Dealing with Currency Risks

As mentioned above, developing countries, especially the so-called emerging markets, have become painfully aware that high external liabilities pose both significant liquidity and balance sheet risks. Thus, many countries have been trying to reduce their external liabilities and open currency mismatches in both official and private firm balance sheets. To do so without incurring significant maturity mismatches, these countries have undertaken major efforts to develop long-term capital markets in domestic currencies.

In addition, some countries have begun to issue domestic currency bonds in international markets, and there have been some attempts in Asia to develop a regional market for sovereign and quasi-sovereign bonds in domestic currencies, through the Asian Bond Fund initiative. The initiative was established by the monetary authorities of eight Asian countries in 2005 as a $2 billion fund to invest in sovereign and quasi-sovereign bonds in their local currencies and was expected to attract additional investors. The Asian Bond Fund was the first foreign investor in the Chinese interbank bond market and has helped to lengthen maturities in other markets. The initiative stimulates and supports tax and regulatory reforms and harmonization that would facilitate the development of local and regional markets for such bonds. It has been complemented by a $10 billion regional multicurrency bond platform sponsored by the Asian Development Bank. The African Development Bank is currently promoting a similar initiative in Africa.
Developing domestic currency capital markets

A recent report by the Bank for International Settlements documents the significant progress achieved by some countries in developing domestic currency markets and in reducing currency mismatches in their balance sheets. In particular, figure 4.1, taken from that report, shows how the outstanding domestic bonds and notes (most of which are in domestic currencies) have increased significantly as a share of total outstanding amounts of bonds and notes in the largest countries of Central Europe since 1998 and of Latin America since 2002, while that share has been quite high for some time in the largest Asian economies. Indeed, as shown in figure 4.2, net issuance in domestic currencies has largely exceeded foreign currency issues in the larger countries of these regions in the last 10 years. As a consequence, stocks in local bonds and notes have increased significantly as a proportion of GDP in the last decade in most large developing countries, while the ratio of international bonds to GDP has remained about constant or tended to diminish since 1998. At the same time, there has been a rapid increase in bonds outstanding issued in international markets in domestic currencies (table 2 in the appendix) by some of the large developing countries, though the overall magnitudes are still small and highly concentrated in the South African rand market.

These developments, and the large accumulation of international reserves, have significantly reduced aggregate currency mismatches in some developing countries. The Bank for International Settlements estimates an aggregate index of effective currency mismatches for a few large developing countries and shows that they have been significantly reduced in the last 10 years, and even reversed in some cases (figure 4.3).

However, as recognized by the Bank for International Settlements (2007), while this is true for some of the larger countries in each region, in many other countries the development of local currency markets is still incipient, and aggregate currency mismatches remain more substantial. As mentioned in chapter 1, the development of long-term and low-cost domestic currency markets has usually required achieving low inflation and high central bank credibility, establishing adequate tax and market regulation and a credible capital market regulatory agency, as well as developing effective market infrastructure. It has also normally required the abandonment of fixed exchange rate regimes and the introduction of floating or flexible regimes. Developing long-term domestic currency markets has been a particularly difficult task in countries that indulged in the past in high financial sector dollarization. Indeed, recent “dedollarization” policies have begun to produce results quite slowly (figure 4.4).

1. BIS 2007.
2. BIS 2007, Graph C3.
3. As the product of the country’s net foreign currency asset position, as a percentage of GDP, and as a simple mismatch ratio (foreign currency share of aggregate debt relative to the export-to-GDP ratio).
5. Though “dollarization” of loans and deposits has been reduced beginning in 2000, it still remains a substantial phenomenon in several countries. For example, in 2005, loans in foreign currencies were as
In addition, even in those countries in which the aggregate mismatch is significantly smaller today, important currency exposures may remain for private and public sector firms in non-tradable sectors. This is so because domestic corporate high as 70 percent of total loans in Peru (and similar percentages in Bolivia, Paraguay, Uruguay, and some Central American countries) and 47 percent in Hungary. Deposit "dollarization" ratios were as high as 65 percent in Peru, 56 percent in the Philippines, and 35 percent in Turkey (BIS 2007, Annex Table 12).
Figure 4.3. Indices of aggregate effective currency mismatches

Note: The aggregate effective currency mismatch is the product of the country’s net foreign currency asset position (as a percentage of GDP) and the simple mismatch ratio (the foreign currency share of aggregate debt relative to the export/GDP ratio).

Source: BIS 2007.

Figure 4.4. Foreign currency deposits as a percentage of total deposits

Source: Author’s calculations based on data from International Financial Statistics (IMF various years).
bond markets, although increasing in size, remain relatively small in most countries (figure 4.5), and the same is true for domestic currency derivative markets, as will be discussed below. Also, many governments still hold large external public debt, and it is not always clear to what extent they will be able to use international reserve stocks for debt service if they lose access to international capital markets and do not run significant fiscal surpluses. In fact, in most developing countries, central banks are the holders of international reserves, and they usually carry significant domestic liabilities against those assets and often have legal limitations on the credit they may extend to governments.

Developing currency derivative markets

Figure 4.6 shows that, despite the huge growth of global derivative markets in recent years, developing countries are still marginal participants (derivatives in developing country currencies are an insignificant fraction of the total, as shown by the dotted line in the right-hand panel). This is especially the case for currency derivatives (forwards, swaps, and options) in which only a few developing countries have active
**Figure 4.6. Global over-the-counter derivative markets (billions of U.S. dollars)**

Source: Author’s calculations based on BIS (2007) data.

**Figure 4.7. Currency derivatives in developing countries and the OECD, as a percentage of GDP (Daily averages)**

Source: Author’s elaboration based on data from BIS 2007 and *World Development Indicators* (World Bank 2007b).
DEALING WITH CURRENCY RISKS

There are several reasons behind these facts. First and most important, currency swap markets are very sensitive to credit risk because normally the swap provider has to retain not just the currency risk but also the issuer’s credit risk. Thus, only relatively low-credit-risk countries have been able to develop deep and cost-efficient currency swap markets. Second, significantrevamping and development of tax and market regulations and market infrastructure are normally necessary for these markets to flourish. Third, high credibility of central bank policies is needed. In particular, these markets have developed only in countries that have achieved consistently low inflation for some years and, in general, in countries in which exchange rate regimes are flexible. As already mentioned, in countries with the tradition of pegged exchange rates, interest rate volatility was too high for domestic currency markets to develop while currency risks were generally underestimated by most economic agents, including the government itself. Furthermore, because long periods of stability were followed by sharp depreciation episodes, it was just too difficult to price currency risk and to take risky bets against potentially massive central bank interventions in defense of the currency.

7. Ize and Levy Yeyati (2003) showed that increases in dollarization levels are related to the ratio of interest rate to exchange rate volatility.
Actual and potential roles for multilateral development banks

Multilateral development banks have played some role in the development of emerging market economies’ local currency capital and derivative markets. Technical assistance has been a key input for building market infrastructure and for required tax and regulatory reforms. But multilateral development banks have also helped occasionally by issuing bonds in domestic currencies of some developing countries, or through an admittedly limited offering of loans and guarantees in domestic currencies and currency swaps. In addition, those multilateral organizations that lend to the private sector have helped to build and strengthen domestic financial institutions through direct equity investments and lending to those institutions. Finally, in some cases, multilateral development banks have supported sovereign and corporate global bonds issued in domestic currencies in international markets, especially by providing advice on required tax and regulatory changes and resolving market clearance and settlement issues.8

Since the 1970s, multilateral development banks have issued bonds in some domestic currency bond markets (and, to a lesser extent, global bonds in domestic currencies). More often than not, such issuance was carried out as a means of obtaining cost-effective funding and diversifying portfolio risks (actually a large percentage of these operations has taken place in South African rands9). However, multilateral development banks have been “first movers” (first foreign issuers) on several occasions, both in domestic and international markets, and in those cases they have played a useful role in helping develop markets and undertake required tax and regulatory reforms. As examples, the Asian Development Bank was the first foreign entity to issue local currency bonds in the domestic markets of China, the Philippines, and Thailand (jointly with the International Finance Corporation (IFC)); the IFC was a pioneer in several emerging markets, such as Argentina, Brazil, China, Colombia, Malaysia, Morocco, and Peru, as was the European Bank for Reconstruction and Development in the Russian market and the World Bank in several countries, most recently in Romania. The role of the multilateral institutions in the development of currency derivative markets seems mostly limited to technical assistance.10

So far, lending in domestic currencies has been a low percentage of overall lending in almost all multilateral development banks (table 4.2), despite the fact that several of them (notably the IFC and the European Bank for Reconstruction and Development) have had operations in local currencies for well over a decade and many of them have widely advertised new local currency initiatives in the last few years (for example, the 2005 and 2006 local currency initiatives by the African Development Bank, the Asian Development Bank, and the Inter-American Development Bank).

8. As examples, we can cite World Bank help to New Zealand in 1989, to Turkey in 2005, and most recently to Gabon, Ghana, and Sri Lanka. The World Bank and the Inter-American Development Bank also supported Brazilian and Colombian global emissions in local currencies in 2005 and 2006.
10. BIS 2007, Box 5.
Dealing with Currency Risks

These operations are usually subject to portfolio caps, and, more important, current prudential practices in most multilateral institutions basically prohibit retaining currency risk in either lending or derivative operations with their clients. Thus, lending operations in domestic currencies are usually fully backed by borrowings in domestic currencies (requiring deep and liquid long-term domestic currency markets for a perfect match of maturities in each operation) or are swapped back to dollars (requiring a deep and liquid currency swap market already in place). As a consequence, such operations are basically limited to those countries that already can obtain domestic funding and currency swaps of similar maturities.

What is the advantage of using a multilateral development bank as an intermediary in such cases? As mentioned above, currency derivative markets are highly sensitive to credit risk. Thus, by retaining the country’s credit risk (taking advantage of their preferred creditor status), multilateral institutions are often in a position to achieve significant cost savings in accessing swap markets on behalf of their governmental and first-tier firm clients. Furthermore, they can facilitate access to existing swap markets for firms and subnational agencies that might not be able to access them directly at present because of their high credit risk. But, by limiting themselves to perfectly matched operations, they are not helping to develop or lengthen the maturity of markets, at least not in a significant way. Overall, currency swaps offered by multilateral development banks remain rather marginal, as indicated in table 3 in the appendix.

11. For example, a 10 percent cap by the Asian Development Bank.

## Table 4.2. Loans in domestic currencies by multilateral development banks

<table>
<thead>
<tr>
<th></th>
<th>Local currency lending (US$ millions)</th>
<th>Local currency lending (Percentage of total loans)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Development Bank</td>
<td>18.8</td>
<td>108.6</td>
</tr>
<tr>
<td>African Development Bank</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Andean Development Corporation</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>European Bank for Reconstruction and Development*</td>
<td>48</td>
<td>212</td>
</tr>
<tr>
<td>Inter-American Development Bank</td>
<td>–</td>
<td>66</td>
</tr>
<tr>
<td>World Bank</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>International Finance Corporation</td>
<td>325</td>
<td>450</td>
</tr>
<tr>
<td>Inter-American Investment Corporation</td>
<td>–</td>
<td>65</td>
</tr>
</tbody>
</table>

— is not available.

* Values have been converted to U.S. dollars from euros using the average exchange rate for the respective year.

Source: Author’s elaboration based on annual reports of the respective institutions.
Back-to-back funding\textsuperscript{12} is an even more unusual operation, and its usefulness is very limited for governments or firms with ratings similar to the sovereign, because multilateral development banks are able only occasionally to issue at significantly lower spreads and longer maturities than governments in relatively well-developed local markets. Why do large differences in credit risk in foreign currency transactions not translate to important differences in premiums in the case of domestic markets, in these cases? This remains pretty much an open question. It may be because government domestic bonds in local currencies benefit from all types of tax and regulatory advantages or, as is usually argued, because they are actually perceived as almost zero risk insofar as they can print money to pay back—in our view, a pretty doubtful proposition in many cases. More often multilateral development banks can obtain significant cost benefits in comparison with governments in issuing in local currencies in international markets rather than in domestic markets.\textsuperscript{13} This suggests that multilateral institutions could be especially helpful in developing domestic currency international markets. However, with the exception of the rand market, multilateral development banks have basically limited themselves to occasional opportunistic issuances, which does not permit developing a benchmark yield curve and a liquid market. To do so under current practices in which multilateral development banks limit themselves to an intermediary role, they would have to develop stable agreements with their clients to lend significant amounts in domestic currencies in different maturities. Such agreements could include commitments to undertake required tax and regulatory reforms, similar to the current practice of Master Derivative Agreements required to benefit from derivative contracts with multilateral development banks.

Some authors have suggested that multilateral development banks (especially the World Bank) could play a more ambitious role in offering domestic currency loans and in helping to develop domestic currency markets even while adhering to a policy of not retaining currency risks. The most detailed proposal was advanced by Eichengreen, Hausmann, and Panizza in 2003.\textsuperscript{14} The World Bank (and other multilateral institutions) would issue bonds in the international markets denominated in an “emerging market currency index” composed from an inflation-indexed basket of currencies of emerging and developing countries. To avoid incurring currency mismatches, they would convert a portion of their existing loans into claims denominated in the inflation-adjusted currencies of each of the countries included in the index. Eichengreen, Hausmann, and Panizza show that these bonds would have attractive risk-diversification features, as well as high rates of return, for OECD-based investors. They suggest that once the multilateral institutions (especially the World Bank) had developed the initial liquidity of the markets for these bonds, absorbing first-mover and market-development costs, other international issuers would find it attractive to issue debt

\textsuperscript{12} Funding each operation in the local currency market with close matching between loan disbursements and borrowing flows.

\textsuperscript{13} Direct communication from World Bank and Inter-American Development Bank treasuries.

\textsuperscript{14} Eichengreen, Hausmann, and Panizza 2003.
DEALING WITH CURRENCY RISKS

Table 4.3. Correlations of nominal exchange rates

<table>
<thead>
<tr>
<th>OECD</th>
<th>East Asia and Pacific</th>
<th>Europe and Central Asia</th>
<th>Latin America and the Caribbean</th>
<th>Middle East and North Africa</th>
<th>South Asia</th>
<th>Sub-Saharan Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>–0.641</td>
<td>–0.854</td>
<td>–0.484</td>
<td>–0.513</td>
<td>–0.640</td>
<td>–0.512</td>
</tr>
<tr>
<td>Higher</td>
<td>0.235</td>
<td>0.543</td>
<td>0.330</td>
<td>0.145</td>
<td>–0.516</td>
<td>–0.011</td>
</tr>
<tr>
<td>Media</td>
<td>–0.272</td>
<td>–0.647</td>
<td>–0.297</td>
<td>–0.210</td>
<td>–0.642</td>
<td>–0.365</td>
</tr>
<tr>
<td>Lower</td>
<td>–0.616</td>
<td>–0.968</td>
<td>–0.659</td>
<td>–0.586</td>
<td>–0.745</td>
<td>–0.648</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>East Asia and Pacific</th>
<th>Europe and Central Asia</th>
<th>Latin America and the Caribbean</th>
<th>Middle East and North Africa</th>
<th>South Asia</th>
<th>Sub-Saharan Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>0.954</td>
<td>0.992</td>
<td>0.993</td>
<td>0.998</td>
<td>0.999</td>
<td>0.988</td>
</tr>
<tr>
<td>Media</td>
<td>0.593</td>
<td>0.626</td>
<td>0.867</td>
<td>0.465</td>
<td>0.981</td>
<td>0.855</td>
</tr>
<tr>
<td>Lower</td>
<td>–0.386</td>
<td>–0.754</td>
<td>0.276</td>
<td>–0.244</td>
<td>0.951</td>
<td>–0.340</td>
</tr>
</tbody>
</table>

*Upper panel:* Region stands for the correlation between the weighted average of nominal dollar exchange rates for each region and the OECD weighted average of nominal dollar exchange rates. Higher, media, and lower correspond to the estimated highest, media, and lowest correlation of the nominal dollar exchange rate of individual countries belonging to each region with the OECD weighted average. *Lower panel:* Reported values correspond to the estimated highest, media, and lowest correlations of the nominal dollar exchange rate of an individual country belonging to each region with its regional weighted average.

Source: Author’s calculations based on data from World Development Indicators (World bank 2007b).

denominated in such an index. This proposal was discussed in several seminars with multilateral authorities and private market participants. Multilateral financial authorities were reluctant at the time to pursue this or similar alternatives.\(^{15}\)

However, multilateral development banks could play a much more useful development role in developing local currency markets—particularly in countries in which those markets are currently underdeveloped—if they were willing to play the role of market developers by retaining developing country currency risk on their balance sheets and pooling them globally. Pooling currency risks over a large number of currencies could, in principle, result in significant risk-diversification benefits for any global investor. Estimates presented in table 4.3 show that nominal exchange rates in developing regions are, on average, negatively correlated with a basket of OECD currencies and that there

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\(^{15}\) Apparently, they considered that perfectly matching a part of their loan portfolio with their issuance of such bonds would be quite a cumbersome task and that the appetite of private markets for such a new instrument might not have been as large as suggested by the authors of the proposal.
are wide variations of such correlations for specific countries over the sampling period.\(^{16}\) Thus, OECD investors and multilateral development banks could achieve significant risk-diversification benefits by investing in global baskets of currencies of developing regions.

Alternative estimates indicate the high risk-diversification potential of global pools of assets denominated in different currencies. Below we use two simple and well-known statistical methods suited for this purpose: principal components analysis\(^{17}\) and comovement (average of pairwise correlations) of regional and global baskets of currencies. Table 4.4 shows that, though principal components explain a high proportion of the variance of nominal dollar exchange rates within some regions (Southeast Asia, Sub-Saharan Africa, Latin America), this is much less the case for all emerging markets or for a global basket of currencies that includes those of OECD countries. Further, figure 4.8 (depicting the average of pairwise rolling correlations of regional and global baskets of currencies) suggests that, during some periods, comovement within all regions may be high and that this is much less the case for a global basket of currencies.\(^{18}\) Thus, the benefits of risk diversification are significantly larger over global currency pools than over regional currency pools.

For these reasons, hedge funds and other current foreign investors in domestic currency markets diversify globally, though they normally include only those currencies from developing countries that have well-developed domestic currency markets. And it should not come as a surprise that current initiatives that involve multilateral

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**Table 4.4. Nominal exchange rates variation, principal component analysis**

(Proportion of variance explained by the first and second components)

<table>
<thead>
<tr>
<th>Component</th>
<th>Latin America and the Caribbean</th>
<th>Europe and Central Asia</th>
<th>East Asia and Pacific</th>
<th>Middle East and North Africa</th>
<th>South Asia</th>
<th>Sub-Saharan Africa</th>
<th>Developing countries</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.819</td>
<td>0.689</td>
<td>0.7973</td>
<td>0.56</td>
<td>0.967</td>
<td>0.837</td>
<td>0.6625</td>
<td>0.6342</td>
</tr>
<tr>
<td>2</td>
<td>0.108</td>
<td>0.2483</td>
<td>0.1181</td>
<td>0.218</td>
<td>0.019</td>
<td>0.089</td>
<td>0.2478</td>
<td>0.2574</td>
</tr>
</tbody>
</table>

**Note:** Calculations consist of the proportion of variance explained by the first and second components taking, as a reference, groups of countries in each region.

**Source:** Author’s calculations based on data from *World Development Indicators* (World Bank 2007b).

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16. The lower panel of table 4.3 reports the media and extreme values of individual country correlations with the region’s average nominal exchange rate (versus U.S. dollars). The upper panel does the same with respect to an OECD basket.


18. Plots of the principal components of table 4.4 over time show a similar behavior, reinforcing this conclusion. See the appendix to this study.
development banks (the IFC’s MATCH (Matching Assets through Currency Hedging) program, and the FMO-sponsored TCX (The Currency Exchange)\(^{19}\) are attempting global diversification over an even wider basket of developing country currencies.

The Currency Exchange (TCX), launched in September 2007, is a particularly interesting initiative because it is designed to allow regional development banks and all their clients to share in the benefits of global currency risk diversification. This vehicle would work as a local currency hedge fund as follows: TCX would accept foreign exchange exposures on transactions originated primarily by its customers (for the first three years only by its shareholders) in hard currencies, by offering swaps and forwards to convert them into domestic currencies for the beneficiaries at the same maturities. Originating customers would retain the credit risk, so that TCX would retain only the currency risk, and though it plans to diversify some away through existing derivative markets, it expects to achieve most risk diversification through its

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19. FMO (the Netherlands Development Finance Company) has had experience in managing a €243 million local currency debt fund (SME MASSIF), which invests in local bank debt instruments in 44 currencies and has achieved significant diversification benefits during its 20 years of existence. In launching TCX, it offered a $350 million backstop guarantee in order to achieve an AAA rating since startup. The fund is expected to achieve an AAA rating on a stand-alone basis in a few years.
global pooling. TCX estimates that its global fund of developing country domestic currencies can achieve, on average, a 75 percent risk reduction in comparison with a single currency risk.

Regional development banks and other investors would have guaranteed access for about three to four times their equity investment in TCX (some will join through deeply subordinated debt instruments). TCX expects to be able to offer conversions with no premium over local market interest rates and to help extend prevailing maturities by at least two years (in markets that currently have only short maturities, extensions could be much larger as loans originated by multilateral development banks would keep their initial maturity, although how to price the swaps will certainly be an issue). By April 2008, TCX commitments amounted to around $570 million (most of it in paid in capital and around $170 million in deeply subordinated debt), for a portfolio capacity of more than $2 billion. Committed investors include the African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, FMO, IFU, KFW, NORFUND, and some private banks and investors. The board of the Inter-American Development Bank recently decided to join with $100 million in subordinated debt. As of June 2008, TCX and their committed investors were negotiating the master derivative agreement that would regulate transactions with the fund.

Although of a modest initial size, TCX has the potential to achieve a significant impact in small- and medium-sized countries where local currency markets are small and essentially short-term. So may the IFC’s MATCH initiative, which is also expected to benefit from global currency risk diversification and to focus on the development of “frontier markets.” The World Bank should consider engaging in a similar program.

Another initiative that can have an important effect on the development of domestic currency markets is the World Bank/IFC-sponsored Global Emerging Markets Local Currency Bonds Market (GEMLOC). This is expected to be a $5 billion investment fund that would have a portfolio of sovereign and corporate local currency emerging market bonds. In its initial phase, it will invest only in sovereign debt instruments of 15 major emerging markets that already have rather developed local currency markets. Thus, it will not initially have a significant developmental impact because there are already several private funds channeling foreign investor funds into these same markets. The potential developmental impact would arise later, when GEMLOC broadens its portfolio to sovereign and corporate debt instruments of less-developed local currency markets. This process is expected to be accompanied by substantial World Bank/IFC technical assistance flows, financed from GEMLOC.

20. Even more, GEMLOC will initially have to attract investors that prefer a new fund sponsored by the World Bank and IFC to existing emerging market funds (or global funds) that also invest in existing emerging market local currency debt instruments as an investment channel. Those are likely to be official and institutional investors (such as the Sovereign Welfare Funds) and new investors for which World Bank sponsorship is a valuable seal of support.
earnings, to help these markets achieve improved investability through required market infrastructure, tax, and regulatory reforms (a developmental concept similar to that behind the Asian Bond Fund initiative).

Furthermore, GEMLOC will develop a benchmark index for these instruments, based precisely on their relative investability. The final goal is to help convert developing country local currency sovereign and corporate debt into a mature asset class for foreign investors. As GEMLOC advertises, the numbers speak for themselves for the potential development of this asset class: while today around 70 percent of developing country bonds are in local currencies, global funds hold only about 10 percent of their developing country portfolios in such currencies. To a significant extent, this maybe a reflection of the fact that only 2 percent of this asset class is currently benchmarked, which suggests the potential importance of combining the development of a benchmark index with technical assistance flows and an investment channel. A few decades ago, the IFC launched a similar idea for emerging market equities, which helped them develop into a significant asset class.