

The Impact of the Boom in Global Finance on Developing Countries

The first seven years of the 21st century were very good for developing countries. GDP growth continued to accelerate as it had done in the 1990s but at an even faster pace, while economic volatility was far lower than in previous periods of rapid growth (IMF 2007). And while large countries with very fast growth rates, such as China and India, tended to attract the most attention, most of the acceleration in developing-country growth during this period occurred among smaller countries that in the past had been growing much less quickly.

Somewhat surprisingly and in contrast to popular perceptions, this growth spurt occurred during a period in which external demand conditions for developing countries were not that strong. Growth in high-income countries was actually slower during the boom years 2003–07 than during the preceding 13 years. Moreover, import demand from high-income countries was growing only 5.6 percent a year, marginally slower than during the preceding 13 years. More than all of the acceleration in developing-country exports came from an expansion in their share in high-income country imports and very rapid growth in South-South trade.

Financial conditions were, however, very favorable. Interest rates and interest rate premiums were low (for example, the average secondary market spread on developing countries' sovereign bonds fell to about 200 basis points by mid-2007, down from

about 700 basis points in January 2003), and global credit expanded twice as fast as nominal GDP.¹ A range of financial innovations, including the securitization of loans and the development of off-balance-sheet vehicles, allowed banks to fund an important portion of their loan portfolios through capital and money markets, leveraging equity capital in a way never before possible. Partly as a result, the amount of finance—both domestic and international—available to developing countries expanded very rapidly, and countries enjoyed a sustained investment boom.

That boom came to an abrupt end in the fall of 2008 with the failure of Lehman Brothers and the financial crisis that ensued (see chapter 1). Although clouded by uncertainty, the longer-term consequences of the crisis could be far-ranging. The sharp scaling back of global production may result in permanent and long-lasting adjustments in global production patterns. Firms and regional specializations may fail and disappear in a way that they would not have had adjustment occurred more gradually. Global trade patterns may be irrevocably altered, and the depth of the recession in some regions and countries relative to others may change the future pattern of growth in the world. The temporary weakness of the financial sector in high-income countries may create opportunities for financial firms in developing countries, allowing them to grow and expand in ways that might not have been possible otherwise. Although each

of these possible consequences merits in-depth exploration, dealing with all of the potential consequences of the crisis for developing countries lies outside the scope of this publication.

The analysis presented in this and the next chapter focuses more narrowly on the medium-term consequences of recent and anticipated changes in financial conditions for developing-country finance, investment, and supply potential, both over the past decade and that can be expected in the next 5 to 10 years. This orientation was chosen partly because, contrary to popular perceptions, real-side external factors do not appear to have played a major role in the boom. Most important, this focus on the financial aspects of the crisis was chosen because of the important role that finance played in causing the crisis and because the likely regulatory and market-based changes in the sector are somewhat less speculative than those that might surround other important elements of the post-crisis world.

Within this overall context, this chapter examines the link between the global expansion of liquidity and the improvement in developing countries' growth before the financial crisis. It begins with a review of the credit boom and its implications for the pricing of risk and borrowing costs. It then describes how the global boom contributed to the rapid expansion of domestically supplied credit and international capital flows in developing countries, discusses the factors that helped to determine which countries most benefited from the liquidity glut, and examines the extent to which different countries were able to translate these more liquid conditions into increased investments. The chapter concludes with some model-based measurements of the impact of the investment boom on growth and potential output in developing countries. All of this serves as a prelude to chapter 3, which analyzes the extent to which, in the future, tighter financial regulation, increased risk aversion, and higher interest rates and interest rate premiums are likely to constrain investment and potential growth in developing countries and the scope for developing countries to pursue policies to mitigate these impacts.

A number of key messages emerge from the discussion in chapter 2:

- The acceleration in developing-country growth during the 2003–07 period arose despite relatively lackluster GDP and import growth among high-income countries. Developed-world GDP grew on average 0.2 percentage point slower than during the 1990s and import demand increased 0.4 percentage point less quickly.
- The fall in borrowing costs during the 2003–07 period was associated with almost 70 percent of the increase in capital flows into developing countries and 80 percent of the increase in domestic intermediation.
- While the biggest apparent contribution to the changes in the extent of intermediation in developing countries was driven by lower borrowing costs and the overall expansion of global liquidity, cross-country differences in the level of intermediation remain very large and are best explained by fundamental factors such as the quality of regulatory frameworks and the business environment, inflation rates, and levels of government debt.
 - Country-specific differences in the quality of institutions and the degree of market openness of the top and bottom performing 25 percent of countries are associated with 56 and 37 percent of the cross-country variation in levels of domestic intermediation, respectively, and 1/3 and 1/5 of the cross-country difference in international capital flows.
 - Countries with good regulatory environments were also more successful in transforming increased financing into increased investment and GDP growth. More than one-quarter of the 11.5 percent of GDP difference between the investment rates of the top and bottom 25 percent of developing countries appears to reflect differences in the quality of institutions.

- Countries with high levels of financial openness and well-developed domestic intermediation systems also had higher investment rates. About 3 percentage points of the difference between the investment-to-GDP ratio of the top 25 percent of developing countries and the bottom 25 percent is associated with differences in the size of foreign capital inflows. For domestic intermediation, the same figure is just under 2 percent of GDP.
- These results suggest that if Sub-Saharan Africa could improve its institutions to roughly the levels observed in Latin America, the overall extent of financial intermediation would rise substantially, perhaps by as much as 12 percent of GDP in the case of domestic credit to the private sector and 2 percent of GDP in the case of international financial flows.
- Different forms of finance had different effects on investment.
 - Bond flows had significant impacts on investment in middle-income countries.
 - Bank lending, which dominated flows into Europe and Central Asia, were associated with a larger increase in current account deficits and consumer demand.
 - Foreign direct investment (FDI) funded as much as 20 percent of total investment in some regions, with low-income countries tending to be more reliant on this form of financing than richer countries.
- Overall, more than half of the 1.4 percentage point increase in potential output growth rates in developing countries between 2003 and 2007 is directly attributable to the capital deepening that was observed during this period, even under the conservative assumption that higher investment had no role in the rise in productivity.
- The expansion of investment and growth during the boom period, without the

creation of significant inflationary pressures or external imbalances in many developing countries, suggests that in these countries the boom relieved what may have been a binding capital constraint on growth. That in turn implies that such stronger growth rates for developing countries may be achievable over the long term if sufficient finance (domestic or external) is forthcoming. Of course there were exceptions, notably in the Europe and Central Asia region, where the strongest expansions in credit boom contributed to macroeconomic instability.

Financial innovation, high-income finance, and the liquidity boom

The liquidity boom that preceded the financial crisis of 2008 was broadly based and rooted in a number of factors. Like other booms and busts, this one was prompted by a rapid increase in credit and investment that ultimately proved unsustainable and the ensuing bust provoked a sudden contraction in GDP (box 2.1).

Data from the Bank of International Settlements (BIS) indicates that from 2002 through 2007 international bank credit expanded about twice as fast as nominal GDP and more than twice as fast as it had during the previous decade (figure 2.1). Long-term interest rates were only between 1.5 and 2 percentage points higher than inflation in the major industrial countries (table 2.1), compared with about 3.5 percentage points (in the United States) during the global expansion in the second half of the 1990s.

The proximate cause of the credit boom is a question of considerable debate—a debate that is unlikely to be resolved anytime soon. Among the competing and not necessarily contradictory explanations are:

A savings glut. According to this argument (see Bernanke 2005, among others), high

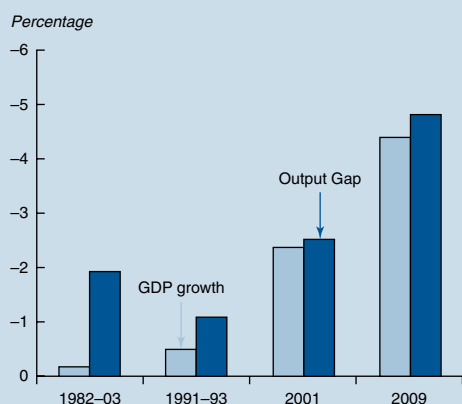
Box 2.1 Comparing this boom-bust cycle with other major cycles

This boom-bust cycle shares many characteristics with earlier financial crises: an extended period of rapid and ultimately unsustainable credit expansion, accompanied by excessive risk taking by financial institutions, followed by a sharp reduction in economic activity. However, this crisis differs in three important respects from earlier crises.

First, this crisis is the most severe and widespread downturn since 1945. Global GDP is estimated to have declined by 2.2 percent in 2009 (the only absolute decline in global GDP during the postwar period), and GDP is projected to remain well below potential output for years to come, with estimates of the developing-country output gap peaking at 4.8 percent of GDP—almost 50 percent larger than during the next most severe modern-day recession (1982–83).

Second, for the majority of developing countries this is a crisis that originated in high-income countries. Moreover, with the notable exception of many countries in Europe and Central Asia, it was

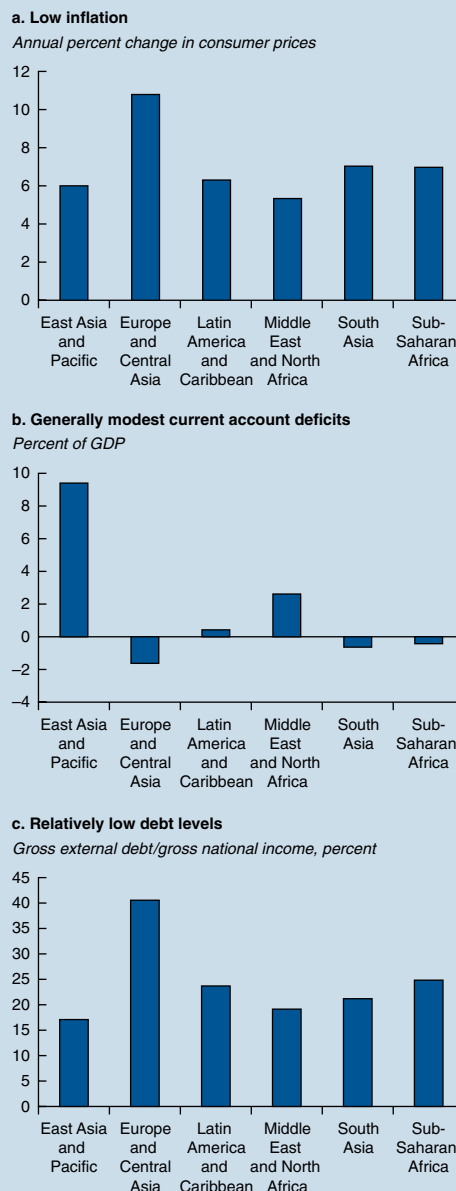
Box figure 2.1.1 GDP growth and output gaps in global crises since 1970



Source: World Bank.

Note: GDP growth is the percentage change in GDP growth in the crisis year(s) compared with the preceding year. The output gap is the percentage difference between GDP and potential output during the crisis year(s).

Box figure 2.1.2 Indicators of macroeconomic stability in developing countries, 2007



Source: World Bank.

not preceded by the buildup of serious domestic and external imbalances, and domestic actors largely did not participate directly in the unsustainable activities that precipitated the crisis.

During earlier global or large-scale crises triggered by changes in high-income countries, major impacts tended to be limited to developing countries with preexisting vulnerabilities. The tightening of U.S. monetary policy in 1979–80 boosted real interest rates and brought on a global recession, which hit hardest those developing countries with excessive levels of private-source debt. The depreciation of the yen against the dollar in the mid-1990s reduced the competitiveness of East Asian economies that pegged their currencies to the dollar, which may have contributed to the onset of the 1997 crisis. By contrast, the current crisis struck virtually every developing

country hard, even though, outside Europe and Central Asia, most countries did not exhibit unsustainable macroeconomic balances (box figure 2.1.2). In most countries regional inflation rates averaged about 6 percent or lower (well below the double-digit rates in most regions during the early 1990s); most regional current account balances were near zero or strongly positive; and ratios of debt to gross national income were modest. However, the quality of policies still affected the impact of the crisis—the countries with the largest imbalances suffered the most (see chapter 3).

Third, this crisis has struck many more countries than earlier recessions did, a factor that complicates recovery for individual countries because there are few fast-growing external markets with which to engage in an export-led recovery strategy.

savings relative to investment in East Asia kept global interest rates low, fueling rapid increases in investment and consumption in high-income countries.

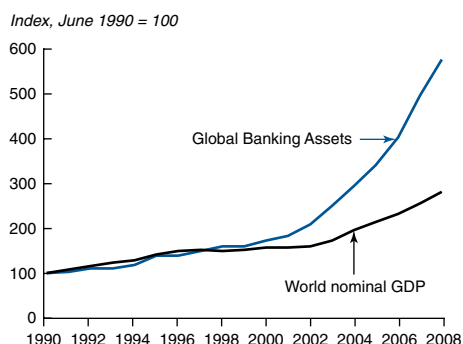
An extended period of loose monetary policy. Very loose monetary conditions in the United States, Japan, and Europe over an extended period of time bled through into longer maturities, provoking an unprecedented expansion in global credit (BIS 2006).

An excessive loosening of regulatory oversight. The reduction of regulatory barriers to speculation and excessive reliance on self-regulation of the banking sector in industrial countries generated and failed to curb excessive risk taking by financial institutions (Crotty 2009).

Financial innovations. In this loosely controlled environment, the use of new financial innovations expanded rapidly; these innovations increased risk taking and helped to circumvent those regulatory barriers that remained (Calvo 2009).

Finally, in contrast to popular thinking, unusually strong developed-country demand

Figure 2.1 Since the early 2000s, credit expansion has grown more than twice as fast as nominal GDP



Sources: Bank of International Settlements; World Bank.

Table 2.1 Interest rates and inflation in industrial countries, January 2002–June 2007 (percent)

	Consumer price inflation	Average long-term interest rate
Euro Area	2.2	4.1
Japan	-0.1	1.4
United States	3.0	4.4

Source: OECD.

Note: CPI inflation is expressed as the average annual percentage change over the period, and the average long-term rate is in percent.

was not a major factor behind the acceleration in developing-country growth or exports. Indeed, the boom period 2003–07 was actually one of relatively slow growth for high-income countries in terms of both GDP and imports. Developed-country GDP grew on average 2.3 percent during the period versus an average of 2.5 percent between 1990 and 2003 (figure 2.2). Moreover, notwithstanding the somewhat heated rhetoric surrounding trade issues, high-income-country import demand, which grew an average of 5.6 percent during the boom period, actually expanded less quickly than during 1990–2003, when it

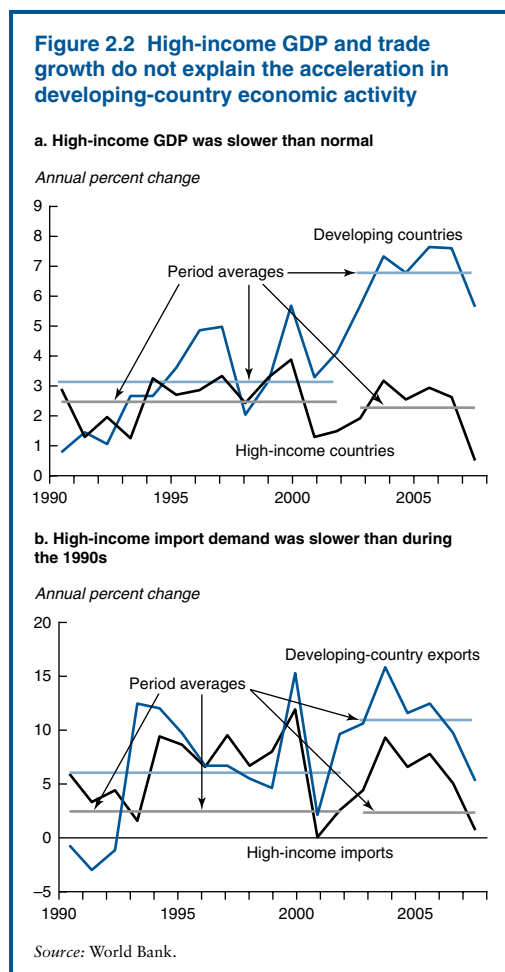
rose an average of 6.0 percent annually. The strong performance of developing-country exports during this period reflected three main factors: rapidly expanding supply capacity in developing countries, an increase in their share of the imports of high-income countries, and rapidly expanding South-South trade.

Novel channels for credit creation

Whatever the fundamental reason for the long credit boom, the increased availability of a number of new financial instruments (box 2.2) gave investors what ultimately proved to be a false sense that the risks of rapid credit expansion had been reduced. This false sense of security contributed to the reductions of interest rates and interest rate spreads, thus facilitating the expansion of credit.

The expanded use of a number of these financial innovations boosted the growth of what has been called the “shadow banking system”—comprising institutions that do not have access to deposit insurance or central bank rediscount operations and that are not subject to the same prudential regulations as banks (Farhi and Cintra 2009). These institutions nevertheless actively sold and marketed instruments that leveraged the savings of households in a manner akin to the credit creation process of more traditional banks. The institutions involved included investment banks, hedge funds, investment funds, private equity funds, special investment vehicles (including those operated off balance sheet by banks), pension funds, and insurance companies. The quasi-banking activities of these entities were actively supported by ratings agencies, which markedly increased their revenues by rating the structured products these entities sold.

It is difficult to measure the contribution of the shadow banking system to the financial boom, compared with more traditional balance-sheet transactions of the commercial



Box 2.2 Recent and systemically important financial innovations

Securitization is not a recent innovation, but its use skyrocketed during the boom. It refers to the issuance of new securities backed by a pool of debt instruments. By this mechanism, a relatively illiquid stream of future cash flows (such as a standard loan with fixed repayment terms) is converted into a security that can be traded in the marketplace.

Credit default swaps (CDSs) are agreements in which the buyer makes a series of payments to the seller, in return for which the seller is obligated to compensate the buyer if the underlying bond or loan goes into default. Effectively, these instruments provided insurance against default—although the regulatory environment for such swaps and insurance are very different. More extensive use of credit default swaps also increased arbitraging opportunities by making it easier for speculators to take positions in securities that they did not own (Guttmann 2009).

Interest rate and currency swaps are instruments that allow investors to effectively change the payment scheme associated with a loan or an asset. For example, interest rate swaps often involve contracting to make a fixed series of payments by one counterparty in exchange for receiving a second series of payments based on a floating rate. Other swaps involve

swapping payment obligations from one currency to another. These transactions are often used to protect a portfolio in the face of uncertain changes in interest or exchange rates or to speculate on such changes.

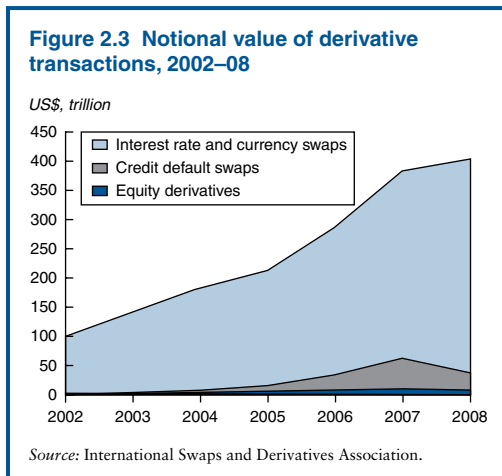
Collateralized debt obligations (CDOs) are securities backed by collateral in the form of a portfolio of bonds, bank loans, or other debt (such as credit card debt). Repayments to the pool of investors are typically allocated according to some prioritization; for example, senior CDO notes are paid first. Other tranches earn higher returns but are only paid out if funds *are* remaining. This structure permits issues that satisfy differing trade-offs between risk and return: more speculative investors can purchase the lower-rated tranches, while more risk-averse investors can purchase higher-rated tranches.

Other credit derivative products. U.S. financial markets have generated several, more exotic approaches to securitizing debt transactions. For example, credit-linked notes are sold with an embedded credit default swap, where the issuer is not required to repay the debt if a specified event occurs (essentially eliminating the need for third-party insurance). Specialty finance companies have been created where transactions involve both securitization and lending.

banking system—in large part because it faced much less comprehensive reporting requirements and oversight. One indication of its importance can be gleaned from the rise in the share in total U.S. domestic credit of mortgage pools (issued by Fannie Mae and Freddie Mac) and asset-backed securities. In 1995 these securities accounted for 16 percent of credit assets held by the U.S. financial sector or 30 percent of GDP. By 2007 the value of these securities had increased more than fivefold, reaching 23 percent of credit assets and 63 percent of GDP—almost as large as the total of commercial bank assets (figure 2.3).

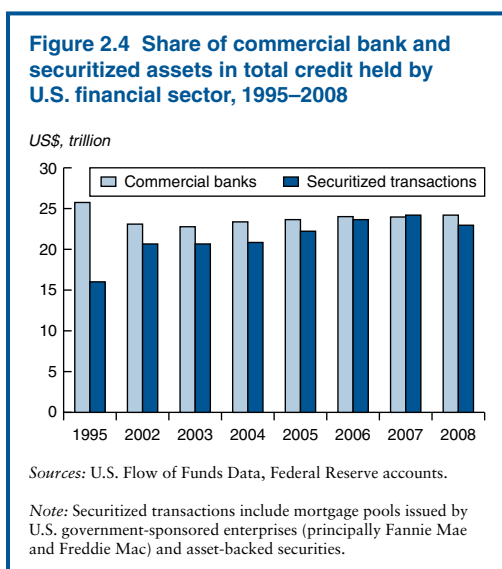
The credit expansion was also reflected in the phenomenal rise in derivative swap

transactions, the notional value of which quadrupled between 2002 and 2008 (figure 2.3), reaching more than 25 times U.S. GDP (figure 2.4). The gross notional value of the derivative market involves considerable double counting (the net exposure of counterparties is much smaller because of offsetting transactions); moreover the actual associated flows involved in these transactions are typically a very small percentage of the notional values. Nevertheless, the notional value provides a sense of how pervasive and far reaching these instruments had become in intermediating economic activity. Moreover, the notional values provide a sense of the systemic vulnerability represented by these instruments, especially during the acute phase of the crisis when the ability of



counterparties to meet their commitments was called into question and default payments under derivative contracts mushroomed.

The impact of the expansion of the shadow banking system was to greatly expand the amount of credit available and reduce its cost. Shadow banking effectively performed the same functions as banks, increasing assets to several times their equity by funding long-term assets with short-term liabilities (by



raising funds in the commercial paper market, for example). The instruments it employed (such as collateralized debt obligations—see box 2.2) had the perceived virtue (compared with bank loans) of spreading the risk of lending. Large, risky investments could be divided efficiently among investors and thus increase the feasibility of such projects. And investors could more easily diversify their risk portfolio, allowing them to undertake higher risk and return projects.

However, these instruments were either loosely or not at all regulated and may have induced banks to reduce their lending standards more than they would have otherwise because the long-term risk associated with loans was being held by others. Moreover, in the event, ownership was concentrated in some systemically important hands. Banks were left with large holdings—often the lower-quality, higher-yielding tranches. In addition, banks that relied on secondary markets to buy and sell loans tended to increase their leverage (Duffie 2007), which contributed to increasing systemic risk to the extent that the buyers of these securitized loans lacked sufficient information to accurately evaluate the risks involved.² The extreme complexity of some of these instruments and the lack of standardized exchanges made it difficult for both purchasers and sellers to evaluate them and exacerbated the difficulties in debt renegotiations in the case of financial distress. Ex post, it appears clear that these instruments generated substantial further systemic risks by multiplying in a nontransparent manner the interdependencies in the financial system.

On balance, the growth of the shadow banking system and the expanded use of securitization and derivatives products worldwide (see box 2.2) contributed to the expansion of credit in developing countries during the boom period. Several factors underpinned the increased use of these instruments in developing countries. Their expanding use in high-income countries made more investors familiar with their benefits, while efforts to standardize derivative

contracts (by the International Securities Dealers Association, for example, to develop standard documentation for credit default swaps) helped reduce their costs and improved confidence in derivative transactions. Growth in spot markets also encouraged greater use of derivatives for hedging purposes. In addition, the expansion of the size and length of maturities in local currency bond markets facilitated the creation and pricing of developing-country interest rate derivatives (Saxena and Villar 2008).

The expanded use of these products helped to disperse risk, improve diversification among investors, and increase the pool of developing-world investors, thereby increasing capital flows to developing countries. For example, banks were able to expand lending to developing-country borrowers—even high-risk borrowers—and transfer the risk to capital markets through credit default swaps (World Bank 2007) and by pooling loans and selling them to investors in high-income countries. Between 2003 and 2008, CDS spreads were quoted widely for 40 developing countries, in addition to a number of privately negotiated deals that were not widely reported.³ The proliferation of securitized and derivative products enabled pension funds and insurance companies, many of which face regulatory restrictions on the kinds of investments they can make, to take indirect positions in developing-country loans by purchasing the more highly rated tranches of securitized loans.

The secondary sale of developing-country loans to nonbank investors, or the banks' own off-balance-sheet vehicles, contributed to overall credit expansion by replenishing banks' reserves and allowing them to provide new additional loans to developing countries. Increased availability of derivatives also boosted the supply of FDI by providing investors with a mechanism to hedge the short-term foreign exchange risk involved in projects, particularly in those targeting production for the domestic market (Griffith-Jones and Leape 2002).

Not all derivative transactions involving developing-country instruments increased the availability of capital to developing countries. For example, synthetic collateralized debt obligations were mainly a vehicle to facilitate speculation on developing-country returns. Investors purchase a synthetic CDO, the return on which was tied, say, to changes in the credit default swap spread on bonds issued by the Brazilian government. Because these synthetic CDOs did not involve the repackaging of existing bank loans, they did not reduce banks' exposure to developing-country debt and therefore did not enable them to increase lending. Indeed, some observers argue that by facilitating speculation, these instruments increased volatility in developing-country financial markets.⁴

Developing-country finance during the boom

The expansion of liquidity in high-income countries, the financial innovations, and the consequent fall in the price of risk dramatically changed developing-country finance. Net capital inflows quintupled, and spreads on foreign debt fell from 656 basis points in 2000 to 168 basis points at the end of 2007. Equally important, domestic credit as a share of GDP increased by 5 percentage points on average, with much larger increases in several regions, while domestic interest rates declined across the board. These developments were accompanied by an unprecedented tripling in the valuation of equities traded on developing-economy stock markets.

The rise in financial intermediation increased the supply of finance available to entrepreneurs to undertake productive investment, thereby contributing to capital accumulation and the expansion of potential output. Moreover, the influx of new investments, embodying newer technologies, facilitated an overall acceleration in technological progress in developing countries that was also supported by macroeconomic and institutional reforms in

many countries.⁵ Finally, the acceleration in growth itself likely triggered a further deepening of financial markets (see box 2.3 for the positive interaction between financial intermediation and growth).

Of course, while a rapid increase in global liquidity can facilitate economic growth, in some circumstances it can also cause macroeconomic instability. Easy access to finance can lead to excessive consumption and unsustainable current account deficits, as was the case in many countries in emerging Europe and Central Asia. More generally, international finance tends to be especially procyclical for developing-country borrowers. Weak institutions (including protection of property rights) and low-income levels make them less creditworthy on average. As a result, when both global and domestic conditions are good,

middle-income borrowers (and those low-income borrowers with market access) may see a surge of inflows that reverse especially sharply when prospects deteriorate.

Historically, this “stop-go” quality of finance, particularly external debt and portfolio equity flows, has exacerbated booms and painful busts in many developing countries. The source of instability is not always foreign, however. In many instances, large swings in international capital flows have been ascribed to the behavior of domestic investors.⁶ In the East Asian financial crisis, much of the capital flight that contributed to the large currency depreciations and macroeconomic instability was the result of domestic investors fleeing local currency instruments in favor of foreign-denominated instruments that were expected to be better stores of value (Kawai, Newfarmer,

Box 2.3 Financial intermediation and economic development

Several empirical studies find that the size and efficiency of financial intermediation has a causal affect on growth: Measures of financial development are found to be correlated with growth in a subsequent period in a cross-section of countries (King and Levine 1993, Levine and Zervos 1998 for developed economies). Financial market deepening is found to be related to productive efficiency in cross-section data, including both developed and developing countries (Nourzad 2002). Financial development is associated with poverty reduction (Jalilian and Kirkpatrick 2002; Beck, Demirgüç-Kunt, and Levine 2007) and is found to precede growth in tests of Granger causation on time series data (Neusser and Kugler 1998; Rousseau and Wachtel 1998). Instrumental variables (English, French, German, or Scandinavian legal origin) as well as other econometric techniques are used to isolate the causal impact of financial development (Levine, Loayza, and Beck 2000). Financial development also is found to raise growth principally through its effects on total factor productivity (Beck, Levine, and Loayza 1999). Several country studies also show that financial development has a major impact on growth over time (Levine 1997).

But the literature is not unanimous in identifying a causal relationship between financial development and growth. Growth also has an impact on financial development. Moreover, third factors (such as technological innovations in communications and data processing, as well as the quality of institutions) affect both growth and financial development. Several economists find a bidirectional relationship between financial development and growth (Luintel and Kahn 1999; Al-Yousif 2002; Demetriades and Hussein 1999). Hurlin and Venet (2008) find a robust causality from growth to financial development in a sample of developed and developing countries but little evidence of causality from financial development to growth. Arestis and Demetriades (1997) find that financial development causes growth in only a few countries in their sample; Shan (2005) and Shan and Morris (2002), using time series data (covering OECD countries plus China), find little evidence that financial development leads economic growth; and Al-Taimimi and others (2001) find no evidence of Granger causation between financial development or economic growth in either direction from a sample of Arab countries.

and Schmukler 2001; World Bank 1998). A similar dynamic underlay the crisis in Mexico in 1994–95 (Frankel and Schmukler 1996). In the case of Chile following the East Asian and Russian crises, however, foreign investors were the main sources of capital flight (Cowan and others 2005).

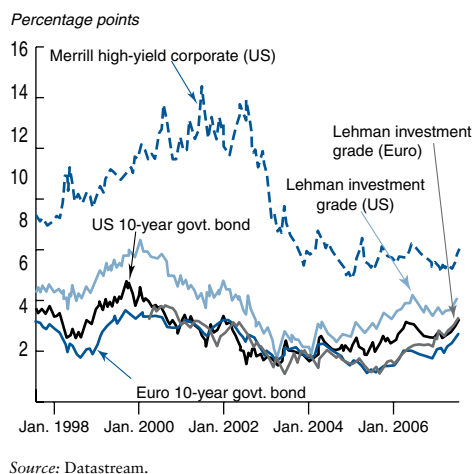
As discussed in chapter 1, during the recent crisis a rapid reversal in capital flows adversely affected virtually every developing country, even those that had pursued prudent macroeconomic policies and accumulated large stocks of foreign currency reserves. That said, the countries (notably many in the Europe and Central Asia region⁷) that were hardest hit were precisely those in which the additional liquidity had been channeled into domestic consumption and that had accumulated significant domestic and external imbalances during the boom period.

The reduction in the price of risk

The rapid expansion of global credit and the low interest rates that accompanied it were reflected in a sharp fall of secondary-market spreads on investment grade and high-risk debt in industrial countries. For example, the risk premium on AAA corporate bonds in the United States fell from 490 to 65 basis points between 2002 and 2007, while that on BBB grade European corporate debt fell from 390 to 55 basis points. The simultaneous fall of spreads on a wide variety of risky assets is consistent with a significant reduction in the price of risk itself, either because of a decline in risk aversion on the part of investors or because of the emergence of a view that derivatives and other hedging mechanisms had lowered the likely financial cost of holding a given level of risk (figure 2.5).

The decline in interest rates and the fall in the price of riskier assets at the beginning of the decade were initially treated as a temporary cyclical phenomenon. However, as the boom period continued, commentators increasingly began to argue that financial market innovations such as credit default swaps and the securitization of loans in secondary

Figure 2.5 The cost of risk in high-income countries fell sharply during the boom

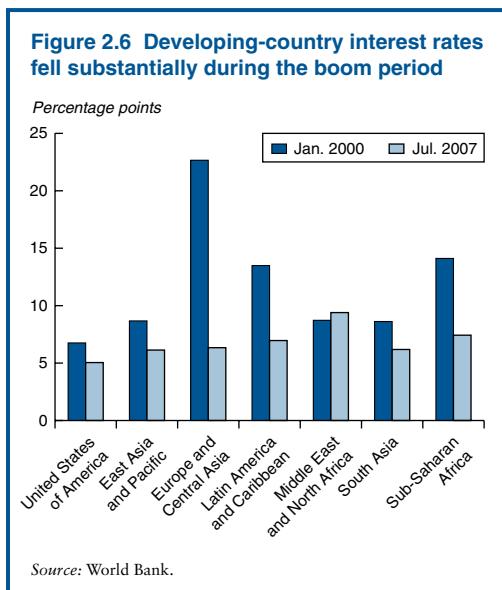


markets had permanently reduced long-term interest rates and risk premiums.

Falling interest rates internationally, lower risk premiums, and, especially toward the end of the boom period, rising commodity prices also meant that financial conditions within developing countries relaxed. Reflecting both these developments and the influence of policy improvements and political factors, interest rate premiums and the interest rates paid by developing-country borrowers fell sharply in several regions (figure 2.6).

The expansion in domestic credit

The decline in borrowing costs was associated with a rapid increase in financial flows, domestic intermediation, and capital market valuations throughout the developing world (table 2.2). Banking intermediation, as measured by claims of deposit money banks on the private sector, expanded on average from 29 percent of GDP in 2000 to 35 percent in 2007—greatly boosting the funds available to firms for investment (see table 2.2). In some regions, a growing participation by foreign banks in domestic financial systems



supported the rapid rise in domestic financial intermediation (box 2.4). Firms in developing countries also benefited from a surge in stock market capitalization, which rose from 35 percent of GDP in 2000 to 114 percent in 2007.⁸ Moreover, lower interest rates and interest rate spreads reduced the cost of capital facing investors in developing countries. Partly as a consequence, ratios of investment to GDP adjusted for inflation jumped by 5 percent of GDP on average, with an 8 percent GDP jump in South Asia.

All regions participated in the financial boom to some extent, although the increase in

financial intermediation and the levels reached varied significantly:

- In Europe and Central Asia, bank credit almost doubled and stock market capitalization more than quadrupled (relative to GDP), reflecting very low initial levels attributable to the region’s communist past (despite 10 years of transition), the prospects for accession of several countries to the European Union, and the boom in oil prices. Of the 25 countries with sufficient data, 12 registered increases in credit to the private sector of more than 10 percent of GDP.
- Financial intermediation also rose strongly in South Asia. In India the ratio of bank credit to GDP increased by 15 percentage points and the stock market capitalization nearly quintupled relative to GDP. Other countries in the region had more moderate increases (for example, the ratio of bank credit to GDP increased 12 percentage points in Bangladesh and 6 percentage points in Pakistan).
- The increase in credit to the private sector in the Middle East and North Africa was smaller but still robust—partly reflecting the fact that as measured the cost of capital in the region actually increased (see table 2.2). Credit in Algeria, Morocco, and Tunisia registered gains of 5–6 percentage points of GDP. Despite the near tripling of stock prices, the increase as a percentage

Table 2.2 Changes in domestic intermediation, 2000–07

Region	Private credit by banks			Stock market capitalization		
	2000	2007	Change	2000	2007	Change
	(percent of GDP)		(% points)	(percent of GDP)		(% points)
Developing countries	29.3	34.8	5.5	35.3	113.9	78.6
East Asia and Pacific	66.1	55.4	–10.7	47.1	165.1	118.0
Europe and Central Asia	16.8	32.5	15.6	17.5	77.3	59.8
Latin America and the Caribbean	24.9	27.1	2.2	31.6	71.4	39.8
Middle East and North Africa	33.0	39.2	6.2	19.9	56.1	36.2
South Asia	25.6	40.4	14.8	26.1	133.4	107.2
Sub-Saharan Africa	34.8	41.6	6.8	89.9	149.0	59.1

Source: World Bank calculations using Beck and Demirgüç-Kunt 2009.

Note: For private credit, the regional numbers are simple averages of available country data. For stock market capitalization, the averages are weighted by GDP.

Box 2.4 The role of foreign banks in domestic intermediation

Foreign banks play an important and growing role in domestic intermediation among developing countries. As of 2005, their share in total banking assets in developing regions ranged from a low of 7.4 percent in South Asia to a high of 54.4 percent in Europe and Central Asia (box table 2.4.1). Moreover, during the boom period foreign banks increased their share in total assets in all of the regions where they already had relatively large presences. Indeed, the extent of the expansion in domestic credit is loosely related to the extent to which foreign banks increased their market shares. The two regions with the smallest foreign presence (East Asia and the Pacific and South Asia) actually saw the market share of foreign banks decline.

The contribution of foreign banks to intermediation in developing countries is not straightforward. In some countries they can serve as an important conduit that facilitates the importation of external

capital to expand lending, and if they are more efficient and improve domestic bank efficiency (see below), they can reduce the cost of financial intermediation and encourage higher volumes. In these instances, foreign banks by stimulating intermediation may, in turn, encourage more rapid development. For example, in Europe and Central Asia, the acquisition of local banks by foreign banks was associated with increased lending to small and medium-size enterprises and retail markets (de Haas and Naaborg 2006), even though foreign banks lent predominantly to multinational corporations, large domestic firms, and governments—potentially squeezing out smaller players (see Gormley 2005 for the theoretical model). Indeed, the entrance of foreign banks in a market tended to cause local banks to increase lending to small enterprises in part because of increased competition in lending to larger firms (Jenkins 2000).

In some cases foreign banks may reduce the level of financial intermediation. Research suggests that especially among low-income countries with weak regulatory frameworks and competition law, foreign banks may enter into a market and cherry-pick the best local clients (Detragiache, Tressel, and Gupta 2006). In such circumstances, a larger presence of foreign banks may be associated with less credit to the private sector.

Overall, the evidence is mixed. Survey data indicate that entrepreneurs in countries with larger participation by foreign banks face less binding credit constraints (Clarke, Cull, and Martinez Peria 2001). Moreover, when domestic conditions are propitious (a solid local banking sector, and good regulatory and competitive protections), foreign banks can contribute to an overall expansion of credit and a lowering of costs for borrowers. However, foreign bank participation is not critical to increasing financial intermediation in developing countries and can, in some regions with weakly contested and poorly regulated markets, result in the crowding out of local providers and no net increase in intermediation.

Box table 2.4.1 Foreign bank participation and credit expansion

Region	Share of assets owned by foreign banks, 2001	Share of assets owned by foreign banks, 2005	Change in ratio of bank credit to the private sector over GDP, 2000–07
East Asia and Pacific	13.0	11.1	–10.7
Europe and Central Asia	42.0	54.4	15.7
Latin America and Caribbean	30.4	35.6	2.2
Middle East and North Africa	8.3	10.9	6.2
South Asia	8.9	7.4	14.8
Sub-Saharan Africa	46.2	49.5	6.8

Source: World Bank database on Financial Institutions and Structure.

of GDP and the level in 2007 were smaller than in the other developing regions

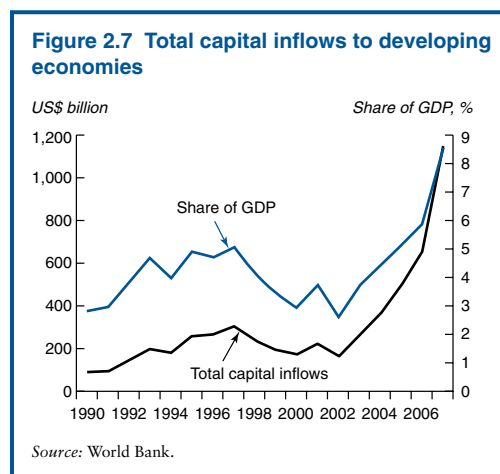
- The 7 percentage point increase in bank credit (relative to GDP) in Sub-Saharan Africa mainly reflects a 12 percentage point rise in South Africa, rather than a more generalized increase in domestic financial intermediation. Of the 30 countries with complete data, 9 experienced declines in domestic intermediation relative to GDP, and 12 countries experienced increases of less than 5 percentage points. Sufficient data on stock market capitalization are reported for only 13 countries. The strong increase is attributable to capitalization more than tripling relative to GDP in Côte d'Ivoire, Kenya, Mauritius, and Nigeria. The high level of stock market capitalization relative to output, however, is attributable to South Africa, where the level reached nearly three times output in 2006. Because South Africa attracts investment from other economies in the region that lack stock markets and are hence not included in the average, the average tends to overstate the level of capitalization for the South African economy per se. Excluding South Africa, the region has the lowest level of stock market capitalization relative to output of the six developing regions.
- The small average increase in credit to the private sector relative to output in Latin America and the Caribbean reflects very different outcomes across countries, ranging from a decline of more than 26 percentage points in Bolivia and Uruguay to an increase of 17 percentage points in Colombia and Costa Rica. Macroeconomic policies in Latin America have improved greatly since their boom-and-bust experiences over the last decades of the 20th century, and many countries avoided an excessive buildup of private credit and achieved steady growth in incomes. Compared with most other regions, the doubling of stock market capitalization was modest and may have reflected policy prudence by authorities in the region seeking to avoid an asset-price bubble.

- The drop in private credit relative to GDP in East Asia and the Pacific stems in part from adjustments following the East Asia crisis, with particularly significant declines in Malaysia (27 percentage points) and the Philippines (14 percentage points). However, East Asia is the developing region with the deepest domestic financial systems, and the region's ratio of bank credit to GDP exceeded that of the United States (although remaining below that of the more bank-based systems in Western Europe). The further deepening of financial markets was reflected in the more than tripling of stock market capitalization over the period.

The rise in foreign flows

The increase in domestic financial intermediation during the liquidity boom was accompanied by a rapid expansion of capital inflows (figure 2.7). Similar to increases in domestic credit, higher capital inflows can boost investment and efficiency (box 2.5).

While virtually every country saw inflows rise, they did not rise by the same amount in all countries, and not all forms of international capital flow increased to the same degree. *Portfolio equity flows* to developing countries increased rapidly before the financial



Box 2.5 Capital flows can boost investment and efficiency

Most developing countries relied on external finance during the 2003–07 boom. Developing countries' aggregate current account surplus (which averaged almost \$243 billion during this period) mainly reflected large surpluses of savings over investment in a few countries, notably China, and developing oil and mineral exporters. Three-fourths of the remaining developing countries for which data are available were net importers of capital, with current account deficits that averaged more than 6 percent of their GDP and 28 percent of their total investment spending (box table 2.5.1).

External finance can improve efficiency by enhancing the transfer of technology from more developed economies, helping firms achieve larger size and thus benefit from economies of scale, building reputations in global markets, and establishing business and marketing contacts for developing countries' exports (World Bank 2006). These effects can be indirect or arrive more directly, as can be the case with some forms of foreign direct investment, if the result is the importation of more sophisticated machines or business techniques.

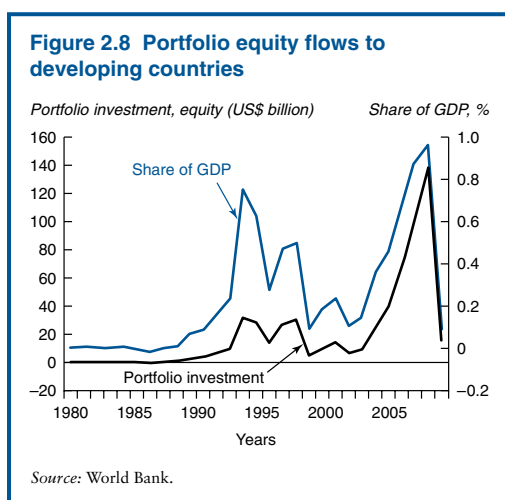
Box table 2.5.1 Developing countries with current account deficits, 2003–07

	Number of countries with current account deficits	Current account deficit (% of GDP)	Current account deficit (% of investment)
All countries	53	6.3	26.8
Low income	16	5.8	29.1
Lower middle income	20	6.1	23.4
Upper middle income	17	7.1	28.3

Source: World Bank.

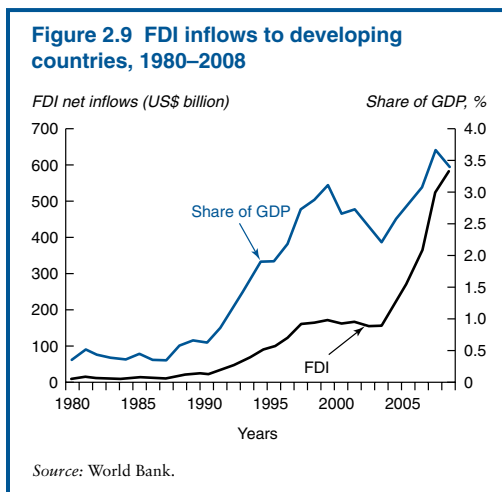
Note: Data on current account deficits are simple averages of country numbers. Small island economies are excluded.

crisis, from near zero in 2001 to \$160 billion in 2007, followed by a total collapse in 2008 (figure 2.8).



Developing countries' access to external *bond markets and foreign bank lending* increased markedly during the liquidity boom, reaching a peak of 4 percent of developing-country GDP in 2007. *Net FDI inflows* increased from about 2.5 percent of GDP in 2001 to 3.9 percent in 2007 before falling slightly in 2008, along with the reduction in global investment in general (figure 2.9). *Official flows*, in contrast, reversed from net inflows of \$26 billion in 2001 to net outflows of \$0.1 billion in 2007.

At the regional level, Europe and Central Asia, East Asia and the Pacific, and Latin America were the largest recipients of capital inflows, receiving more than 80 percent of net inflows over 2001–07, with the first two regions together accounting for 65 percent of the total. However, expressed as a share of GDP, the differences in inflows across regions were



less pronounced—both in 2001, and in 2007 when flows peaked. Flows to East Asia and the Pacific, relative to GDP, were only slightly above the developing-country average in 2001 and were actually below average in 2007. In contrast, while flows to developing Europe and Central Asia as a share of GDP were below average in 2001, they grew about fivefold by 2007. South Asia also saw inflows increase very rapidly, from only about 1 percent of GDP in 2001 to more than 8 percent in 2007. Contrary to accepted wisdom, Sub-Saharan Africa actually received close to average flows (relative to GDP) both in the pre-boom and end-of-boom periods. Both middle-income and low-income countries benefited from the surge in capital flows. The flows to low-income countries more than quadrupled, from

1.5 percent of their GDP in 2001 to almost 7 percent in 2007, largely supported by the rise in resource-related FDI.

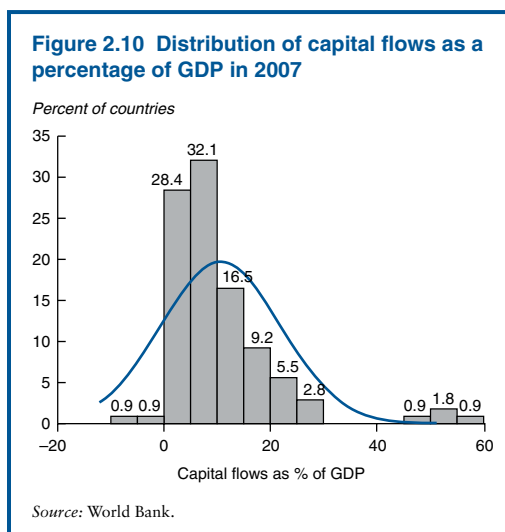
Across regions, the relative importance of different types of capital flows varied somewhat. In most regions equity (especially FDI) accounted for both the bulk of capital inflows in 2007 and most of the increase in inflows over 2001–07 (table 2.3). In developing Europe and Central Asia, however, net debt flows grew from almost nothing in 2001 to almost 10 percent of GDP. As such they represented about two-thirds of total inflows in 2007. Had Europe and Central Asia received the same increase in debt flows as other developing regions, its overall inflows would have been closer to 8 percent of GDP, similar to those received by East Asia, South Asia, and Sub-Saharan Africa. Although many factors underpin the strength of debt inflows to the region—including enthusiasm for the region’s long-term prospects within the European Union and the high share of foreign banks in the overall banking sector—the population’s willingness to take on exchange rate risk by borrowing in foreign currencies helps to explain why bank lending—including to private individuals—played such a prominent role.

At the country level, absolute flows are extremely concentrated, with China, India, the Russian Federation, and Brazil accounting for about 50 percent of net inflows both in 2007 and, on average, over 2001–07; the four also account for 73 percent of all flows

Table 2.3 Net capital inflows by region

	2001	2007	Avg. 2001–2007	2001	2007	2001	2007
	(US\$ billion)			(% of total flows to developing countries)		(% of region’s GDP)	
Developing countries	223	1,143	470			4	9
East Asia and Pacific	83	277	141	37	24	5	7
Europe and Central Asia	29	454	164	13	40	3	15
Latin America and the Caribbean	87	215	87	39	19	4	6
Middle East and North Africa	5	21	12	2	2	1	3
South Asia	8	116	39	4	10	1	8
Sub-Saharan Africa	11	60	27	5	5	3	7

Source: World Bank.



(figure 2.10). However, relative to GDP, both the flows and the change in flows are more evenly distributed, with about 60 percent of countries receiving flows of between 0 and 10 percent of GDP in 2007 (figure 2.10).

Real-side consequences of the surge in global finance

The extent to which a given developing country benefited from the surge in global liquidity depended on a wide variety of factors, many of which are impossible or at best very difficult to measure in a consistent manner across countries.

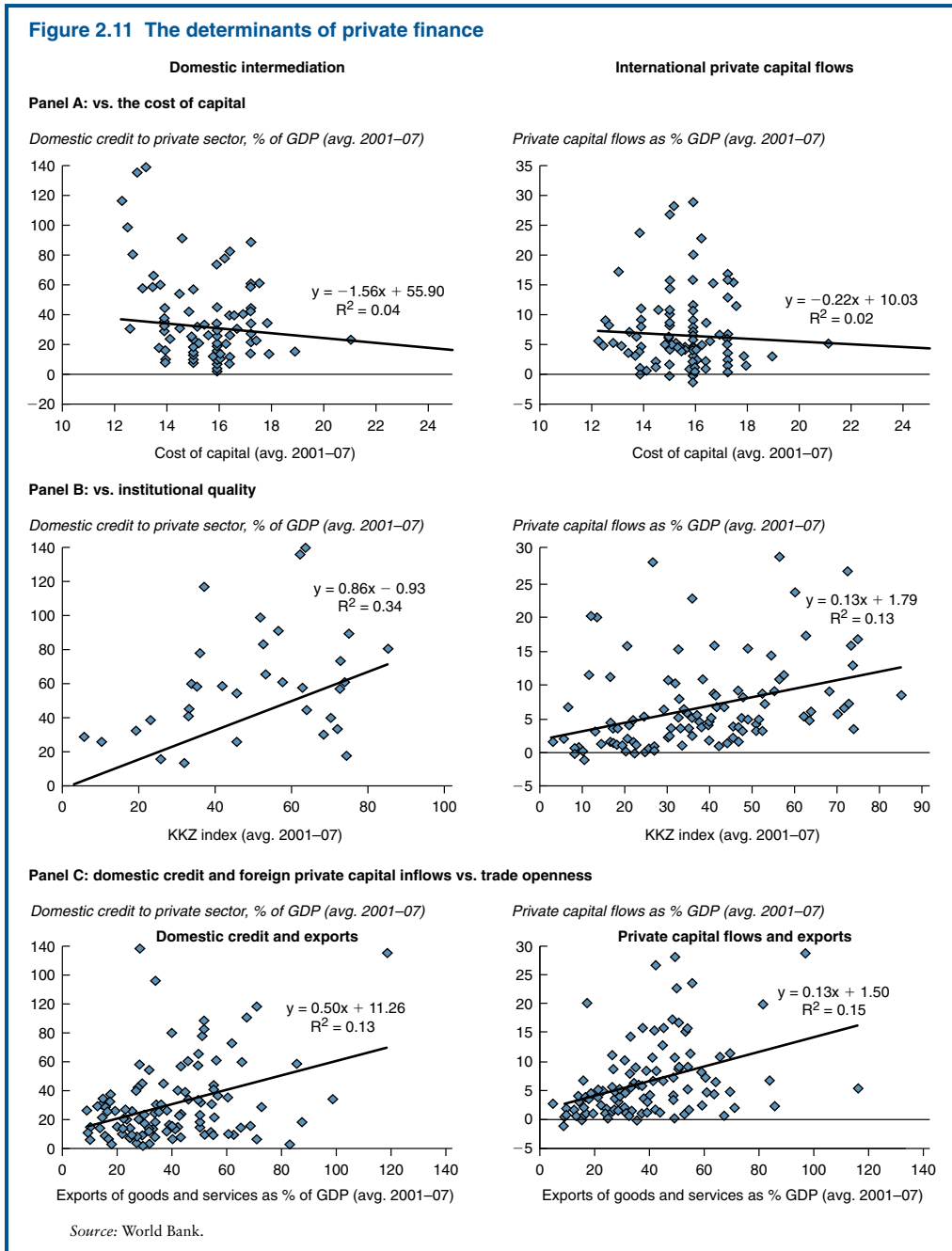
Figure 2.11 reports simple correlations between private finance (as represented by domestic intermediation in the first column and foreign capital inflows in the second column) and borrowing costs, the quality of institutions, and the extent of real-side openness (all data are expressed in terms of the average from 2001 through 2007). Unsurprisingly, the levels of both domestic intermediation and private capital inflows are negatively correlated with borrowing costs—although the simple bivariate correlation illustrated here is not very strong, mainly because of the interaction of other factors (see below).

The quality of domestic institutions (proxied here by the Kaufmann–Kraay–Zoido-Lobaton index) is also correlated with both domestic and external finance. Demand for capital will depend on the potential revenues from a physical investment. Both domestic and international investors operating in countries with strong institutions and a well-functioning regulatory environment, including reasonable protection of property rights, will likely earn higher real-side returns and therefore, all else equal, be willing to take on more debt. Similarly, lenders providing finance to borrowers in countries with strong institutions and protection of property rights would be more likely to be able to enforce their claims for repayment and hence would be willing to lend more.

Finally, the extent of real-side integration of an economy is also a good predictor of the extent of financial intermediation and private capital inflows that a country receives (Figure 2.11 panel C). In the recent boom period, external factors such as the high price of commodities were also at play. Interestingly, while per capita income levels are highly correlated with the level of domestic intermediation (figure 2.12), the size of capital flows is only weakly related to income.

Although these correlations provide some insight into the differences in intermediation levels at a given point in time, they do not speak to what drove the changes observed during the boom (table 2.4).

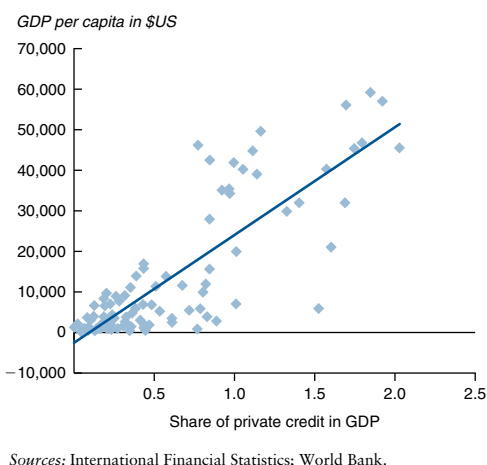
By far the biggest drivers of the observed changes in the availability of domestic and international finance were changes in the cost of capital, here operating through the reduction of interest rates in high-income countries and interest rate spreads in developing countries. Cross-country regressions (box 2.6) suggest that for the average developing country a 500 basis point decline (roughly the mean decline observed over the estimation period—as well as a standard deviation across the sample of countries for which comparable data are available) in borrowing costs resulted in an increase in the level of domestic intermediation equal to 4.5 percent of GDP and an increase in



foreign capital inflows of 0.5 percent of GDP. Likewise, panel estimates suggest that financial conditions in developing countries were even more sensitive to international financial conditions. According to these estimates, a 1 point

decline in the price of global risk (about the decline observed between 2003 and 2007) could result in an increase of 3.5 percent of GDP in foreign capital flows and an increase of 7.5 percent of GDP in domestic intermediation

Figure 2.12 Private credit from banks and other financial institutions relative to per capita income, 2007



(amounting to, respectively, more than two-thirds and more than three-fourths of the mean increase observed over the estimation period). The association is especially strong for debt inflows, and, not surprisingly, it does not hold for official aid.

Changes over time in other important determinants of domestic and international financial intermediation were not as large as the changes in international capital conditions and the cost

of capital. As a result, changes in the cost of capital (broadly understood to include the international price of risk) on average accounted for almost one-half of the observed fluctuation in capital inflows and about 60 percent of the increase in domestic intermediation (see table 2.4), with domestic intermediation being the only other quantitatively important factor in the determination of net capital inflows.

However, other factors, including institutional quality, overall economic openness, and the extent of domestic financial sector intermediation (in the case of the capital flows equation), were critical in explaining the wide differences in the levels of intermediation and inflows across countries both before and during the boom (lower panel of table 2.4). Cross-country differences in institutional quality (as measured by the Kaufmann–Kraay–Zoido-Lobaton Index) explained almost six-tenths of the variance in the level of domestic intermediation across countries and about one-third of the difference in net capital inflows. Indeed, a one-standard-deviation improvement in institutional quality (roughly equivalent to the average difference in institutional quality between Sub-Saharan Africa and Latin America) could generate a 12 percentage point increase in the ratio of private sector domestic credit to GDP, and an

Table 2.4 Intertemporal changes in financial variables mainly reflected the cost of capital, but across countries institutional quality was most important

Financial variables	Net capital flows	Domestic intermediation
		(As a percent of GDP)
Change over 2001–07 in sample mean of dependent variable	4.9	8.6
Contributions of changes in (sample mean of):		
Global cost of risk	2.2	5.1
Institutional quality	...	–0.08
Domestic intermediation	1.8	...
Difference in 2007 between top and bottom quartile in dependent variable		
Contribution of differences in:	1.61	34.5
Cost of capital	...	2.1
Institutional quality	3.7	19
Exports of GNFS	5.2	12.8

Source: World Bank.

Notes: Calculations based on estimates reported in box 2.6.

... Not estimated.

Box 2.6 Determinants of cross-country differences in domestic and international financial intermediation

Data limitations among other constraints prevent a comprehensive modeling of the factors that explain the extent of the expansion of domestic and international finance in developing countries in response to the global loosening of monetary conditions. However, cross-country regressions that seek to explain the average change in domestic intermediation (credit to the private sector) and international capital flows as a percentage of GDP provide important insights into the role of the country-specific potential explanatory variables (including changes in the cost of capital, institutional quality, financial development, exports, the budget surplus, and inflation).

These regressions confirm a statistically significant association between the level of domestic intermediation in developing countries and institutional quality, the share of exports in GDP, and their rate of growth (box table 2.6.1, column 2). The results also indicate a significant association between the level of international capital flows and institutional quality and exports (box table 2.6.1, column 3).

Both as a robustness check and to explore the role of the country-invariant risk-premium variable (discussed in chapter 3), panel regressions were also run for the period 2001–07, with net capital inflows and domestic intermediation as the dependent variables, and the risk premium plus the full set of regressors from the cross-sectional analysis as the independent variables. All independent variables were lagged, to diminish endogeneity concerns. These regressions confirm a statistically significant association between both domestic intermediation and capital inflows on the one hand and the international price of risk and financial development on the other (box table 2.6.2, columns 2 and 3). While the variation in the level of domestic financial intermediation was significantly associated with institutional quality, the variation in international capital flows was not. Nor did the cost of capital have an independent influence on either domestic or international intermediation beyond that of the price of international risk, likely reflecting the strong link between variations in the two variables (see chapter 3).

Box table 2.6.1 Cross-sectional regressions results

Dependent variable	Domestic intermediation (Private sector credit, % of GDP, Average 2001–07)	Net capital inflows (% of GDP, Average 2001–07)
	Coefficient	Coefficient
Explanatory variables		
Cost of capital ^a	–0.56*	–0.02
Institutional quality (Kaufmann–Kraay–Zoido-Lobaton index) ^b	0.69***	0.13***
Financial development (private sector credit, % of GDP)	—	–0.05
Export of goods and nonfactor services (% of GDP)	0.28**	0.13***
Export growth	0.53**	–0.244***
Budget surplus (% of GDP)	1.23***	0.12
Inflation (logs, percent)	–2.38	–0.52
R ²	0.46	0.36

Source: World Bank.

Note: All regressions estimated using average values over the period 2001–07 for the dependent variables, and initial values for the independent variables; number of countries = 103. Other controls include export growth, 1990–97 (percent, average annual rate); and indicators for countries in the upper quartile of both the fuel exports/GDP and the metals exports/GDP distribution.

*, **, and *** denote significance at, respectively, the 10 percent, 5 percent, and 1 percent level. Significance is evaluated using robust standard errors.

a. Measured as the U.S. T-bill rate, plus the country-specific spread, plus depreciation.

b. Measured on a scale of 0 to 100, with a cross-sectional standard deviation of 19.

— Not applicable.

Box table 2.6.2 Panel regression results

Dependent variable	Domestic intermediation (private sector credit, % of GDP)	Net capital inflows (% of GDP)
Explanatory variables	Coefficient	Coefficient
Global cost of risk ^a	-3.49***	-1.47*
Cost of capital ^b	-0.03	-0.03
Institutional quality (Kaufmann–Kraay–Zoido-Lobaton index) ^c	0.30**	-0.01
Financial development (private sector credit, % of GDP)	—	0.27***
Exports of goods and non-factor services (% of GDP)	-0.08	0.02
Budget surplus (% of GDP)	0.07	-0.03
Inflation (logs, %)	0.12	0.13
R ²	0.16	0.10

Source: World Bank.

Note: All regressions estimated using annual data over the period 2001–07, with all independent variables lagged once; number of observations = 498, 493. Other controls include indicators for countries in the upper quartile of both the (fuel exports/GDP and the metals exports/GDP distribution; and a full set of country-specific fixed effects.

*, **, and *** denote significance at, respectively, the 10 percent, 5 percent, and 1 percent level. Significance is evaluated using robust standard errors.

a. See above for details.

b. Measured as the U.S. T-bill rate, plus the country-specific spread, plus depreciation.

c. Measured on a scale of 0 to 100.

— Not applicable.

increase of 2 percent of GDP in private capital flows after controlling for all other factors. Countries with large export sectors and therefore a proven track record with foreign partners also tend to receive more foreign financing than those with weaker external ties. A country whose export sector was 5 percentage points larger than another's received, on

average over 2001–07, an extra 0.5 percent of GDP in foreign capital inflows, and its total domestic intermediation amounted to an extra 1.5 percent of GDP. Cross-country differences in the extent of real-side openness were associated with about one-third of the differences in net capital flows and in domestic intermediation.

Table 2.5 Regional distribution of changes in financing conditions, 2000–07

	Change between 2007 and 2000 in:				
	Cost of capital	Capital inflows	Stock market capitalization	Private credit by deposits money banks	Investment
	(Basis points)		(% of GDP)		
Developing countries	-400	5.0	78.6	5.5	5.5
Low-income countries					2.3
Middle-income countries					5.6
East Asia and Pacific	-134	2.0	118.0	-10.7	5.5
Europe and Central Asia	-866	12.0	59.8	15.7	4.9
Latin America and the Caribbean	-471	2.0	39.8	2.2	1.4
Middle East and North Africa	269	2.0	36.2	6.2	5.0
South Asia	-142	7.0	107.3	14.8	8.1
Sub-Saharan Africa	-685	4.0	59.1	6.8	3.6

Sources: World Bank; Beck and Demirgüç-Kunt 2009; World Bank 2009.

Note: Regional values are simple averages of countries, except for investment rates which are weighted averages.

The association between capital inflows and macroeconomic stability (as represented by the budget surplus and inflation) was in general not statistically significant, after controlling for the cost of capital, institutional quality, export intensity, and the extent of financial sector intermediation. Although one would expect that macroeconomic stability would be an important determinant of credit worthiness and as a result the size of capital flows, the data suggest that the relationship is relatively weak.

Overall, ample global liquidity was a determining factor in the surge in global capital flows to developing countries, but where those flows went and in which form depended importantly on the characteristics of individual developing countries. Country-specific “pull” factors, such as the quality of the institutional environment and overall economic openness, shaped the direction of capital flows and the extent to which the domestic intermediation responded by increasing the availability of credit.

It follows that even in an international environment in which capital may become scarcer and more expensive, countries can take steps that can deepen their domestic capital markets and increase their access to international capital. In particular, the evidence suggests that improvements in the regulatory environment, increased market openness, and more generally reforms that improve the business environment and reduce the cost of capital can substantially influence the level of capital inflows and financial intermediation in a given country, especially in Africa where the quality of institutions remains well below the average elsewhere. Indeed, in the expected tougher global environment, such factors are likely to be even more critical in determining the direction of future flows—placing even more value on forging ahead with further reforms. Sufficient progress in these areas across enough countries could well mitigate to a large degree the expected increase in risk aversion, potentially allowing capital flows in the longer run to regain more recent levels (see discussion in chapter 3).

The liquidity boom and macroeconomic performance

The sharp increase in capital inflows to developing countries and the rapid expansion of domestic finance were associated with a generalized investment boom, although some countries were more or less successful in transforming additional finance into productive investments.⁹ On average, between 2000 and 2007 investment-to-GDP ratios in developing countries increased by 5.2 percentage points, or 23 percent, compared with their 2000 levels (table 2.6).

Investment rates rose in all regions, most markedly in South Asia, the Middle East, and Sub-Saharan Africa. The very marked increase in investment rates in South Asia (up by more than 10 percentage points) partly reflects deep structural reforms that were undertaken during the 1990s, the influence of which on investment was redoubled by falling borrowing costs. In the rest of the developing world the rise in investment rates was more modest. Rates in low-income countries rose by 6 percentage points versus 5.2 percentage points in middle-income countries (inclusive of India). Despite the very strong capital inflows received by countries in Europe and Central Asia, investment rates in that region rose by only 3.5 percentage points—much less than the overall average for middle-income countries. By 2007, just before the onset of the crisis, investment rates in East Asia and

Table 2.6 Rising investment rates by region

	Investment rate		
	2000 (%)	2007 (%)	Change (% points)
Developing countries	22.7	28	5.2
Middle-income countries	22.8	28	5.2
Low-income countries	21.1	27.1	6.0
East Asia and Pacific (excluding China)	22.1	26	3.9
China	34.1	38.8	4.7
Europe and Central Asia	19.9	23.4	3.5
Latin America and the Caribbean	18.6	22.1	3.5
Middle East and North Africa	22.4	27.0	4.6
South Asia	22.0	32.8	10.8
Sub-Saharan Africa	16.9	20.9	3.9

Source: World Bank.

Table 2.7 Intertemporal and cross-country influences on investment

Change over 2001–07 in investment/GDP (sample mean) ^a	5.4
Contributions of changes in:	
Global cost of risk	1.9
Domestic intermediation	0.6
Terms of trade	1.4
Difference in 2007 between top and bottom quartile in investment/GDP ^b	11.5
Contributions of differences:	
Cost of capital	3.3
Net capital inflows/GDP	3.0

Source: World Bank.

a. Based on panel regressions.

b. Based on cross-sectional regressions.

the Pacific exceeded 26 percent of GDP. Those in Sub-Saharan Africa were much more modest (about 21 percent of GDP) but were nevertheless 3.9 percentage points higher than in 2000.

Many factors help explain the extent to which investment rates differ across countries and rise in some countries but not others (table 2.7; box 2.7). On average, about one-third of the increase in investment rates observed between 2001 and 2007 is accounted for by the reduction in the global cost of risk, a further 11 percent by increased domestic intermediation, and about one-fourth by improvements in the terms of trade in some countries.

Cross-country differences were more than twice as large as the changes over time, with about 30 percent of the variation accounted for by differences in the cost of capital and a further 30 percent by the level of capital inflows a country attracts. The impact of domestic intermediation and institutional quality was not statistically significant here, possibly reflecting difficulties in disentangling their effect from that of the cost of capital. Concretely, these results suggest that a reduction in the cost of capital from the average level found in Sub-Saharan Africa to that prevailing in Latin America would be associated with an increase in investment equal to almost 2 percent of GDP. This reinforces the importance of continuing with structural reforms aimed at expanding still-underdeveloped financial sectors (a point confirmed by the simulations discussed in chapter 3).

Investment does not, of course, mechanically translate into greater output and living standards: its efficiency must also be taken into account. In this context, additional econometrics suggest that increased financing was most likely to lead to increases in growth in those countries where the quality of institutions was high, a result that is consistent with the recent literature (Frankel 2009).¹⁰

Impact of the investment boom on growth and potential output

The prolonged reduction in interest rates during the liquidity boom was associated with a rise in potential output. Normally, the increase in investment from a fall in interest rates would be relatively short-lived (as would be the period of low interest rates). During this most recent bubble, however, interest rates remained low for a very long time, and as a result investors and economists alike began to talk of a new regime likely to be characterized by low interest rates. If investors' expected interest rates (and with them the cost of capital) had decreased on a permanent basis,¹¹ then economic theory suggests that investors would have sought to increase the amount of capital they employed to produce a given level of output. As predicted by theory, during this transition period to a higher capital output ratio, investment grew faster than usual and the ratio of the stock of capital to GDP rose (figure 2.13). As a result, the rate of growth of potential output increased—see box 2.8 for a brief description of the model of potential output employed here; the online technical annex (available at www.worldbank.org/GEP2010) to this chapter provides further details—more rapidly than normal during this period.

Overall, the rate of growth of potential output among developing countries increased by an average of 1.5 percentage points between 2003 and 2007 as compared with the pre-boom period 1995–2002, with 40 percent of that increase attributable to increased capital services as a result of higher investment rates.¹² Table 2.8 breaks down this aggregate result across different regions. Although both

Box 2.7 Understanding the increase in investment rates

Box table 2.7.1 reports cross-sectional regression results that seek to describe differences in investment across developing countries in terms of differences in the cost of capital, institutional quality, domestic intermediation, and international capital inflows, among other explanatory variables. These regressions confirm a statistically significant association between investment ratios on the one hand and initial values of the cost of capital and international capital inflows on the other. Both as a robustness check and to explore further the changes in investments observed over time, including the role of the country-invariant global risk premium, panel regressions were also run for the period 2001–07, with investment ratios as the dependent variables, and the risk premium, plus the full set of regressors from the cross-sectional analysis, as the independent variables. Also included as possible explanatory variables were interactions between capital inflows, financial

development, and institutional quality, to capture the notion that domestic conditions may affect the efficiency of investment. All independent variables were lagged, to diminish endogeneity concerns.

The results (box table 2.7.2) confirm a statistically significant association between investment on the one hand and both the global price of risk and domestic intermediation on the other. Even after controlling for the latter factors, the terms of trade have a significant impact on investment. In contrast, the impact of the cost of capital, institutional quality, and international capital flows is not statistically significant, possibly reflecting difficulties in disentangling their effect from that of other variables. Additional regression analysis, not reported here, indicates that equity capital inflows, notably FDI flows, have a stronger effect on investment rates than on international debt flows (bonds and bank lending).

Box table 2.7.1 Investment-to-GDP ratio, cross-sectional regression results

	Coefficient
Cost of capital	-0.59***
Institutional quality ^a	0.00
Financial development	-0.04
Net capital inflows	0.45*
Change in terms of trade	-0.01
R ²	0.22

Source: World Bank.

Note: All regressions estimated using average values over the period 2001–07 for the dependent variable, and initial values for the independent variables; number of countries = 106. Other controls include trade-weighted export market growth (percent) and indicators for countries in the upper quartile of both the fuel exports / GDP and the metals exports / GDP distribution. *, **, and *** denote significance at, respectively, the 10, 5, and 1 percent level. Significance is evaluated using robust standard errors. ^aMeasured on a scale of 0 to 100.

Box table 2.7.2 Investment to GDP ratio, panel regression results

	Coefficient
Global cost of risk	1.33*
Cost of capital	0.10
Institutional quality (Kaufmann–Kraay–Zoido-Lobaton index) ^a	0.08
Financial development (private sector credit, percent of GDP)	0.08*
Net capital inflows/GDP (percentage points)	0.34
Terms-of-trade index, weighted by trade ratio	0.06**
R ²	0.24

Source: World Bank.

Note: All regressions estimated using annual data over the period 2001–07, with all independent variables lagged once; number of observations = 430. Other controls include trade-weighted export market growth (percent); indicators for countries in the upper quartile of both the fuel exports/GDP and the metals exports/GDP distribution; and a full set of country-specific fixed effects. *, **, and *** denote significance at, respectively, the 10, 5, and 1 percent level. Significance is evaluated using robust standard errors.

^aMeasured on a scale of 0 to 100.

Box 2.8 Estimating potential output in developing countries

This *Global Economic Prospects* introduces new estimates of potential output based on a hybrid production-function model of potential output similar to that used by the Congressional Budget Office (CBO) in the United States, the OECD, the European Commission and the Federal Reserve Board (CBO 2001; OECD 2008; Cournède forthcoming; Denis and others 2006). In this model, which is described in more detail in the online annex to this publication, the supply side of GDP is described by a simple Cobb-Douglas function of the form

$$GDP = AK^\alpha L^{1-\alpha},$$

where *GDP* is gross domestic product, *K* is the capital stock, and *L* is labor employed. Potential output is the level of output attained when the entirety of the capital stock and effective labor supply is employed. Replacing *L* with the working-age population (P_{1565}), the labor force participation rate (*Pr*), and the unemployment rate (*UNR*) gives

$$GDP = AK^\alpha (P_{1565} * Pr * (1 - UNR))^{1-\alpha}.$$

And stating everything in growth terms gives

$$\dot{y} = \dot{TFP} + \alpha \dot{K} + (1-\alpha) * (\dot{P}_{1565} + \dot{Pr} + (1-UNR))$$

Assuming that all of the capital stock and all of the labor force are fully employed (*UNR* and *Pr* equal their equilibrium values), that all of the services of the available capital stock are used, and that total factor productivity (*TFP*) is growing at its trend rate gives an expression for the rate of growth of potential. For most developing countries, we do not have reliable economy-wide data for *Pr* and *UNR*, so for the purposes of calculating the rate of growth of potential, it suffices to assume that the equilibrium unemployment and participation rates are constant, which leaves us with

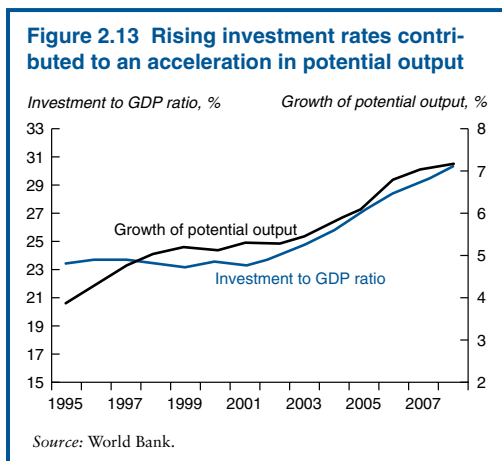
$$\dot{y} = \dot{TFP} + \alpha \dot{K} + (1-\alpha) * (\dot{P}_{1565})$$

as an expression for the rate of growth of potential output.

For the purposes of this study, the capital stock was estimated using the perpetual inventory method from investment data (running from 1960 in the case of most countries) and assuming a depreciation rate of 7 percent (IMF 2005). Trend TFP was calculated using an Hodrik-Prescott filter through spot estimates of TFP calculated by inverting the above equation in level terms. The end-point problem was resolved by assuming that TFP growth from 2008 through 2009 was equal to the average rate of growth of TFP during the period 1996–2006. The share of capital income in total output (alpha) was assumed to be a uniform 40 percent in all developing countries.

An alternative approach used until recently by the OECD (it was recently abandoned in favor of one similar to that described here) calculates the capital stock on the basis of a smoothed investment rate series. This results in an estimate of potential that is less sensitive to cyclical changes in investment behavior but has the disadvantage that full employment capital services are disconnected from the actual observable capital stock. In the words of the U.S. Congressional Budget Office, which also eschews using the smoothed investment method, “unlike the labor input, the capital input does not need to be cyclically adjusted to create a ‘potential’ level—the unadjusted capital input already represents its potential contribution to output. Although use of the capital stock varies greatly during the business cycle, the potential flow of capital services will always be related to the total size of the capital stock, not to the amount currently being used” (CBO 2001).

The use of actual rather than a smoothed capital stock means that the output gap fluctuates less over the cycle.



middle- and low-income countries saw their potential growth rates increase by about the same amount, with capital deepening accounting for a larger share of the total among low-income countries, with the remaining 60 percent increase attributable to growth in population and in total factor productivity. In the case of China, almost all of the increase in output during this period can be ascribed to increases in the capital stock. While these

Table 2.8 Decomposition of increase in potential output growth directly attributable to capital deepening

	Change in growth rate of potential output (2003–2007 vs 1995–2003)		
	Total	Due to capital deepening	Share due to capital deepening
Developing countries	1.5	0.6	40.3
Middle-income countries	1.5	0.6	39.8
Low-income countries	1.3	0.8	63.7
East Asia and Pacific (excluding China)	0.4	–0.1	–19.8
China	0.3	0.9	283.5
Europe and Central Asia	3.1	0.6	18.7
Latin America and the Caribbean	0.3	0.1	46.6
Middle East and North Africa	0.8	0.5	66.7
South Asia	1.4	1.1	78.5
Sub-Saharan Africa	1.9	1.5	79.5

Source: World Bank.

results are sensitive to the level of investment rate used in the counterfactual exercise, the broad result that capital deepening accounted for almost half of the acceleration in potential output observed during this period is robust to different specifications.¹³

Concluding remarks

Finance, whether it is delivered through the domestic banking system or originates from abroad, is an important enabler of economic development. At its best, it improves efficiency by funding potential-enhancing investment projects that would otherwise not have been funded and by promoting and facilitating the transfer of technologies and the spread of best practices within an economy. However, the extent to which an increase in intermediation is able to achieve these results depends importantly on the quality of domestic institutions, regulations, and overall absorptive capacity of an economy. Where the supply of credit, whether domestic or foreign in origin, exceeds the absorptive capacity of an economy, it can lead to macroeconomic instability and thus make a negative contribution to long-term growth and potential output.

For the vast majority of developing countries, the period of 2000–07 was one of very liquid financial conditions. Both domestic and international finance expanded rapidly, with those countries most open to world trade and finance receiving the largest shares of the increase in credit. For most countries this expansion fueled an investment boom that contributed to faster productivity growth and increased potential output through capital deepening—without generating domestic inflation or serious external imbalances. That in turn suggests that for these countries a pre-existing capital constraint was at least temporarily relieved, ushering in a golden age of rapid and, at least at the country level, sustainable growth. For a few countries, most notably a number in the Europe and Central Asia region, inflows and domestic credit creation either

exceeded the domestic economy's absorptive capacity or found its way into nonproductive hands, helping to feed an unsustainable increase in consumer demand that generated large and ultimately unsustainable internal and external imbalances.

The financial crisis has brought an end to these favorable conditions for both groups of developing countries. For the moment, the most serious impacts have been felt in those countries where the largest imbalances accrued. Going forward as financial conditions improve, conditions in developing countries should also improve. But growth rates are unlikely to regain their boom-period levels, if global liquidity is both more expensive and less abundant in coming years, particularly over the next several years as countries adjust to tighter international conditions. International capital flows to developing countries are not expected to reach their pre-crisis levels in the medium term. Competition among developing countries to attract investment flows (such as FDI) will be tougher than in previous years. Factors such as institutional quality, trade openness, and regulatory framework will play an increasingly important role in attracting these cross-border investments and financial intermediation. To what extent financial conditions and developing-country growth potential will be affected will depend importantly on the nature of the changes to come in the international financial architecture, the extent that these changes impinge on financing conditions for developing countries, and the success with which developing countries are able to offset the less propitious external conditions by improving domestic financial conditions. The nature of these changes and their expected impact on growth and the growth potential of developing countries are explored in more detail in chapter 3.

Notes

1. Total claims on BIS-reporting banks increased by 21 percent a year on average between 2002 and 2007, compared with a 10 percent annual increase in nominal world GDP.

2. The lack of information available to buyers of these instruments also should reduce their price. However, sustained low interest rates during the 2002–07 boom appear to have eroded concerns over risk taking on the part of many investors. Information asymmetries may also be mitigated by more stringent covenants on loans sold on secondary markets than on loans held by the originating bank, although it is difficult for covenants to anticipate all potential repayment issues.

3. Data on reported CDS spreads are taken from Datastream.

4. Over-the-counter derivatives played an important role in the excessive volatility affecting foreign currency and asset markets during the East Asian crisis of 1997–98 (Kregel 1998).

5. Firms operating in countries at low levels of financial development are constrained from making the investments required to assimilate new technologies (Aghion and others 2004). Moreover, the intermediation services of a healthy financial sector also contribute to development, efficiency, and economic growth by enabling arms-length transactions that increase competition and the range of options available for both suppliers and buyers. Financial intermediation also helps to move resources from less productive uses to more productive ones, and to reduce information and transactions costs, such as the cost of acquiring information on investments, monitoring of firms' managers, and enforcing contracts (Levine 1997).

6. Rothenberg and Warnock (2006) find that nearly half the "sudden stop" crises in emerging markets can best be attributed to capital flight by local investors, while Cowan and others (2008) find that one in five episodes are driven by surges in outflows rather than stops in inflows.

7. During the recent boom, the biggest expansion in finance (both domestic and external) among the developing regions was in Europe and Central Asia, largely reflecting optimism about long-term prospects for the region given its quality labor force and its increasing political and economic integration with high-income EU economies. Unlike other regions, the expansion in finance (increases of 12 percent of GDP in external flows and 15.6 percent in domestic intermediation) exceeded the absorptive capacity of many countries, spilling over into increased consumption, inflation, and rising current account deficits.

8. Bond markets also increased significantly in some of the middle-income countries, as discussed in World Bank 2009.

9. At first blush, this appears to contradict some of the evidence outlined in box 2.3 suggesting that increased intermediation increases GDP and investment mainly by contributing to increased total factor

productivity. However, they are consistent but here the expansion in potential output that drives an increase in investment derives (principally) not from increased TFP but from a fall in the cost of capital. Although TFP growth did increase during the 2000s, the sharp change observed was the decline in borrowing costs and with them the cost of capital. As a result, the quantity of capital that could be supported by a given level of productivity and labor increased, inducing an increase in investment, an acceleration in GDP growth, and an increase in potential output.

10. These regressions also suggested a negative relationship between growth and the global price of risk and the cost of capital. However, this link may be spurious: the estimated negative relationship between growth and domestic credit expansion suggests that the data may be finding it hard to disentangle the impact of the domestic credit expansion from that of some of its underlying determinants.

11. Indeed, some argue that long-term forces will yet force interest rates back down to the levels observed during the first half of the 2000s.

12. Calculations based on the results of counterfactual simulations were conducted by assuming investment-to-GDP ratios between the period 2002 and 2007 held constant, instead of increasing significantly, as they did in many countries. This has the effect of reducing the level of the capital stock and therefore the services of capital in the calculation of potential output. See box 2.8 for more on the model of potential output employed here.

13. The share attributable to capital deepening ranges from a high of 57 percent when assuming a base year of 2000 to a low of 42 percent when assuming a base year of 2003.

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