*market liquidity*); and (iii) the financial sector can create a broad menu of assets for risk-sharing purposes (*hedging* or *diversification*). In other words, deep markets allow savers to invest in a broad range of quality investment and risk-sharing instruments and allow borrowers to likewise tap a broad range of financing and risk management instruments (King and Levine, 1993; Rajan and Zingales, 1998; Chami, Fullenkamp and Sharma, 2009; Goswami and Sharma, 2011).

Stability benefits. Deepening is widely believed to confer important stability benefits to an economy, albeit with caveats. For instance, by increasing transaction volumes, it can enhance the capacity to intermediate capital flows without large swings in asset prices and exchange rates. But it can also attract volatile capital inflows, complicating macroeconomic management (IMF, 2011a). It can lower the reliance on foreign savings and attenuate balance sheet mismatches by increasing the scope to raise funds in domestic currencies and at longer maturities (World Bank, 2011; IMF, World Bank, and FSB, forthcoming). Deeper markets can provide alternative sources of funding during times of international stress, limiting adverse spillovers, as evidenced in the global crisis. At the same time though, deepening can occur too quickly, leading to credit booms and subsequent busts. It has also been argued that deepening can increase the capacity of EMs to generate their own "safe" or reserve assets, rather than to rely predominantly on U.S. treasuries (Gourinchas and Rey, 2005; Caballero, Farhi, and Gourinchas, 2008). At the systemic level, all these factors, if properly managed, can attenuate the need to accumulate foreign assets, thus promoting global adjustment. In time, they could facilitate currency internationalization and a shift to a more multipolar IMS (Maziad et al., 2011).

This paper. This paper seeks to shed light on the relationship between financial deepening in EMs and the stability of the IMS as a whole. Using a simple metric, it compares the patterns of financial deepening across advanced and emerging markets over the past two decades (section II). These patterns show not only that there has been a growing divergence in the depth of advanced versus emerging markets but also that, over the past decade, this divergence reflects the lack of adjustment in the IMS. Thus deepening has implications for global imbalances. The paper then relates financial deepening to crisis incidence and costs (section III). Crisis risks are found to rise in the initial stages of deepening, during which policymakers have sought to build reserve buffers, constrain capital mobility, and limit exchange rate flexibility. In later stages, crisis incidence falls, and policymakers have tended

to adopt more flexible exchange rates, open capital accounts, and keep smaller reserve buffers. The paper concludes with implications for enhancing the stability of the IMS (section IV). Appendix I provides a brief overview of policies that could promote deepening.

II. Patterns of Financial Deepening and International Monetary Stability

Analyzing depth. One approach to analyzing financial deepening is from a markets and sectoral perspective—*broadening the set of markets* beyond a core banking sector to encompass capital markets, and *expanding the range of actors*, such as nonbank financial intermediaries, including pension funds and foreign investors. Underpinning deep markets is a credible legal system that *inter alia* allows for the effective enforcement of contracts and property rights and provides investor protection (Appendix I). Each type of market provides a different set of opportunities for investment and risk, and each requires prerequisites. Capital markets, for example, provide for arms-length, anonymous transactions and therefore call for greater information disclosure and trading arrangements to become viable. Not all countries will find it possible to develop local capital markets, such as local currency bond markets. Different actors bring different preferences for financial exposure and different attitudes about risk, which creates opportunities for gains from trade. For example, while banks transform maturities (borrowing short term to lend long), pension funds and insurance companies invariably match maturities (borrowing and lending long term), making them natural buyers of longer-term bonds and facilitating the development of these markets. The sectoral patterns of deepening are analyzed below across advanced markets (AMs) and EMs.[2]

A balance sheet approach. A more general approach is to think of deepening in terms of *enhancing the capacity of an economy to manage its aggregate balance sheet in a smooth and balanced manner, including in response to shocks*. A deep financial sector is one that facilitates the orderly and balanced growth of its balance sheet (i.e., with expansion or contraction that is not too rapid, excessive, or unsustained) and allows for smooth adjustment to shocks. Such capacity depends on a number of factors, including the structure of balance sheets (e.g., maturity of debt, size of rollover needs, currency composition of liabilities); the ability of various sectors to issue claims in a cost-effective manner (e.g., if the corporate sector must de-lever, the aggregate effects can be attenuated if the household sector can countercyclically expand its balance sheet); the ability of the government to employ countercyclical macroeconomic and financial policies and serve as a lender of last resort; and prudent financial regulation and supervision.

A metric. The size of the aggregate balance sheet thus provides a simple metric by which to track financial deepening over time and compare depth across economies. It measures the total financial claims and counterclaims of an economy, both at home and abroad (see Box 1). As such, it is more comprehensive than the commonly used liquid liability measure or even broad money (M2/GDP).

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[2] The definitions of AMs and EMs are generally consistent with the classification used in the *World Economic Outlook.* However, a few economies defined as AMs in the WEO are treated here as EMs because they transitioned from the latter category during the period under investigation. These are the four Asian NIEs (Hong Kong SAR, Korea, Singapore, and Taiwan Province of China) and three transition economies in central and eastern Europe (Czech Republic, Slovakia, and Slovenia).

Box 1. An Index of Financial Depth

There are a number of ways to measure financial depth or integration. Adding up the total financial claims within an economy as a share of GDP gives a sense of the domestic financial depth. Adding up external assets and liabilities as a share of GDP, on the other hand, gives a sense of international financial integration.

A composite index of financial depth (IFD) of an economy is proposed to capture the stock of both domestic and external financial claims. It measures the total stock of domestic financial assets, D_A, and liabilities, D_L, as well as the foreign assets, F_A, and liabilities, F_L, as follows:

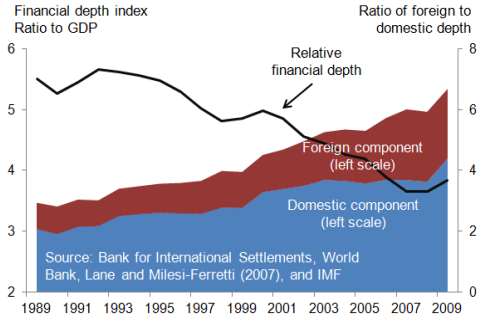
$$IFD = \frac{1}{2}\frac{(D_A + D_L)}{Y} + \frac{1}{2}\frac{(F_A + F_L)}{Y} = \frac{D_L}{Y} + \frac{1}{2}\frac{(F_A + F_L)}{Y}$$

Since, by definition, domestic liabilities equal domestic assets, the index measures the total stock of the domestic balance sheet. The ½ weighting on foreign assets and liabilities means that when $F_A = F_L$ the index of financial depth reflects the total domestic and foreign liabilities of the economy.

The weighted sum of this index over the entire world gives a measure of global financial liabilities as a share of GDP, since the sum of foreign assets must equal the sum of foreign liabilities (see text figure). There has been considerable growth in the past two decades. It can also give a sense of relative domestic versus external financial depth; the latter has dominated in recent years. Sub-indices can also be constructed for AMs and EMs (see below).

The index was constructed for 50 countries – half AMs and half EMs – that collectively account for over 90 percent of global GDP. The data on external assets and liabilities come from the updated and extended version of the Lane and Milesi-Ferretti (2007) dataset. These data are available through 2009 (admittedly an awkward end-point, given the crisis, and which could generate some anomalous results; see Table 1 below). Domestic claims are defined as the total domestic financial liabilities, including broad money, resident claims on the banks, domestic securities, and stock market capitalization, using datasets constructed by the World Bank and the Bank for International Settlements. The index was constructed with and without equities, to side-step large swings in valuation in the former case.

Index of Global Financial Depth (Excluding Equities):1989–2009



Limits. Isn't such a metric too simple, partial, and imperfect? Of course, it is—as would be any single metric of depth that could be compared across countries and time. To gain a comprehensive picture of both the state of financial depth and the process of deepening, it is essential to complement this aggregate measure by other measures. Useful insights would be gleaned, for instance, by examining the resilience of balance sheets (such as currency and maturity mismatches and prudential indicators), the quality of regulation and supervision (as obtained, for instance, in the Financial Sector Assessment Programs, or FSAPs, of the IMF and World Bank; see also IMF, World Bank, and FSB forthcoming), institutional capacity, and market development (e.g., of sectors and actors, as described below).

Value. For the purposes of analyzing international monetary stability—the focus of this paper—the aggregate balance sheet metric contains a wealth of information. For instance, the differential growth of domestic and external balance sheets can help account for the persistence of global imbalances and lack of adjustment. Too rapid a growth in balance sheets can point to increasing risks and vulnerabilities, such as those related to excessive leverage or reliance on short-term financing. Early stages of deepening can also be related to

rising risks, since capital flows can be relatively large compared with the capacity of an economy and its institutional framework to cope with them. Moreover, while risks can decline beyond a threshold (see, e.g., Kose, Prasad, and Taylor, 2009), economies with great depth are not necessarily immune, if risks build up and the regulatory framework does not keep pace, as the crisis has demonstrated (e.g., Arcand, Berkes, and Panizza, 2011, argue that finance has a negative effect on growth when credit to the private sector exceeds 110 percent of GDP). Finally, information on the size and sectoral distribution can also shed light on the ability of an economy to smooth the effects of shocks.

Results. Table 1 shows the countries with the largest balance sheets relative to GDP in 1989 and 2009 (left columns). The important financial centers stand out (except the United States, given that the measure is against own GDP), but so does Ireland in 2009. This reflects the very rapid cyclical increase in its balance sheet size in recent years, pointing out that rapid borrowing brings growing risks as much as risk sharing. The table also shows overall financial size as a share of global size (right columns; each country's contribution is weighted by global GDP): the Euro Area, Japan, the United Kingdom, and the United States dominate. Among EMs, China's total financial claims are now comparable with those of large European countries as a share of global GDP, underscoring the possible future role of China in the global financial system.

Table 1. Ranking of Countries by Depth and Contribution to Total Depth

Top 5 financially deep economies (in percent of own GDP)				Top 5 contributors to global financial depth (in percent of all countries' GDP)			
1989			*2009*	*1989*			*2009*
				World	**4.25**		**6.71**
Advanced countries				***Advanced countries***	***3.93***		***5.50***
Japan	7.25	Ireland	21.61	United States	1.38	United States	1.96
Switzerland	6.48	United Kingdom	12.64	Japan	1.20	Japan	0.88
Belgium	5.45	Switzerland	11.48	United Kingdom	0.24	United Kingdom	0.52
United Kingdom	5.03	Netherlands	10.63	Germany	0.23	Germany	0.41
United States	4.51	Japan	9.31	France	0.19	France	0.36
Emerging markets				***Emerging markets***	***0.32***		***1.21***
Lebanon	8.94	Hong Kong SAR	26.67	Brazil	0.08	China	0.48
Hong Kong SAR	7.44	Singapore	10.47	China	0.04	Brazil	0.11
Malaysia	4.92	Lebanon	7.44	Hong Kong SAR	0.03	Hong Kong SAR	0.10
Singapore	4.76	South Africa	6.47	Korea	0.03	Korea	0.08
South Africa	3.96	Malaysia	6.30	India	0.02	India	0.08

Source: BIS, World Bank, updated and extended Lane and Milesi-Feretti (2007) dataset, IMF staff calculations.

Notes: Summing all assets and liabilities (held against residents and non-residents) as a share of GDP gives a measure of the weight of total financial claims and counter-claims of an economy—both at home and abroad. Domestic claims are defined as the total domestic financial liabilities, including broad money, resident claims on the banks, domestic securities, and stock market capitalization. Data are from the BIS, the World Bank, and Lane and Milesi-Feretti's "external wealth of nations" database, for 50 countries, half advanced and half emerging, that collectively account for over 90 percent of global GDP.

Overall trends. AMs and EMs have deepened their financial sectors over the past two decades (Figure 1). Reflecting the growth of financial centers such as Hong Kong SAR and Singapore, some EMs exhibit levels of depth comparable to AMs. Some other EMs, on the other hand, experienced virtually no deepening. Overall, depth in AMs has grown far more rapidly than in EMs, especially in the last decade. *Thus, in stark contrast to average real*

incomes, which have been converging, financial depth has been diverging between AMs and EMs. This points to the scope for financial catch-up.

Deficit vs. surplus economies. The divergence should not be entirely surprising. It reflects increased globalization and the rapid rise in cross-border claims among advanced economies. It also reflects the continued large increases over the past decade in the balance sheets of advanced current-account-deficit economies (see the lower panels of Figure 1):

- *Advanced deficit economies* have sustained domestic demand through borrowing, as is well known; what is noteworthy is that their domestic balance sheets have expanded rapidly even as their external liabilities have grown.

- *Advanced surplus economies*, on the other hand, have not leveraged their growing foreign assets; domestic claims have remained virtually constant as a share of GDP over the past decade, albeit at a high level.

- *EMs.* Both deficit and surplus EMs have expanded their domestic balance sheets over time, but at a more measured pace than advanced deficit economies.

- *Conclusion: Deepening can help international adjustment insofar as adjustment requires slower growth of domestic claims in advanced deficit economies and faster growth in surplus economies and EMs.* Slower secular credit growth in advanced deficit economies would slow domestic absorption, while faster secular credit growth in EMs would increase domestic demand.

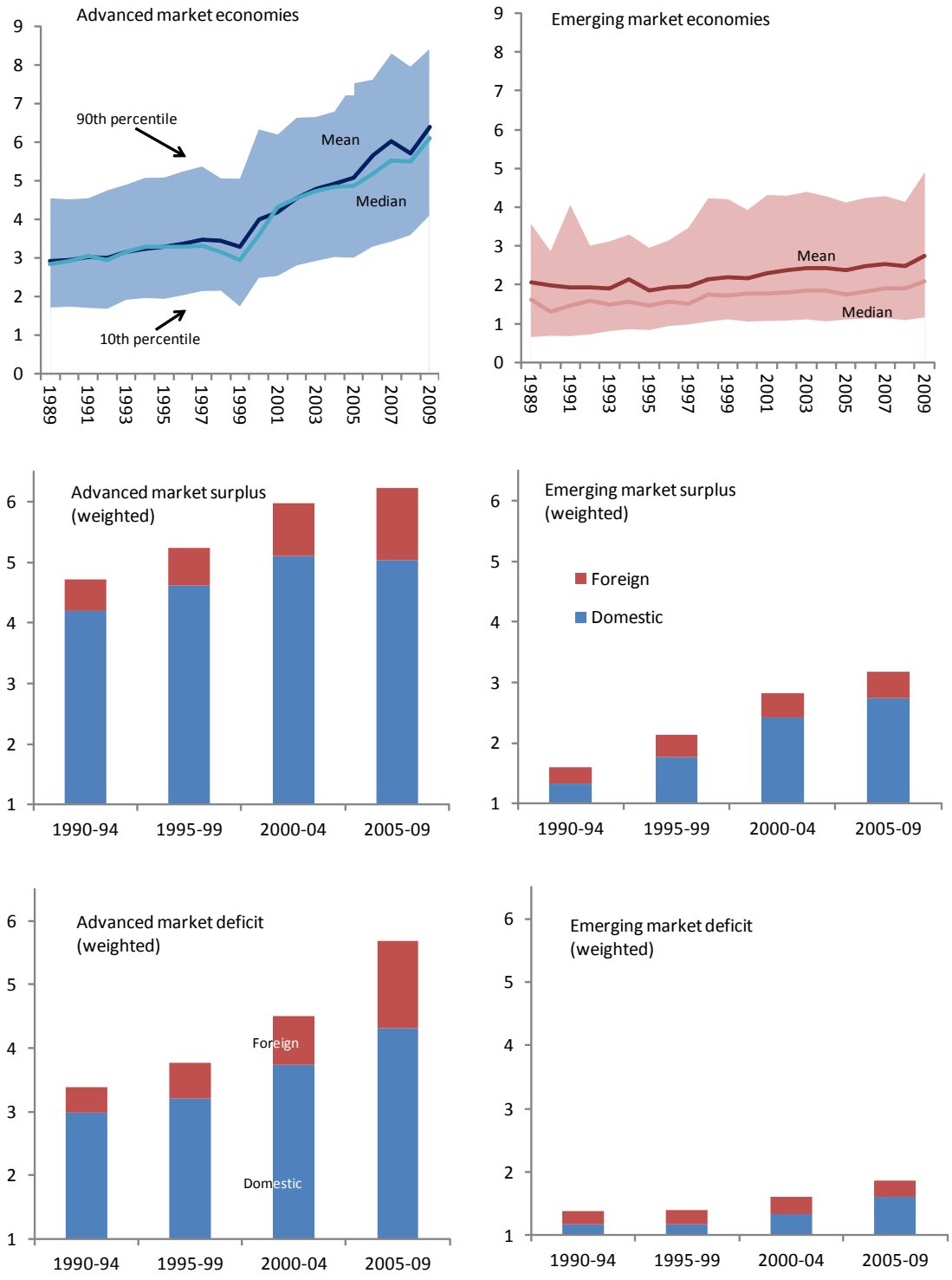
Sectoral patterns. The sectoral patterns of deepening have also varied substantially between AMs and EMs. Figures 2–6 illustrate some of these differences, identifying areas for further deepening in the latter:

- *EMs remain largely bank based* (Figure 2). As several studies have noted, capital flows intermediated through banks are the most volatile (Cetorelli and Goldberg, 2010; IMF, 2010b).[3] Given the prominence of bank intermediation in EMs, this may induce policymakers to adopt policies that preserve stability in the banking sector, and could help account for the more measured pace of deepening and slower growth of credit to the private sector (IMF, 2010a). The rates of growth of domestic liquid liabilities in AMs and EMs have been roughly identical, but AMs have differed crucially due to the expansion of credit to the private sector and the increasingly important role of capital markets.

- *AMs have experienced more rapid growth in their external balance sheets than EMs, though the latter continue to be more significant net borrowers.* External balance sheets in AMs have experienced a nearly 10-fold increase since 1970, compared with 3½ times in EMs. Assets and liabilities have risen in lockstep in AMs, leading to a

[3] The experience of EMs varies, depending on the business model used by international banks in their respective jurisdictions. In particular, EMs where these banks funded their activities by raising local deposits experienced less volatility, as was the case of Spanish banks in Latin America (Kamil and Rai, 2010).

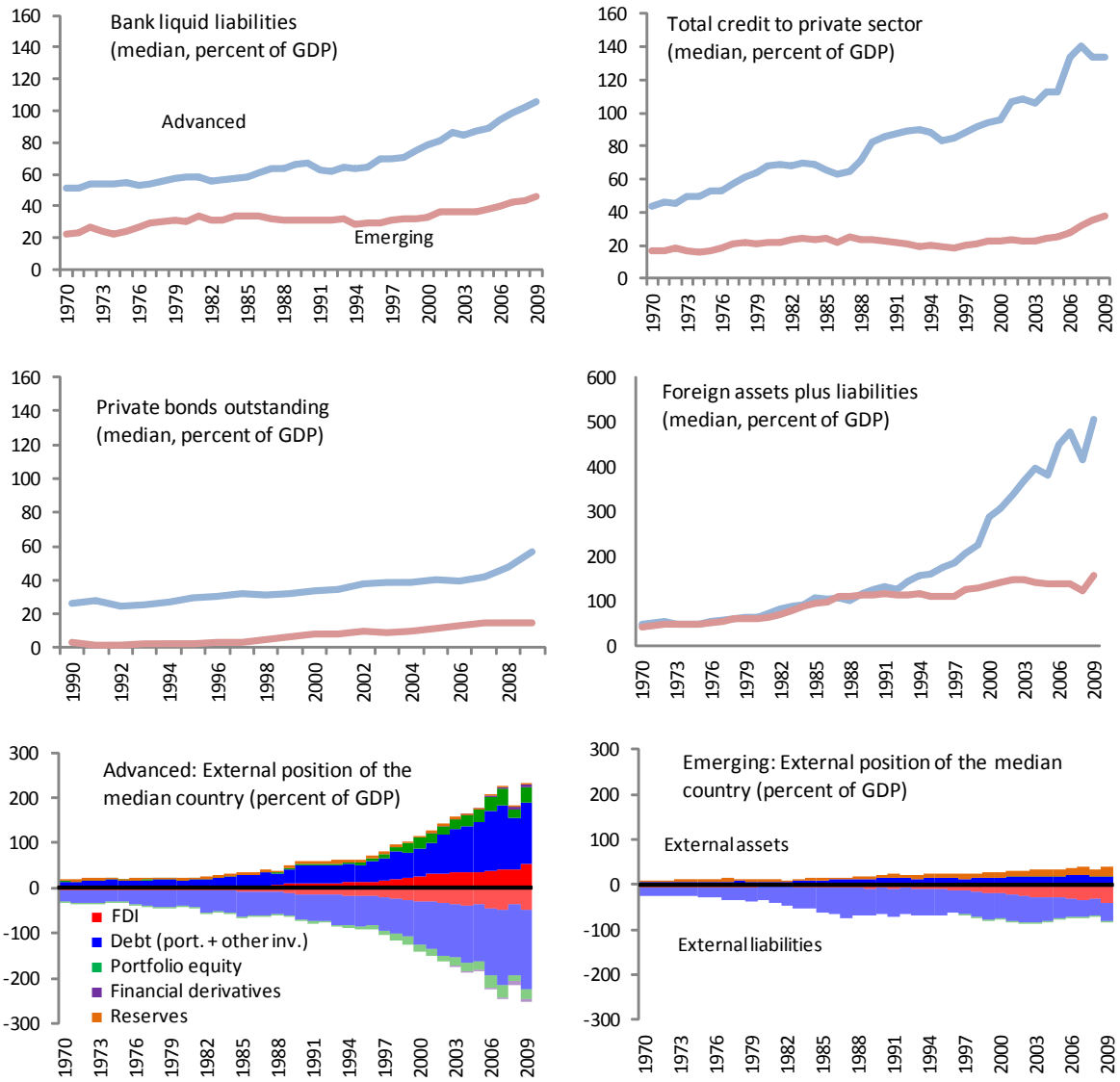
Figure 1. Financial Depth, Excluding Equities (ratio to GDP): 1989-2009



Sources: Bank for International Settlements, World Bank, and International Monetary Fund.

Note: Surplus/deficit economies defined as those experiencing a current account surplus or deficit on average over the period 2005-09.

Figure 2. Dimensions of Balance Sheet Expansion



Sources: World Bank, Bank for International Settlements, updated and extended version of the Lane and Milesi-Ferretti dataset (2007), and IMF staff calculations.

narrow net position (median of –15½ percent of GDP in 2009) compared to a large net liability position in EMs (40.1 percent).

- *EMs have increasingly substituted foreign direct investment (FDI) for debt liabilities.* In 2000, gross debt liabilities for the median EM amounted to 55½ percent of GDP, while FDI liabilities stood at 20½ percent. By 2009, FDI liabilities had risen to over 40 percent, while debt liabilities had fallen to just over 42 percent. Even among EM financial centers, there is a revealed preference for external liabilities geared more towards FDI than debt instruments. This general preference for FDI over debt may

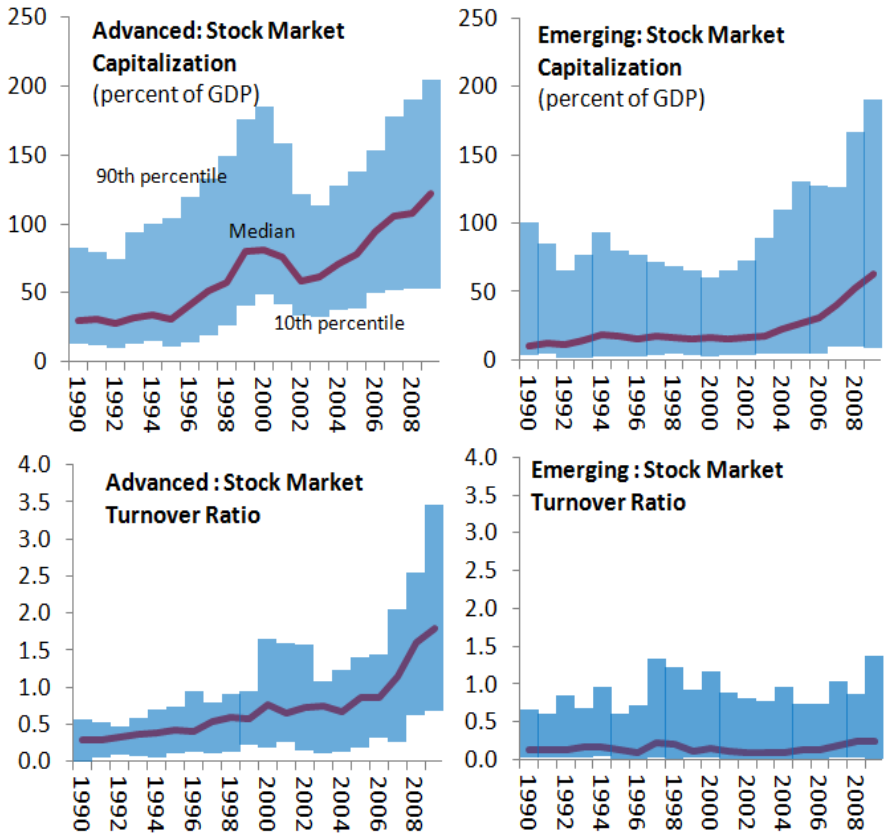
reflect a desire to manage the balance sheet in a manner that reduces crisis risks (Gourinchas and Rey, 2005; see also next section). There are exceptions: for instance, in Europe, the large expansion has been due to external debt liabilities (portfolio plus other liabilities).

There is significant scope in EMs to develop capital markets (Figures 3-4). In advanced economies, capital markets are not only larger, but also have significantly higher turnover and liquidity. This is true across equity, bond, and derivative markets:

- *Equity.* At 120 percent of GDP in 2009, median AM capitalization was around twice that of EMs (Figure 3).

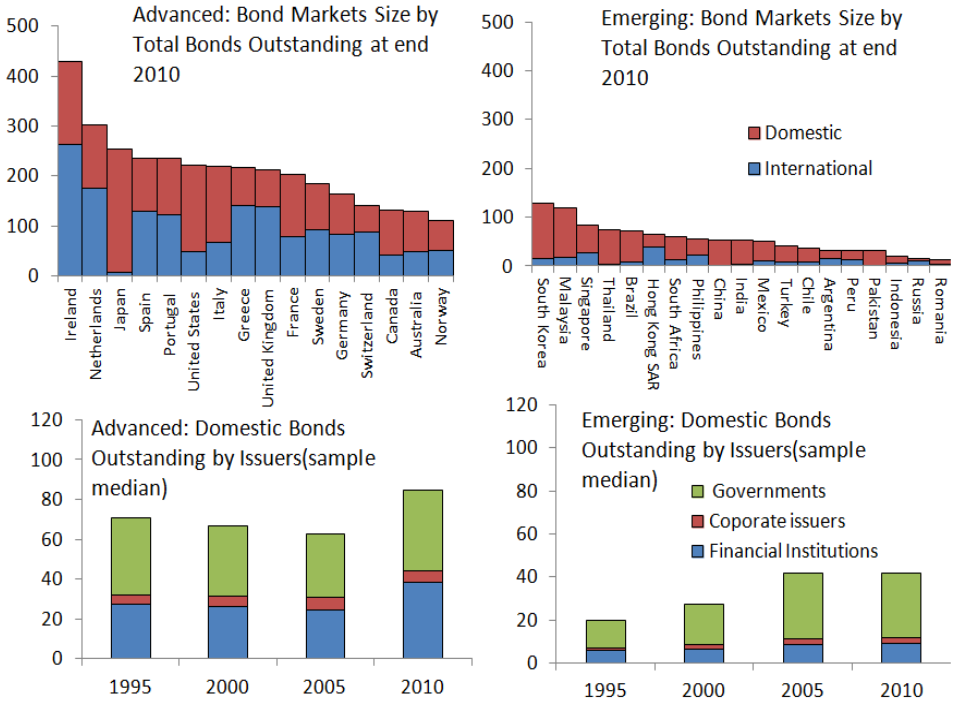
- *Bonds.* The gap in the size of bond markets is even larger. At 200 percent of GDP at end 2010, the median value of bonds outstanding in AM markets was four times as large as the median value in EMs, with even some of the smallest AM bond markets larger than the largest EM ones (Figure 4). Longer-term bond markets were also significantly larger in AMs: for 19 AMs and 12 EMs for which data were available, bonds outstanding with maturities over a year in the median AM were equivalent to 75 percent of GDP, compared with 33 percent of GDP for the median EM.

Figure 3. Stock Market Capitalization and Turnover



Note: Stock market turnover ratio is defined as ratio of the value of total shares traded to average real market capitalization.
Sources: Beck, Demirgüç-Kunt, and Levine (2000) dataset, as updated in 2010; IMF staff calculations.

Figure 4. Bond market size and issuer (percent of GDP)

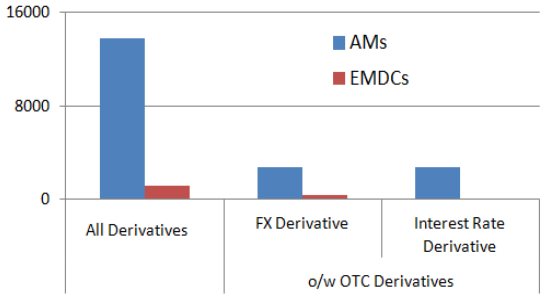


Sources: BIS, country authorities, and IMF staff calculations.

- *Derivatives.* Despite experiencing rapid growth in recent years, derivatives markets in EMs remain small compared to those in AMs. Average daily turnover in EMs where data are available was $1.2 trillion in April 2010 (6.2 percent of those economies' GDP), compared to $13.8 trillion (36 percent of GDP) in AMs (Figure 5). Derivative markets in EMs are primarily in foreign exchange derivatives, while interest-rate derivatives predominate in AMs. As foreign exchange derivatives are generally of short duration compared to interest-rate derivatives, developing the latter could offer greater scope for risk sharing. It requires, among other things, developing longer-term debt markets and extending the yield curve.

Figure 5. Derivative Turnover in AMs and EMDCs

In USD billions, average daily turnover in April 2010



Source: BIS Quarterly Review, December 2010

Players such as pension funds can facilitate the development of long-term debt markets. Pension funds and insurance companies play a much larger role in advanced economies than they do in EMs (Figure 6). As providers of financial services such as for long-term savings and risk sharing (e.g., health, life, property, employment), they are natural holders of equity and long-term securities. Hence, development of these players should facilitate the growth of capital markets.

Figure 6A. Pension Fund Assets, 2009
As percentage of GDP 1/

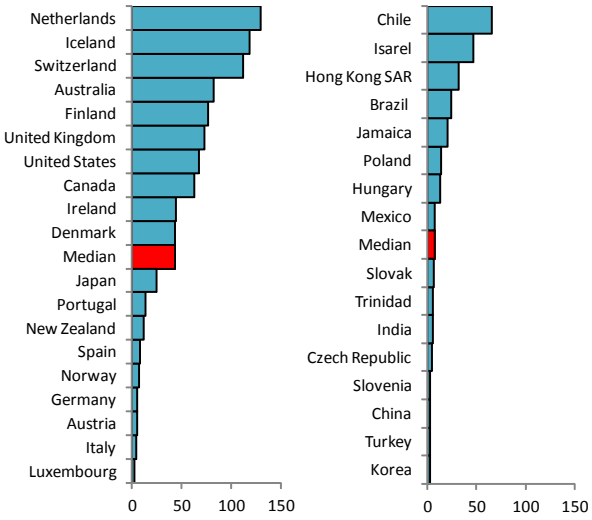
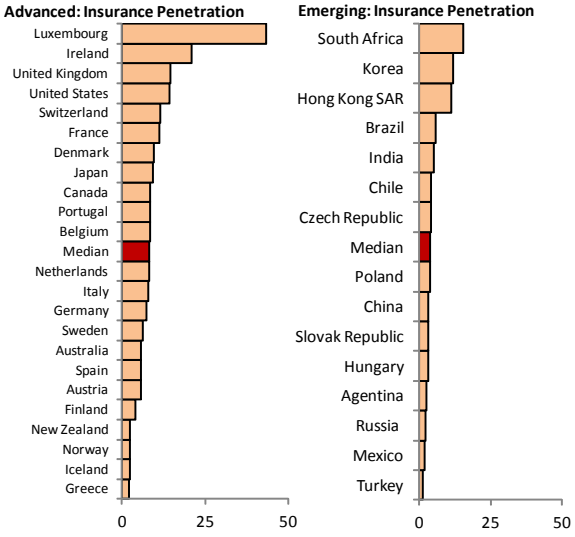


Figure 6B. Insurance Penetration,2009
As percentage of GDP 2/ 3/

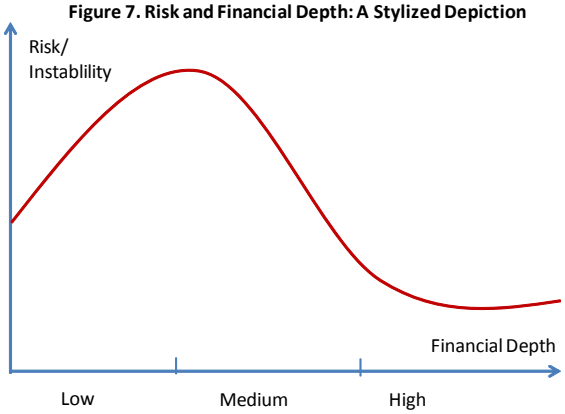


Source: OECD Global Pension and Insurance Statistics, country authorities, and IMF staff calculations.
1/ End-2007 data for India.
2/ Insurance penetration defined as total gross insurance premiums as percent of GDP.
3/ End-2008 data for Argentina, Austria, Denmark, Russia, South Africa, and United Kingdom.

III. RISKS AND POLICIES

Crisis risks. How are crisis risks related to financial deepening? Lax regulation and excessive credit growth could precipitate crises even if the financial sector is deep (measured by the aggregate balance sheet concept), as the global crisis indicates. And the costs would be commensurately larger were it to occur in one of the core financial centers of the world. That said, and all else equal, as deepening occurs and the capacity of balance sheets to manage shocks increases, crises would be expected to become less frequent and less costly. Were a crisis to occur, however, it is conceivable that it would more likely occur at "medium" (or "medium-low") levels of depth and that costs would also be higher at these levels (Figure 7). This could occur, for instance, if balance sheets were not yet large enough to cope with volatile cross-border capital flows, or if regulatory and supervisory capacities were lagging.

Figure 7. Risk and Financial Depth: A Stylized Depiction



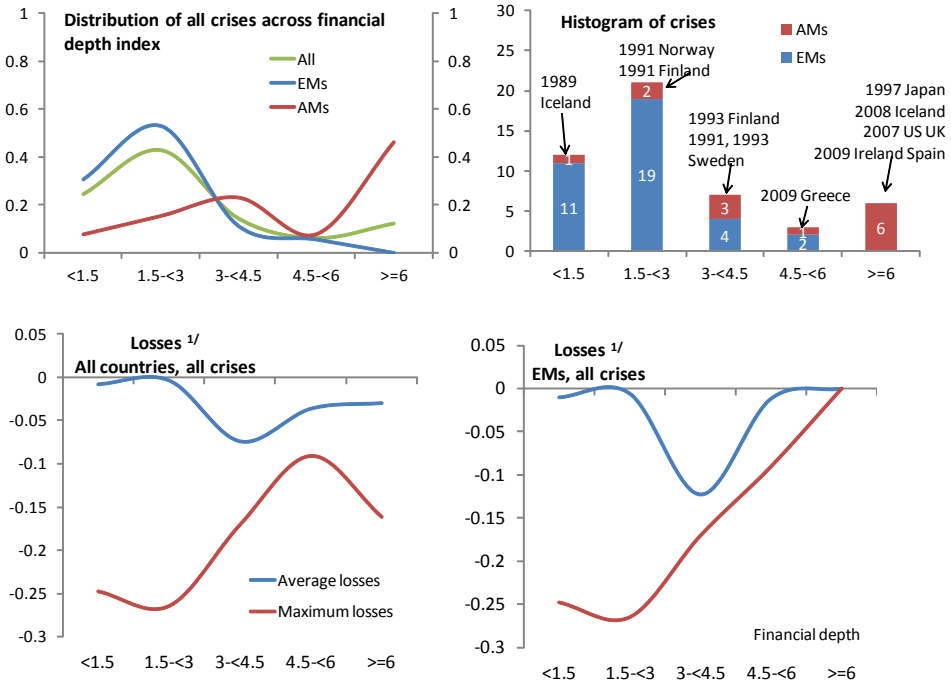
Evidence. To examine the hypothesis that deepening could lead to (i) a greater likelihood and a rising cost of crises at early stages of deepening and (ii) a lower likelihood and falling costs of crises at higher levels of financial depth, the frequency of crises and costs of crises (calculated as the 2-3 year loss in GDP) were examined at various levels of depth as

measured by the balance sheet metric above. Based on Laeven and Valencia (2008), which was updated through end 2009, 49 crisis cases were identified. Of these, 36 crises occurred in EMs and 13 in AMs; there were 30 banking crises and 21 currency crises, with overlaps reflecting twin or triple crises. The following conclusions are drawn:

- Based on this dataset, *the (unconditional) probability of crises generally declines with depth*. It rises slightly at very high levels of depth, reflecting the recent crisis.

- *Were a crisis to occur, the (conditional) probability rises before falling off* (Figure 8, top left panel). Crisis incidence has historically been high at levels of financial depth associated with EMs (index lower than 3). The vast majority (83 percent) of all EM crises have occurred when the depth index was lower than 3, with a further 11 percent above 3 but below 4.5. At very high levels of depth, the incidence of crises, particularly banking crises, can re-emerge.

Figure 8. Incidence and Cost of Crises, and Financial Depth



Source: World Economic Outlook, Laeven and Valencia (2008) and IMF staff calculations.

1/ Loss at time t is measured as: $Loss_t = \sum_{i=0}^{n} \frac{GDP_{t+i} - GDP_{t-1}}{GDP_{t-1}}$

where t is the crisis start date based on the Laeven and Valencia dataset. In practice we examined n=1 and 2 (i.e., 2- and 3-year cumulative losses), and show the 2-year losses here.

- *Even though the frequency of crises declines with deepening, the costs of crises remain high* (Figure 8, lower panels). Among EMs, the average costs of crises have historically been highest at the levels of depth that many economies are currently at, even though the maximum cost in the sample declines monotonically with depth. For EMs, the average two-year cumulative losses for levels of depth between 3 and 4½—the level where the incidence of crises declines—are about 12¼ percent of precrisis GDP. The costs of currency crises at these levels are even higher, nearly 15½ percent, suggesting that currency mismatches play an important role in determining risk. The

dynamic is different for AM crises, however. Based on a smaller set of crises, the average cost rises with depth, although the magnitude of losses tends to remain lower.

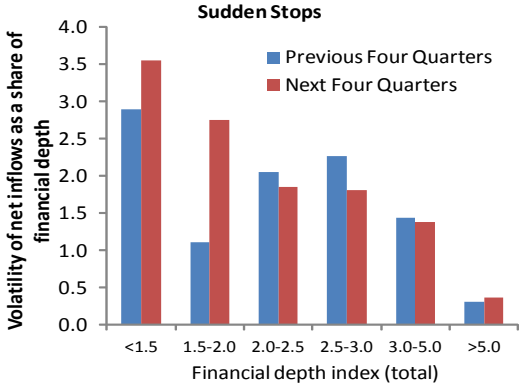
Capital flows. What is the role of volatile capital flows in accounting for the high average cost of crises in EMs? To explore how the volatility of capital flows varies with financial depth, Figure 9 plots the standard deviation of capital flows as a proportion of financial depth, before and after "sudden stop" episodes, against different levels of depth, as measured by the aggregate balance sheet metric. (These episodes are taken from IMF, 2011a.) A number of features stand out:

- First, the volatility of net capital outflows following a sudden stop (the red bars) declines unambiguously as depth rises, suggesting that greater depth helps cushion against outflows. This echoes previous findings that more developed domestic financial markets in EMs helps reduce the volatility of capital flows (IMF, 2007).

- Second, once depth exceeds 1½, further deepening is associated with greater volatility in net flows during the inflows phase of the cycle (the blue bars), which then falls off when depth exceeds 3. This may account for why EMs continue to experience large average output declines following crises even as the crisis frequency falls.

- Finally, at levels of depth similar to AMs, relative volatility, both before and after sudden stops, becomes negligible.

Figure 9. EMs: Volatility of Net Inflows Before/After Sudden Stops



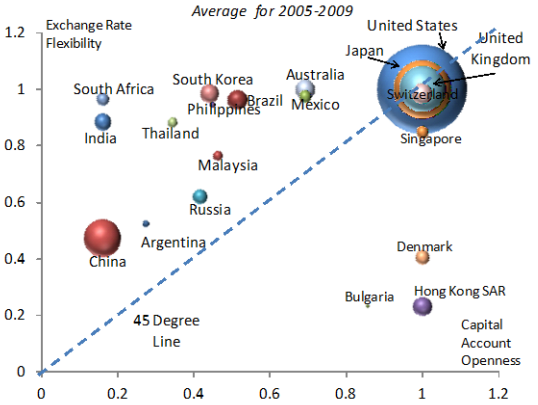
Source: IFS, and IMF staff calculations.

How deep is deep enough? Crisis risks and costs can—and have—re-emerged at greater levels of depth. Crises can occur at any level of financial development. But, as the recent crisis in the advanced economy core of the global financial system has shown, there may be limits to the pace of balance-sheet expansion. Notwithstanding the increased ability to cope with volatile capital flows, and absent work on the "optimal" level of depth, the above data suggest that, all else being equal, deepening in EMs does not need to increase as much as it has in AMs for them to benefit from reduced crisis risks and costs.

Policies. Countries with lower levels of depth—and higher crisis risks and costs—typically also have less exchange-rate flexibility, more capital account restrictions, and high reserves accumulation; the last of these may serve as buffers against costly crises (Figure 10). If crisis risks and costs are perceived to be high during the process of financial deepening, precautionary reserve accumulation may *increase*. This could result in delays in global adjustment. However, countries with greater levels of depth and lower crisis incidence and costs tend to have more open capital accounts, free floating exchange rates, and far lower reserves as a percent of GDP.

Figure 10A. Share of Global Financial Depth and Policies 1/

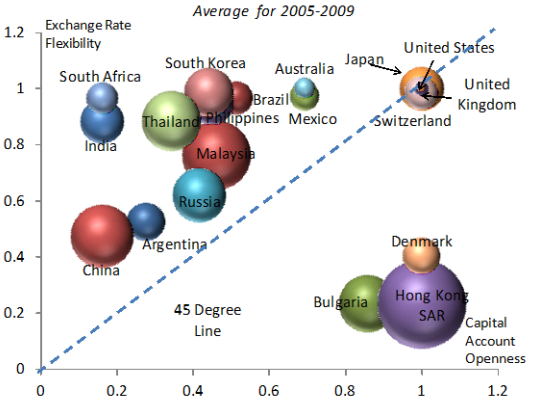
Average for 2005-2009



1/ ***Bubble size***: Share of global financial depth, US = 100.
Capital Account Openness: 1 for most open (normalized Chinn-Ito meaures).
Exchange Rate Flexibility: 1 for free float (normalized AREAER measures).
Source: BIS, Chinn and Ito (2008), World Bank, updated and extended Lane and Milesi-Ferretti (2007) dataset, and IMF staff calculations.

Figure 10B. Reserve Accumulation and Policies 2/

Average for 2005-2009



2/ ***Bubble size***: Official reserves as precentage of GDP, Hong Kong = 100.
Capital Account Openness: 1 for most open (normalized Chinn-Ito meaures).
Exchange Rate Flexibility: 1 for free float (normalized AREAER measures).

IV. IMPLICATIONS AND CONCLUSIONS

Deepening. Financial deepening in EMs can bring important benefits to these economies. This paper has shown that deepening is associated with a reduced incidence and lower costs of crises and an improved capacity to manage volatile capital flows. That said, risks and costs can rise in the process of deepening, and mechanisms are needed to help cope with them.

Scope. There is a substantial gap in the financial depths of EMs compared to their AM counterparts. A degree of catch-up has implications for global imbalances, insofar as international adjustment requires slower growth of domestic claims in advanced deficit countries (slower credit growth lowers domestic demand) and faster growth in surplus economies and emerging markets (which would raise domestic demand).

Adjustment. Even as EMs deepen, and given the still high costs of crises in the process, they may continue to operate policies that can help shield them against external shocks. Policies to build reserve buffers, manage capital flows, and limit exchange rate flexibility may bolster stability at the country level. Moreover, even though some EMs (e.g., China, Korea, South Africa, and Thailand) are close to the threshold of financial depth where crisis costs decline, the fragility of the global recovery may induce countries to remain cautious. However, at the systemic level, a result could be the postponement of adjustment, which could adversely impact systemic stability and growth. In time, greater financial depth would be expected to lower crisis costs, and policies too could transition to reduced precautionary demand for reserves, greater openness in the capital account, and more flexibility in exchange rates.

Strengthening the IMS. Deepening is a long-term process, and the transition could be a long one. It remains essential therefore that progress be made at the multilateral level to help cope with risks. This includes progress to resolve external imbalances through surveillance of and cooperation on policies (e.g., IMF surveillance and the G-20 Mutual Assessment Process); reforms to the global safety net to close remaining gaps, which would limit the need for precautionary reserve accumulation; and progress to develop a coherent framework to cope with volatile capital flows, which could also limit risks and costs.

Appendix I. Facilitating Financial Deepening

Deepening is a gradual and largely organic process, and policy recommendations need to account for country-specific circumstances and institutions. While further work is needed to sketch out specific policy advice, some basic areas of emphasis that can nevertheless be extracted from the prevailing wisdom and some references to the literature are provided:

- *Macro policy framework*. A sound policy framework is essential for macroeconomic and financial stability (World Bank-IMF Handbook, 2001; Eichengreen, 2008; Arvai and Heenan, 2008; Chami, Fullenkamp, and Sharma, 2009). It would support demand for domestic assets, and enhance the credibility of the government as an issuer of debt securities.

- *Market infrastructure*. A robust market infrastructure is necessary. For instance, a benchmark yield curve is a key requirement for market development and facilitates the reliable valuation of financial assets. This, in turn, necessitates sound public debt management policies (Arvai and Heenan, 2008; Chami, Fullenkamp, and Sharma, 2009).

- *Legal framework*. A strong and transparent legal framework is critical to investor protection and property and creditor rights. The regulator could, for instance, codify and enforce accurate and timely accounting standards, while the private sector could build the necessary infrastructure such as exchanges and credit bureaus. A robust payments and settlements infrastructure is also essential. The positive relationship among sound institutions, financial development, and long-term growth has been confirmed in many empirical analyses (Fergusson, 2006; Chinn and Ito, 2006).

- *Regulatory and supervisory regime*. A sound regulatory and supervisory system needs to be established with the capacity to ensure financial stability. A balance is needed whereby regulation can foster prudent market conduct without hindering development: too rapid a deregulation risks engendering instability (Reinhart and Rogoff, 2008; Rodrick and Subramaniam, 2009), but highly restrictive rules may hinder financial market development (Chami, Fullenkamp, and Sharma 2009; Goswami and Sharma, 2011). Such regulation needs to address disclosure and transparency among market participants, limit market dominance, and enforce risk management practices. In addition, IMF (2002) discusses the linkages between financial sector development and capital account liberalization, setting out an operational framework for sequencing financial deregulation and liberalizing cross-border capital flows.

- *Cooperative mechanisms.* There may also be a role for cooperative solutions, such as by countries in Asia to develop local currency bond markets. In particular, efforts aimed at addressing various impediments to bond market development—focusing efforts to achieve a critical scale, building information systems and transparency, improving market infrastructure and regulation, and creating a vibrant investor community—appear to have had a large impact (BIS, 2011).

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