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Editor's Note

Understanding the determinants of growth remains a basic and important challenge for macroeconomists. The first research summary in this issue surveys the extensive body of IMF research on the *sources of economic growth*.

One of the main features of the process of "globalization" has been the recent rapid increase in capital flows across national borders. This issue's second research summary examines research done at the IMF on the determinants of the magnitude and composition of *capital flows*.

The country study in this issue is on *Poland*—one of the classic examples of a transition economy that undertook "big bang" reforms and experienced strong growth rates in the early years of transition. Recent IMF research on Poland has focused on the difficult medium-term policy challenges that this country faces as its growth has begun to stagnate and unemployment has risen to high levels.

The special topic article summarizes the June 2002 *Global Financial Stability Report*. Also included in this issue is a summary of an IMF pre-conference on *global linkages*.

— Eswar Prasad

Research Summaries

Sources of Economic Growth

Abdel Senhadji

In the vast empirical growth literature, research on the sources of economic growth, based on the growth accounting framework, has received particular attention since the widely publicized papers of Alwyn Young and Paul Krugman in the mid-1990s.[1] *These authors generated a heated debate on the sources of real GDP growth in East Asian countries, by asserting that the "Asian Miracle" was a myth because the engine that drove the spectacular growth in the region came essentially from capital accumulation and not growth in total factor productivity (TFP). Why does the source of growth matter? The answer hinges on the important assumption of diminishing returns in physical capital in the neoclassical growth mode, which implies that capital accumulation cannot sustain long-term growth while TFP can. Thus, the source of growth is crucial to the long-term outlook of a country. This article provides a brief overview of recent IMF research on sources of growth using the growth accounting framework.*

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Capital Flows

Prakash Loungani[1]

The waxing and waning of capital flows has been a source of economic drama over the last decade. The movement of capital from the developed countries to others ("North-South" flows) accelerated in the first half of the 1990s but has since been subject to frequent reversals, in the aftermath of many high-profile financial crises. Against this background, recent IMF research provides evidence on two broad questions: (1) What drives the level, composition, and regional allocation of capital flows?, and (2) What impact do capital flows have on investment and growth in host countries? These questions are often addressed using new measures of capital market openness and integration; the development of these measures has been another area of intensive IMF research.

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Sources of Economic Growth *(continued from page 1)*

Since the mid-1990s, there has been an abundant literature extending Young's growth accounting exercise to more countries and/or refining his methodology. The growth accounting framework was first presented in Solow (1957).[2] It is based on an aggregate production function and decomposes real GDP growth in terms of contributions from factor inputs and total factor productivity (TFP). Therefore, the results of the growth accounting exercise depend on the specification of the production function.

Several IMF studies have contributed to the debate on sources of growth in East Asia. Using internationally comparable data and factor shares, based on the industrial structure, and the level of development of economies, Sarel (1997) finds, contrary to Young, that the TFP growth has been impressive in Singapore, Thailand, and Malaysia.[3] These results are corroborated by Crafts (1999), using different data sets, and Iwata, Khan, and Murao (2002), using nonparametric methods for estimating a very general production function.[4]

Numerous other studies have focused on other regions. Hu and Khan (1997) find that the contribution of TFP in China's growth has been increasing, especially during the reform period.[5] El-Erian and Helbling (1997) argue that growth in the Arab countries region was overly reliant on volatile external sources of funding and TFP growth was too low. The importance of market-friendly institutions are emphasized, in Dhonte, Bhattacharya, Yousef (2000), in absorbing the demographic explosion in the Middle East and sustaining adequate growth in GDP per capita.[6] Ghura (1997) finds empirical evidence of increasing returns to scale for the aggregate production function for Cameroon stemming from positive externalities in physical and human capital.[7] Hugo (1999) shows that despite a large investment-GDP ratio in Honduras, growth has been hampered by low TFP due to deficient levels of human capital and inadequate composition of investment.[8] According to De Broek and Koen (2000), the severe contractions in Russia, the Baltics and the other countries of the former Soviet Union reflected not only collapsing investment and shrinking employment but also sharp declines in productivity because of the transition to a market economy.[9] Even after correcting for factor utilization during the transition process, Dolinskaya (2001) finds a similar result for Russia.[10] Cerisola and Chan-Lau (2000) find that investment-specific technical change is the major underlying cause of the pickup in productivity in Canada and narrowing of the productivity gap with the United States.[11] Calderón (2001) finds that the differential in productivity growth across OECD countries could be accounted for, to a large extent, by measurement errors.[12] Cardarelli (2002) shows that most of the divergence in income per capita between Australia and New Zealand is the result of lower capital accumulation, and to a lesser extent, lower TFP growth in New Zealand.[13]

While the basic growth accounting exercise which decomposes real GDP growth into contributions from factor inputs and TFP is a useful initial exercise, it does not, however, explain why certain countries enjoy faster TFP growth than others. Some of the empirical literature on sources of growth has explored the determinants of TFP. Bayoumi, Coe, and Helpman (1996) show that a country can raise its TFP not only by investing in research and development (R&D) but also by trading with countries with high levels of R&D.[14] Similarly, Coe, Helpman, and Hoffmaister (1997) find empirical evidence to support that developing countries could boost their TFP growth through R&D spillovers by increasing trade with industrial countries and, in particular, by importing intermediate products and capital equipment embodying foreign knowledge.[15] Hakura and Jaumotte (1999) find that this spillover is stronger through intra- rather than inter-industry trade because countries are likely to absorb foreign technologies more easily if they produce products similar to the imported goods.[16] Senhadji (2000), using econometric estimates of factor shares for a large sample of countries, finds that initial conditions, institutional factors, and macroeconomic policy variables explain most of the cross-country differences in TFP levels.[17] Salgado (2002) finds that the effects of structural reforms on TFP in the OECD countries are weakly positive, or even negative, in the short run but significantly positive in the long run.[18] Jonsson and Subramanian (2001) find econometric evidence for a positive relationship between trade and TFP growth both over time and across sectors in South Africa.[19]

The growth accounting framework has also been used to compute potential output. Jonsson (2001) stresses the importance of TFP for sustaining growth in Thailand and recommends measures for stimulating TFP growth.[20] Ma (2001) argues that higher TFP growth from structural reforms is also essential in Korea in order to sustain growth close to historical levels.[21] Senhadji (2002) develops a framework based on growth accounting for analyzing alternative scenarios of poverty reduction in Bangladesh.

More recently, the growth accounting methodology has been used to analyze the TFP acceleration in some countries, particularly in the United States, which enjoyed strong growth with low inflation and robust labor productivity growth during the second half of the 1990s. The acceleration in labor productivity in the United States—which coincided with increasing production and use of information and communication technologies (ICT)—has spurred a growing empirical literature aimed at identifying the sources of this acceleration, its longevity, and the potential for diffusion across sectors and across countries.

While the large number of empirical studies for the United States suggests that there is a positive link between investment in ICT and TFP growth, there is, however, no clear evidence that the acceleration is permanent. De Masi (2000) provides a survey of this literature.[22] Acceleration of TFP and labor productivity growth in the second half of the 1990s has been more pronounced in the United States than in Europe, partly because the ICT sector share in GDP is generally lower in European countries. De Masi, Estevâo, and Kodres (2001) provide an excellent summary of the evidence for Canada, France, Germany, the United Kingdom and the United States.[23] In Finland, where the ICT sector plays a dominant role, Wagner (2001) documents a significant acceleration of TFP and a substantial contribution of the ICT sector to GDP growth.[24] Finally, Cardarelli (2001) shows that the rapid accumulation of ICT capital over the last two decades has played a significant role in explaining the impressive acceleration in productivity in Australia since 1995.

[1]Paul Krugman, "The Myth of Asia's Miracle," *Foreign Affairs*, Vol. 73 (Nov–Dec 1994), pp. 62–78; Alwyn Young, " The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience," *Quarterly Journal of Economics*, Vol. 110 (August), pp. 641–80.

[2]Robert Solow, "Technical Change and the Aggregate Production Function," *Review of Economics and Statistics*, Vol. 39 (August 1957), pp. 312–20.

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Details contents of IMF Occasional Papers are available at the **Research at the IMF** website: *http://www.imf.org/research.*

[3]Michael Sarel, "Growth and Productivity in ASEAN countries," IMF Working Paper 97/97, 1997.

[4]Nicholas Crafts, "East Asian Growth Before and After the Crisis," *IMF Staff Papers*, Vol. 46, No. 2 (1999), pp.139–66; Shigeru Iwata, Mohsin S. Khan, and Hiroshi Murao, "Sources of Economic Growth in East Asia: A Nonparametric Assessment," IMF Working Paper 02/13, 2002.

[5]Zuliu Hu and Mohsin S. Khan, "Why Is China Growing So Fast?" *IMF Staff Papers*, Vol. 44 (March 1997), pp. 103–31.

[6]Amer Bisat, Mohamed El-Erian, and Thomas Helbling, "Growth, Investment, and Saving in the Arab Countries," IMF Working Paper 97/85, 1997; Pierre Dhonte, Rina Bhattacharya, and Tarik Yousef, "Demographic Transition in the Middle East: Implications for Growth, Employment, and Housing," IMF Working Paper 00/41, 2000.

[7]Dhaneshwar Ghura, "Private Investment and Endogenous Growth—Evidence from Cameroon," IMF Working Paper 97/165, 1997.

[8] Hugo Juan-Ramon, "Honduras' Growth Performance During 1970¥97," IMF Policy Discussion Paper 99/1, 1999.

[9]Mark De Broek and Vincent Koen, "The Great Contractions in Russia, the Baltics and the Other Countries of the Former Soviet Union: A View from the Supply Side," IMF Working Paper 00/32, 2000.

[10]Irena Dolinskaya, "Explaining Russia's Output Collapse: Aggregate Sources and Regional Evidence," IMF Working Paper 01/16, 2001.

[11]Martin Cerisola and Chan-Lau Jorge, "Tales from Two Neighbors: Productivity Growth in Canada and the United States," IMF Working Paper 00/169, 2000.

[12]César Calderón, "Productivity in the OECD Countries: A Critical Appraisal of the Evidence," IMF Working Paper 01/89, 2001.

[13]Roberto Cardarelli, "An Exploration into the Income Divergence Between New Zealand and Australia," in *New Zealand: Selected Issues*, IMF Staff Country Report 02/02, 2002.

[14]Tamim Bayoumi, David Coe, and Elhanan Helpman "R&D Spillovers and Global Growth," IMF Working Paper 96/47, 1996. Also published in *Journal of International Economics*, Vol. 47 (April), 1999.

[15]David Coe, Elhanan Helpman, and Alexander Hoffmaister, "North-South R&D Spillovers," *The Economic Journal*, Vol. 107 (January 1997), pp. 134–49.

[16]Dalia Hakura and Florence Jaumotte, "The Role of Inter- and Intra-industry Trade for Technology Diffusion," IMF Working Paper 99/58, 1999.

[17]Abdelhak Senhadji, "Sources of Economic Growth: An Extensive Growth Exercise," *IMF Staff Papers*, Vol. 47, No. 1 (2000), pp. 129¥57.

[18]Ranil Salgado, "The Impact of Structural Reforms on Productivity Growth in Industrial Countries," IMF Working Paper 02/10, 2002.

[19]Gunnar Jonsson and Arvind Subramanian, "Dynamic Gains from Trade: Evidence from South Africa," *IMF Staff Papers*, Vol. 48, No. 1 (2001), pp. 197–224.

[20]Gunnar Jonsson, "Growth Accounting and the Medium-Term Outlook in Thailand," in *Thailand: Selected Issues*, IMF Staff Country Report 01/07, 2001.

[21]Henry Ma, "Potential Output, the Output Gap, and Inflation in Korea," in *Republic of Korea: Selected Issues*, IMF Staff Country Report 01/01, 2001.

[22]Paula De Masi, " Does the Pickup in Productivity Growth Mean There Is a 'New Economy'?" in *The United* States: *Selected Issues*, IMF Staff Country Report 00/6, 2000.

[23]Paula De Masi, Marcello Estevâo, and Laura Kodres, "Who Has a New Economy," *Finance and Development*, Vol. 38 (June), 2001. For detailed results, see Marcello Estevâo and Joaquim Levy, "The New Economy in France: Developments and Prospects," in *France: Selected Issues*, IMF Staff Country Report 00/10, 2000; Laura Kodres, "Prospects for the 'New Economy' in Germany," in *Germany: Selected Issues*, IMF Staff Country Report 00/10, 2000; and Laura Kodres, "The 'New Economy' in the United Kingdom," in *United Kingdom: Selected Issues*, IMF Staff Country Report 01/02, 2001.

[24]Nancy Wagner, "A Note on Finland's *New Economy*," in *Finland: Selected Issues*, IMF Staff Country Report 01/11, 2001.

Capital Flows *(continued from page 1)*

For both developing and industrial countries, international gross capital flows grew markedly during the 1990s. In the industrial countries, gross capital flows as a percent of GDP are presently about 15 percent of GDP, as compared with an average of about 10 percent in the 1980s; the rise in cross-border capital flows among the members of the European Union is a significant factor behind this rise. For the developing countries as a whole, gross capital flows—after a drop in the 1980s—are now about 5 percent of GDP, roughly the same level as in the late 1970s.[2]

In addition to changes in the level of overall capital flows, the 1990s have accelerated an ongoing change in the composition of capital flows: the share of bank loans has declined and that of foreign direct investment (FDI) and portfolio investment has increased. According to Mody and Murshid (2002), in the period 1995–98, FDI accounted for 55 percent of private long-term capital flows to developing countries and bank loans for 15 percent. The remaining 30 percent was accounted for by portfolio flows; while higher than it was two decades ago, this figure reflects a scaling back from a share of nearly 40 percent of total flows in the first-half of the 1990s.[3]

Supplementing the data on capital flows, recent IMF work has developed new measures of capital market openness (or restrictions). Lane and Milesi-Ferretti (2001) construct estimates of gross stocks of foreign assets and liabilities as a percentage of GDP, and show that these stocks increased rapidly in both developing and industrialized countries over the 1990s. These stocks can be used as a measure of financial openness, analogous to measuring financial sector depth, using the stock of credit to the private sector, as a percent of GDP. As it is based on the accumulation of *stocks*, this new measure provides a more gradual and backward-looking view of changes in openness and is less influenced by the reversals of flows that often occur in the course of financial crises.[4]

In contrast, Edison and Warnock (2001) propose a measure that is available at a high frequency, monthly, but is narrower in coverage—it measures only stock market liberalizations. Their proposed measure of openness is the proportion of a country's total stock market capitalization that is available to foreign investors. This measure, available for 29 emerging market countries, this measure shows substantial opening up in many Asian countries during the 1990s; Latin American countries opened up to foreign equity investment earlier and more extensively than the Asian countries.[5]

What drives cross-border capital flows?[6] Much of the literature on North-South flows has found it useful to dichotomize the driving forces into push and pull factors. The former are factors such as low interest rates (or asset returns) in industrialized countries, which serve to push capital out of these countries in search of higher returns elsewhere. The pull factors are the ones that serve to attract capital into particular host countries—low wages, tax incentives, level of financial market development, protection of property rights, and the like. Mody and Murshid suggest that the "flush of capital inflows in the 1990s was more a push into developing countries rather than a pull based on unmet demand for investment financing."[7]

The push/pull framework has also been used to analyze portfolio equity flows. Edison and Warnock (2002) find that a decrease in U.S. interest rates or in U.S. industrial production pushes equity flows into emerging markets, with the effect stronger on flows to Latin America than on flows to Asia. The high volatility of portfolio flows has also prompted attempts to see if they are better explained on the basis of herding behavior and momentum strategies. Borensztein and Gelos (forthcoming) report only moderate evidence for such behavior among emerging market mutual funds. Gelos and Wei (2002) find that herding among international equity funds is less pronounced in countries that have more transparent macroeconomic policies and corporate sectors.[8]

Why does capital flow to some developing countries and emerging markets and not to others? And what determines what type of capital flow a country will attract?[9] In a study of transition economies, Garibaldi, Mora, Sahay, and Zettelmeyer (2002) confirm the general finding that the quality of institutions and governance is an important factor in determining the level, composition, and regional allocation of capital inflows. Specifically, they find that FDI has been the main source of inflows to transition economies, and its allocation across these economies can be explained well by a standard set of economic fundamentals such as macroeconomic stability, level of structural reforms, and such. Portfolio investment has been concentrated in a handful of countries, which, relative to other transition economies, strongly protect property rights and have more developed securities markets.[10]

In a similar vein, Lane and Milesi-Ferretti (2000) document that for emerging markets the stocks of FDI are larger in countries that are more open to trade, that undertake more privatization, and that have more natural resources, while portfolio equity stocks are larger in countries with more developed financial markets. Wei and Wu (2001) find that in countries perceived to have high levels of corruption, the composition of capital flows is biased away from FDI toward more fickle flows such as international bank loans. In the early 1990s, capital inflows to Asia were primarily foreign direct investment (FDI). Montiel and Reinhart (1999) show that differences between Latin America and Asia in the composition of capital flows were eroding in the years leading up to the Asian crisis; specifically, sterilized intervention was skewing the composition of Asian flows toward short maturities.[11]

Africa lags behind other regions in attracting FDI. While there are some obvious explanations for this, such as a high incidence of conflict in some countries, Reinhart and Rogoff (2002) examine the role that monetary and exchange rate policy may also have played in explaining the paucity of FDI. They suggest that the high levels of parallel market premia observed in many African countries may be symptomatic of the more general governance problems that deter FDI. Basu and Srinivasan (2002) document that a few African countries have overcome the odds through sustained macroeconomic and structural reforms.[12]

What impact do capital flows have on growth? The evidence is decidedly mixed and appears to depend, somewhat, on the particular flow studied (or the measure of capital market openness used), the sample period, the set of countries, and whether cross-section or panel data is used. Recent IMF work provides an illustration of mixed findings. In a much-cited study, Borensztein, De Gregorio, and Lee (1998) find that FDI increases economic growth when the level of education in the host country—a measure of its absorptive capacity—is high. Mody and Murshid find that capital inflows boost domestic investment almost one-to-one, but the strength of this relationship appears to be weakening over time. In contrast, Edison, Levine, Ricci, and Slok (forthcoming), using the new measures of openness described above, do not find evidence of a robust link between international financial integration and economic growth.[13]

[1]I thank Hongwei Bian for superb research assistance and several colleagues for comments on an earlier draft.

[2]IMF, *World Economic Outlook, October 2001*, World Economic and Financial Surveys (Washington), pp. 145–73.

[3]Ashoka Mody and Antu Murshid, “Growing Up with Capital Flows,” IMF Working Paper 02/75, 2002. For more recent developments, see IMF, *Global Financial Stability Report: Market Developments and Issues, June 2002*, World Economic and Financial Surveys (Washington).

[4]Philip Lane and Gian Maria Milesi-Ferretti, “The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Countries,” *Journal of International Economics*, Vol. 55 (December 2002), pp. 263–94. Their subsequent work, “Long-Term Capital Movements,” in *NBER Macroeconomics Annual 2001*, Vol. 16 (Cambridge, MA: MIT Press, 2002) [also IMF Working Paper No. 01/107, 2001], identifies the long-term factors driving the evolution of countries’ net external positions.

[5]Hali Edison and Francis Warnock, “A Simple Measure of the Intensity of Capital Controls,” IMF Working Paper No. 01/180, 2001.

[6]For a recent survey of the literature on what drives FDI, see Ewe-Ghee Lim, “Determinants of, and the Relation Between, Foreign Direct Investment and Growth: A Summary of the Recent Literature,” IMF Working Paper No. 01/175, 2001.

[7]The push factor Mody and Murshid use is total capital flows to developing countries rather than the industrialized country interest rates used in earlier work. The assumption is that shocks to the supply of capital are correlated across countries and that no one country is large enough to have a significant influence on total flows of capital. Ashoka Mody and Mark Taylor, “International Capital Crunches: The Time-Varying Role of Informational Asymmetries,: IMF Working Paper No. 02/43, departs from the push/pull framework in favor of identification of demand and supply curves in an disequilibrium framework. Mody and Taylor find that information asymmetries, and hence variables, such as risk premia on junk bonds, are crucial in determining the supply of capital to emerging markets.

[8]Hali Edison and Francis Warnock, "Cross-Border Listings, Capital Controls, and Equity Flows to Emerging Markets," forthcoming IMF Working Paper. Eduardo Borensztein and R. Gaston Gelos, "A Panic-Prone Pack? The Behavior of Emerging Market Mutual Funds," forthcoming, *IMF Staff Papers*. R. Gaston Gelos and Shang-Jin Wei, "Transparency and International Investor Behavior," forthcoming IMF Working Paper, 2002.

[9]For more on the determinants of the composition of capital inflows see Mark Carlson and Leonardo Hernandez, "Determinants and Repercussions of the Composition of Capital Inflows," IMF Working Paper No. 02/86, 2002.

[10]Pietro Garibaldi, Nada Mora, Ratna Sahay, and Jeromin Zettelmeyer, "What Moves Capital to Transition Economies," *IMF Staff Papers*, Vol. 48, Special Issue (2001). See also Leslie Lipschitz, Timothy Lane, and Alexandros Mourmouras, "Capital Flows to Transition Economies: Master or Servant?" IMF Working Paper 02/11, 2002. They conclude that capital flows can be a useful servant by fostering development but also a cruel master by rendering economies more vulnerable to global capital market conditions.

[11]Philip Lane and Gian Maria Milesi-Ferretti, "External Capital Structure—Theory and Evidence," IMF Working Paper No. 00/152, 2000; also published in *The World's New Financial Landscape: Challenges for Economic Policies*, ed. by Horst Siebert (Berlin-Heidelberg: Springer Verlag, 2001). Shang-Jin Wei and Yi Wu, "Negative Alchemy?: Corruption, Composition of Capital Flows and Currency Crisis," NBER Working Paper No. 8187, 2001. Peter Montiel and Carmen Reinhart, "Do Capital Controls and Macroeconomics Policies Influence the Volume and Composition of Capital Flows?: Evidence from the 1990s," *Journal of International Money and Finance*, Vol. 18, No. 4, pp. 619–35.

[12]Carmen Reinhart and Kenneth Rogoff, "Foreign Direct Investment to Africa: The Role of Price Stability and Currency Instability," paper presented at the Annual Bank Conference on Development Economics, April 2002. Anupam Basu and Krishna Srinivasan, "Foreign Direct Investment in Africa—Some Case Studies, "IMF Working Paper No, 02/61, 2002.

[13]Eduardo Borensztein, Jose de Gregorio, and Jong-Wha Lee, "How Does Foreign Investment Affect Growth?" *Journal of International Economics*, Vol. 45 (June), pp. 115–35. Hali Edison, Ross Levine, Luca Ricci, and Torsten Slok, "International Financial Integration and Economic Growth," forthcoming, *Journal of International Money and Finance.* See also Hali Edison, Michael Klein, Luca Ricci and Torsten Slok, "Capital Account Liberalization and Economic Performance: Survey and Synthesis," forthcoming IMF Working Paper, and Chapter 3 in the forthcoming *World Economic Outlook, October 2002* (Washington: International Monetary Fund).

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Country Study

Poland

Abebe Aemro Selassie

The Polish economy is emerging from a rough patch. After a period of strong growth—at about 5¼ percent in the late 1990s, the highest in east and central Europe—the last couple of years have been more disappointing. Reflecting the slowdown in Germany, exogenous shocks, and tight macroeconomic policies, growth in 2001, and for much of 2002, has been on the order of 1 percent. The tightening of policies in mid-2000 was in response to signs of overheating, with inflation and private consumption growth accelerating rapidly, and a burgeoning current account deficit starting in late 1999. Recent IMF research on Poland has focused accordingly on inflation dynamics and current account sustainability issues. There has also been extensive work on labor market issues and other structural reforms. This article provides an overview of recent IMF research on Poland.

With the attainment of broad macroeconomic stability, Poland proceeded to adopt an inflation targeting (IT) framework in late–1998. Whether inflation dynamics and the monetary transmission mechanism would allow the successful implementation of such a framework has been the subject of a number of studies.[1] Christoffersen and Wescott's (1999) study confirmed the continued existence of considerable volatility in the inflation process late in the transition process. Previous research (Griffiths and Pujol, 1996) had pointed to the skewed distribution of price increases as being a source of inflation persistence.[2] In the early transition years, administrative price hikes and large relative prices swings contributed to non-normality. More recently, this pattern is attributable to the large weight of foodstuffs (which tend to be more volatile) in the CPI basket and excise tax changes.

Beyond contributing to inflation persistence, non-normality makes modeling headline inflation extremely difficult. This is problematic because an important prerequisite for a successful IT framework is the ability to produce inflation forecasts and, indeed, have some understanding of how changes in policy instruments affect inflation (Debelle and others, 1997).[3] Consistent with the literature, Christoffersen and Wescott sought to establish a link between policy instruments and a number of measures of core inflation. By and large, their efforts to establish this link were not successful, partly because of the monotonic decline in both inflation and short-term policy interest rates over the sample period (1992–98). Doyle (2001) sought to model inflation over a longer sample period (1992–2000), but concludes that the challenge to identify a parsimonious representation of inflation in Poland remains.

These findings have influenced IMF staff advice in a number of ways. In particular, the absence of a sufficiently robust understanding of the link between policy rates and inflation, as well as volatility of the headline inflation rate, has led staff to argue for wider bands around a central inflation target in Poland, placing greater emphasis on core measures of inflation and lengthening the target horizon. Interestingly, Mourmouras (2002) concludes that, relative to a peer group of eight emerging market inflation targeters, Poland's inflation targeting performance has not been unfavorable.[4] Despite missing all three of its annual targets to date (overshooting them in 1999 and 2000, and undershooting in 2001), Poland was able to disinflate successfully.

Another recurring theme on research on Poland in recent years has been the sustainability of the large current account deficit that emerged in the late 1990s. Following a sharp decline early in the transition period, non-government savings rebounded strongly, reaching 22 percent of GDP in 1998. Their subsequent decline from this high level, coupled with continued rapid investment growth, was behind the widening of the current account deficit to about 8 percent of GDP in early 2000. Jiang's (2000) study concludes that the likely path for savings in the comings years will be highly uncertain, with most of the factors that influence savings expected to offset one another.[5] Rising income levels, for example, will likely raise savings, but expectations of higher permanent incomes could also likely lead to higher consumption in the short-run. Jiang's empirical results confirm that both these effects are important, leading him to conclude that prudence dictates that the government internalize these uncertainties in determining its path for fiscal consolidation.

In a somewhat different vein, Daseking (2001) considers how large a current account deficit Poland might be able to sustain.[6] Using a simple growth accounting framework, the author explores the magnitude of the current account deficits that Poland would incur if it were to achieve convergence to EU income levels. Daseking concludes that current account deficits in the range of 4–6 percent are feasible, and would permit convergence to EU income levels in a reasonable time frame. From a risk perspective, Poland's external vulnerability indicators are found to be relatively robust, including, because it maintains a floating exchange regime, its high levels of reserves and modest external indebtedness.

Two other studies have focused on the flip side of current account sustainability—the composition and sustainability of capital flows.[7] This is motivated by the fact that at least part of the increase in the current account deficit was an endogenous response to higher capital inflows (mostly in the form of FDI, Wagner, 1999). Selassie's (2002) study finds that the impending end of large-scale privatization is unlikely to lead to a decline in FDI. Because Poland's net foreign liabilities are relatively low compared to similar emerging market countries, there is reason to expect a higher level of inflows in all forms of capital in the coming years, particularly in light of its large market size. Furthermore, the study notes that the composition of capital inflows may not matter much—receiving capital only, or largely in the form of FDI, could reflect, among other things, poorly functioning credit markets.

Recent IMF research has also focused on developments in the labor market, an issue of increasing importance as the unemployment rate has risen back to the high teens. Selassie (2001) looks at the impact of Poland's uniform national minimum on wage dispersion and unemployment.[8] The study finds that this floor on wages serves to compress the lower end of the pay scale, and may partly explain the high level of youth unemployment as well as the large regional disparity in unemployment rates. In a series of papers, Keane and Prasad (2001, 2002a, 2002b) have challenged the conventional wisdom that the transition process has led to a substantial increase in inequality.[9] In the case of Poland, the authors argue that earnings dispersion has indeed increased since the start of the transition, but find this to have been offset by higher government transfers, leaving overall income and consumption inequality broadly unchanged between 1988 and 1997. This high level of government transfers and subsidies has been documented in a couple of studies (Daseking, 2000; and Christou and Daseking, 2002).[10] These show that, even by Western European standards, transfers to households in Poland are very high and could partly explain the high level of non-participation in the labor force.

Other research on Poland has focused on the factors behind the remarkable growth spurt that followed the sizable contraction of the early transition years. De Broeck and Koen (2000) find that, in the early years, improved resource utilization was the paramount determinant of growth, with factor accumulation partly induced by FDI's gaining importance later in the 1990s. [11] The authors also note that manufacturing was the main engine of growth, in contrast to the widespread perception that overindustrialization under planning would imply that services would be the main growth area.

[1]Peter Christoffersen and Robert Wescott, "Is Poland Ready for Inflation Targeting?" IMF Working Paper 99/41, 1999; Robert Wescott, "Inflation Targeting in Poland: Linkages Between Monetary and Policy Instruments and Inflation," in *Republic of Poland: Selected Issues*, IMF Staff Country Report No. 99/32, 1999; Peter Doyle, "Modeling Inflation in Poland" (unpublished; Washington: IMF), 2001.

[2]Thierry Pujol and Mark Griffiths, "Moderate Inflation in Poland: A Real Story," IMF Working Paper 96/57, 1996.

[3]Guy Debelle, Paul Masson, and Miguel Savastano, *Inflation Targeting as a Framework for Monetary Policy*, IMF Economic Issues, No. 15, 1998.

[4]Alexandros Mourmouras, "Poland's Inflation Targeting Performance: A Peer Group Perspective," in *Republic of Poland: Selected Issues and Statistical Appendix*, IMF Staff Country Report No. 02/128, 2002.

[5]Gourong Jiang, "Prospects for Private Saving in Poland" in *Repulic of Poland: Selected Issues*, IMF Staff Country Report No. 00/60, 2000.

[6]Christina Daseking, "How Large Should Poland's Current Account Be?" (unpublished; Washington: IMF).

[7]Nancy Wagner, "Capital Flows to Poland: A Medium-Term Perspective" in *Republic of Poland: Selected Issues*, IMF Staff Country Report No. 99/32, 1999; Abebe Aemro Selassie, "Whither Capital Flows After Privatization" in *Republic of Poland: Selected Issues*, IMF Staff Country Report No. 02/128, 2002.

[8]Abebe Aemro Selassie, "Unemployment, Wage Dispersion and the Minimum Wage in Poland: Some Evidence from Micro Data," (unpublished; Washington: IMF).

[9]Michael Keane and Eswar Prasad, "Consumption and Income Inequality in Poland During the Transition to a Market Economy: Poland, 1985–1992," *IMF Staff Papers: IMF Annual Research Conference*, Vol. 47, Special Issue (2001), pp. 121–54; idem, "Inequality, Transfers and Growth: New Evidence from the Economic Transition in Poland" *Review of Economics and Statistics*, Vol. 84 (May 2002), pp. 324–41*; idem, "Changes in the Structure of Earnings During the Polish Transition," forthcoming IMF Working Paper*.

[10]Christina Daseking, "Public Expenditure Reform in Poland" in *Republic of Poland: Selected Issues*, IMF Staff Country Report No. 00/60; Costas Christou and Christina Daseking, "Balancing Fiscal Priorities" in *Into the EU: Policy Frameworks in Central Europe*, R. A. Feldman and C. M. Watson, editors (Washington: International Monetary Fund, 2002).

[11]Mark De Broeck and Vincent Koen, "The Soaring Eagle: Anatomy of the Polish Take-Off in the 1990s," IMF Working Paper 00/6, 2000.

Global Linkages Pre-Conference

Summary by Robin Brooks, Kristin Forbes, and Ashoka Mody

On January 30–31, 2003, the IMF will host a Conference on Global Linkages.* *The main purpose of the conference is to assess empirically how real and financial linkages across countries have changed in recent years and what implications these changes have for policymakers in developed and emerging markets. In preparation for that conference, prospective authors and other experts in the field attended a pre-conference in Washington, D.C., on April 26, 2002. Authors made short presentations of their research proposals and preliminary results and participants discussed suggestions for the work in progress. This article summarizes the papers presented at the pre-conference, describes the substantive and methodological issues raised, and concludes by noting some goals of the conference.*

The papers presented at the Global Linkages Pre-Conference addressed one of the following four topics:

- trends in comovements across national stock markets,
- contagion spillovers across financial markets,
- rise in comovement of real variables across countries, and
- changing importance of financial and real linkages.

Several presenters proposed studying the sources for the *comovement across and within national equity markets*. **Andrew Karolyi** (Ohio State University, Fisher College of Business) plans to use a new database on American depository receipts (ADRs). ADRs are a mechanism by which companies in emerging markets can raise risk capital in the United States. Karolyi will explore whether the accelerating trend among firms in emerging markets to issue ADRs is an important driver underlying the rise in correlations *across* equity markets. **Randall Morck** (University of Alberta, Business School) proposes to examine how the degree of comovement of individual stocks *within* an emerging economy has changed over time and to what extent these changes can be related to changes in emerging economies' institutional environments and in the strengthening of their linkages to the global economy. He finds that the comovement of individual stock returns declines as an economy develops stronger links with the world economy or develops sounder financial, legal, and economic institutions. **William Goetzman** (Yale University, School of Management), in a joint project with **Geert Rouwenhorst** and **Lingfeng Li** (both also of Yale University), will examine the correlation structure of the major world equity markets over the past 150 years. First results show that correlations have varied considerably through time and have been highest during periods of economic and financial integration, such as the late nineteenth and twentieth centuries.

Some presenters focused on *contagion spillovers in financial markets*. **Graciela Kaminsky** (George Washington University) and **Carmen Reinhart** (IMF) propose investigating the spread of market turbulence around the world. They reported on new indices to measure "weak" and "strong" global linkages at times of turbulence and evaluated the effects of turmoil in three crisis-prone emerging markets: Brazil, Russia, and Thailand. Preliminary results show that turbulence in those countries spreads globally mainly when the turbulence affects asset markets in financial centers. **René Stulz** (Ohio State University, Fisher College of Business) plans to explain the determinants of daily net equity flows for nine emerging markets. Preliminary results show that these flows increase with stock returns in the host country and with stock returns in other countries, especially the United States. **Hali Edison** (IMF) and **Frank Warnock** (Federal Reserve Board) plan to explore the determinants of U.S. investors' holdings of emerging market equities, using new security-level data that includes information for 1,779 firms from the 1994 and 1997 Benchmark Survey of U.S. Holdings of Foreign Securities. They plan to explain investor's holdings using variables such as firm-level financial data, firm-level investable weight from EMDB, dummy variables for cross-listings and inclusion in MSCI indexes.

Another topic was the determinants of the *rise in comovement in real variables across countries*. **Ayhan Kose** (IMF) and **Christopher Otrok** (Department of Economics, University of Virginia), using a dynamic latent factor model, will assess the relative importance of global and country-specific components underlying the main macroeconomic aggregates across the G-7 countries. Using this decomposition, they plan to examine the channels through which business cycles are transmitted across countries. **Jean Imbs** (London Business School) is similarly interested in explaining the international synchronization of aggregate activity and proposes quantifying the role of sectoral specialization patterns. His paper will use the information contained in the cross section of bilateral output correlations, borrowing from the recent literature on the transmission of financial crises across countries.

Finally, two papers will address the changing importance over time of *real and financial linkages across countries*. **Kristin Forbes** (MIT, Sloan School of Management) and **Menzie Chinn** (University of California, Santa Cruz) propose decomposing cross-country correlations in different asset markets (equities, bonds, and exchange rates) into specific trade and financial linkages. Their analysis will measure two types of trade linkages: bilateral trade flows and competition within specific industries. Financial linkages will be decomposed into bank lending and portfolio flows across countries. **Robin Brooks** (IMF) and **Marco Del Negro** (Federal Reserve Bank of Atlanta) propose exploring if the recent rise in comovement across national stock markets can

*Organizing committee: Robin Brooks, Kristin Forbes, and Ashoka Mody.

be explained in terms of a rise in real integration at the firm level (through cross-border mergers and international sales), using balance sheet and financial data for companies in 40 developed and emerging markets. First results show that, consistent with similar evidence for international stock returns, the ability of country-specific shocks to explain international variations in asset and sales growth and the return on assets fell during the late 1990s. They argue that this evidence is consistent with the notion that real integration is partly driving the rise in stock market correlation.

Substantive and Methodological Issues Raised

The range of topics covered in the different proposals shows the complex nature of global integration. The diverse forces driving increased integration include not just increased trade and capital flows between countries, but also increased convergence in institutions, cross-listings on stock exchanges, greater outsourcing across borders by multinationals, and an increased role of sectoral shocks across countries.

Given this multifaceted nature of global linkages, the diversity in topics and approaches among the conference papers will provide a useful framework to better understand these complex issues. For example, some of the papers perform detailed studies of one specific type of global linkage (such as the paper by Karolyi on ADRs, the paper by Morck on institutions, and the paper by Edison and Warnock on U.S. investment patterns). As a complement to these detailed case studies on specific linkages, other papers take a broader view and compare and contrast the role of different linkages over time (such as the paper by Chinn and Forbes, which compares the relative importance of trade and financial linkages, or the paper by Brooks and Del Negro, which looks at the relative importance of sectoral versus global shocks).

Against this background, authors are expected to address the following substantive issues for the Conference on Global Linkages:

- What are the potential problems of only focusing on certain factors driving integration and omitting other factors? How can this approach be reconciled with the main objective of the conference: to assess the changing importance of real and financial linkages?
- Given the variety of factors that could drive the increase in comovement across markets, does increased comovement provide direct evidence of increased global integration? On the one hand, several papers in the literature show that stock market correlations are higher on average during periods of integration than during periods of segmentation. On the other hand, a growing literature argues that the link between financial and real integration is hardly straightforward. Some papers argue that financial integration may be the result of changes in the correlation of real shocks, while others argue that greater stock market comovement may be driven by market incompleteness rather than real integration. Owing to these issues, future research will need to carefully specify whether “comovement” or “integration” is being explained.
- What are the benefits of using disaggregated data? Edison and Warnock use firm-level balance sheet variables to control for fundamentals in equity returns, while Chinn and Forbes, and Imbs, use industry-level information to control for sectoral shocks. But can micro-level data be successfully aggregated to fully explain macro-level relationships?
- Papers on financial linkages only look at equity markets. Should the analysis extend to other financial markets? For example, what is the role of the safe-haven effect working through bond markets?

Looking Ahead to Next Year’s Conference

The above collection of papers will be discussed at the Conference on Global Linkages in January 2003. The overall goal of which will be to generate a quantitative assessment of how important different cross-country linkages are in practice, by country and industry. More specific questions that will likely be addressed are:

- What are the linkages by which country- and region-specific shocks are transmitted globally? Have these linkages become more important in recent years or have the underlying shocks themselves become more global?
- How has the balance shifted among cross-country linkages between real linkages (international trade) and financial linkages (capital flows)?
- To what extent does the rise in comovement of real and financial series across countries reflect a long-term trend towards closer integration and to what extent does it reflect short-term factors? Has there been a rise in financial linkages that cannot be explained in terms of real and financial shocks (contagion)?
- What is the role of firms (multinationals, FDI, mutual funds) versus individuals (falling transaction and information costs in portfolio diversification) in promoting the change in cross-border linkages?
- What role have government policies played in the evolution of cross-border linkages and what policies should governments pursue going forward? Are short- and medium-run isolation strategies effective, given the changing nature of cross-country linkages? Do exchange rate regimes interact with real and financial linkages? Are there benefits to diversification across industries and commodities? Should policy coordination among the G-3 be enhanced to promote exchange rate stability and what would be the implications for emerging markets?

Additional details on the pre-conference can be found at: *http://www.imf.org/external/NP/Res/seminars/2002/global/preconf.htm*

External Publications by IMF Staff

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Journal Articles

Bartolini, Leonardo; Bertola, Giuseppe; Prati, Alessandro
Day-to-Day Monetary Policy and the Volatility of the Federal Funds Interest Rate
Journal of Money, Credit, and Banking

Bhundia, Ashok; O'Donnell, Gus
U.K. Policy Coordination: The Importance of Institutional Design
Fiscal Studies

Breuer, Peter
Measuring Off-Balance-Sheet Leverage
Journal of Banking and Finance

Cerra, Valerie; Saxena, Sweta Chaman
Contagion, Monsoons, and Domestic Turmoil in Indonesia's Currency Crisis
Review of International Economics

Clements, Benedict
How Efficient is Education Spending in Europe?
European Review of Economics and Finance

Cordella, Tito; Datta, M.
Intertemporal Cournot and Walras Equilibria: An Illustration
International Economic Review

Cordella, Tito; Levy-Yeyati, Eduardo
Financial Opening, Deposit Insurance, and Risk in a Model of Banking Competition
European Economic Review

Davoodi, Hamid; Gupta, Sanjeev; Alonso-Terme, Rosa
Does Corruption Affect Inequality and Poverty?
Economics of Governance

Edison, Hali
Stock Market Wealth Effects and the New Economy: A Cross-Country Study
International Finance

Garibaldi, Pietro; Mauro, Paolo
Anatomy of Employment Growth
Economic Policy

Gershenson, Dmitriy
Sanctions and Civil Conflict
Economica

Heijdra, B.J.; Ligthart, Johanna Elisabeth
The Hiring Subsidy Cum Firing Tax in a Search Model of Unemployment
Economics Letters

Hunt, Benjamin; Isard, Peter; Laxton, Douglas
The Macroeconomic Effects of Higher Oil Prices
National Institute Economic Review

Kandil, Magda Elsayed
Asymmetry in Economic Fluctuations in the U.S. Economy: The Pre-War and the 1946–1991 Periods Compared.
International Economic Journal

Asymmetry in the Effects of Monetary and Government Spending Shocks: Contrasting Evidence and Implications
Economic Inquiry

Kandil, Magda Elsayed; Mirzaie, Aghdas
The Effects of Dollar Appreciation on Sectoral Labor Market Adjustments: Theory and Evidence
Quarterly Review of Economics and Finance

Exchange Rate Fluctuations and Disaggregate Economic Activity in the U.S.: Theory and Evidence
Journal of International Money and Finance

Kandil, Magda Elsayed; Woods, Jeffrey
Convergence of the Gender Gap Over the Business Cycle: A Sectoral Investigation
Journal of Economics and Business

Employment Composition and the Cyclical Behavior of the Aggregate Real Wage
Applied Economics

Keane, Michael; Prasad, Eswar
Inequality, Transfers, and Growth: New Evidence from the Economic Transition in Poland
Review of Economics and Statistics

Keen, Michael; Kotsogiannis, Christos
Does Federalism Lead to Excessively High Taxes?
American Economic Review

Kodres, Laura; Pritsker, Matt
A Rational Expectations Model of Financial Contagion
Journal of Finance

Ley, Eduardo
On Democratic and Plutocratic CPIs
Economics Bulletin

Ley, Eduardo; Macauley, Molly; Salant, Steve
Spatially and Intertemporally Efficient Solid Waste Management
Journal of Environmental Economics and Management

Mauro, Paolo
Stock Returns and Output Growth in Emerging and Advanced Economies
Journal of Development Economics

Mauro, Paolo; Sussman, Nathan; Yafeh, Yishay
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The Aging Population and the Size of the Welfare State
Journal of Political Economy

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Economics Letters

The Laspeyres Bias in the Spanish CPI
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Journal of Economic Growth

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Tax Incentives for Business Investment: A Primer for Policymakers in Developing Countries
World Development

Contributions to Books and Conference Volumes

Garibaldi, Pietro; Spilimbergo, Antonio
Coping with Illegal Immigration at the New Boundaries of the EU
In *Enlarging to a Developing Europe, edited by Tito Boeri and Richard Portes (CEPR).*

Gupta, Sanjeev; Clements, Benedict; Guin-Siu, Maria Teresa; Leruth, Luc
Debt Relief and Public Health Spending in Heavily Indebted Poor Countries
In *Bulletin of the World Health Organization*

Keane, Michael; Prasad, Eswar
Social Transfers and Inequality During the Polish Transition: A New Growth Theory Perspective
In *Growth and Inequality: Issues and Policy Implications, edited by Theo Eicher, Stephen Turnovsky, and Hans-Werner Sinn (Cambridge: MIT Press).*

Kim, Henry; Kose, Ayhan M.; Plummer, Michael
Contagion or Simple Transmission of Business Cycles?: The Case of the Asian Crisis
In *The Post-Financial Challenges for Asian Industrialization, edited by Richard Hooley (Elsevier Science).*

Kock, Udo
Social Benefits and the Flow Approach to the Labor Market
In *Thela Thesis (Amsterdam).*

Lane, Philip R.; Milesi-Ferretti, Gian Maria
Long-Term Capital Movements
In *NBER Macroeconomics Annual 2001*

Luna, Francesco; Perrone, Alessandro
Agent-Based Methods in Economics and Finance: Simulations in Swarm
In *Advances in Computational Economics (Kluwer Academic Publishers).*

Parrado, Eric; Velasco, Andrés
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Special Topic

Global Financial Stability Report, June 2002

Summary by Ramana Ramaswamy

The Global Financial Stability Report (GFSR) is a new quarterly publication, produced by the International Capital Markets Department, which replaces the IMF's International Capital Markets Report *and* Emerging Market Financing *publications. The GFSR provides regular assessments of developments in global financial markets and seeks to identify potential systemic weaknesses that could lead to crises. The focus of the June 2002 issue is on the impact of corporate profitability on financial markets, developments in emerging bond and equity markets, financial market activities of insurance companies, and the performance of emerging equity markets over the past decade. A summary of the analyses in the GFSR's thematic chapters follows.*

The report argues that an important source of uncertainty in financial markets currently is the level and quality of corporate profits in mature markets. In the aftermath of Enron's failure, questions surrounding the quality of reported corporate profits continue to have an adverse impact on international equity and corporate bond markets—with weak corporate profitability negatively affecting the quality of some banks' and insurance companies' balance sheets. The report identifies the risk of an equity price correction, owing to disappointing corporate earnings, as the main danger for mature markets.

The GFSR notes that the spread compression in emerging bond markets, in the first quarter of this year, reached levels not seen since the Russian crisis, but argues that they remain vulnerable to corrections. The growing involvement of crossover investors in emerging bond markets creates the risk of rapid funds withdrawal should event risk appetites decline or other asset classes become relatively more attractive. Political factors also weigh on emerging bond markets.

Insurance and reinsurance companies are now an important and growing class of financial market participants. An analysis of this sector is provided in the report along with issues identified as likely to have medium-term implications for financial stability and efficiency.

Reaping strong investment returns has been particularly important for life insurance companies, which were able to offer high guaranteed returns on insurance policies in the 1980s and early 1990s. As nominal bond yields sank during the 1990s, insurers responded to an environment of lower real premium growth by managing asset portfolios more actively and shifting the asset mix into potentially more volatile investments. The GSFR makes the case that while the systemic risks associated with the financial market activities of insurance companies are relatively limited compared with that of internationally active banks, there remain uncertainties about insurers and whether they hold sufficient capital against financial risks, whether their management of market risk is adequate, the extent of their off-balance-sheet activities, and the potential migration of financial risks from the banking to the insurance sector.

After languishing for a protracted period, equity prices in emerging markets have witnessed a sharp rebound during the last nine months. Despite this strong recent performance, emerging equity returns have been relatively poor—in both absolute and relative terms during the past decade. The GFSR provides a detailed empirical analysis of the return-volatility performance of emerging stock markets and analyzes the reasons for the poor performance of emerging equity markets.

Valuations do not appear to be the key factor for explaining the longer-term performance of emerging equity markets. The price-earnings ratio for the IFCI Composite has been, on the whole, significantly lower than that of the S&P 500 for much of 1990–2002. Other indicators such as the price-to-book ratio and dividend yields also do not indicate structurally overvalued emerging equity markets. Rather, a string of financial crises in major emerging market countries culminated in prominent currency depreciations and severe contractions of economic activity, which in turn weakened the income and balance sheet position of corporates. The poor corporate performance along with the sizable currency depreciations resulted in poor returns in dollar terms from investing in emerging market equities. The report also identifies the reduction in liquidity associated with the migration of the listings of top-quality emerging market corporates to mature market stock exchanges, and issues of transparency and corporate governance as also having had a dampening effect on emerging equity markets.