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Dilip Ratha
World Bank

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Workers' Remittances: An Important and Stable Source of External Development Finance

Dilip Ratha

AS PRIVATE CAPITAL FLOWS HAVE DECLINED, workers' remittances have become an increasingly prominent source of external funding for many developing countries. This chapter examines the relative importance of workers' remittances as a source of development finance and discusses measures that industrial and developing countries could take to increase remittances. The main messages are:

- Remittance flows are the second-largest source, behind FDI, of external funding for developing countries. In 2001, workers' remittance receipts of developing countries stood at \$72.3 billion, much higher than total official flows and private non-FDI flows, and 42 percent of total FDI flows to developing countries (table 7.1). Remittances to low-income countries were larger as a share of GDP and imports than were those to middle income countries. Remittances are also more stable than private capital
- flows, which often move pro-cyclically, thus raising incomes during booms and depressing them during downturns. By contrast, remittances are less volatile—and may even rise—in response to economic cycles in the recipient country. They are expected to rise significantly in the long term, once sluggish labor markets in G-7 economies recover and new procedures for scrutinizing international travelers become routine.
- Remittances are often invested by the recipients, particularly in countries with sound economic policies. Improvements in policies and relaxation of foreign exchange controls in the 1990s may have encouraged the use of remittances for investment.
- By strengthening financial-sector infrastructure and facilitating international travel, countries could increase remittance flows, thereby bringing more funds into formal channels. The transaction costs of fund transfers often exceed

Table 7.1 Remittances received and paid by developing countries in 2001

(billions of dollars)

	All developing	Low-income	Lower middle-income	Upper middle-income
Total remittance receipts	72.3	19.2	35.9	17.3
as % of GDP	1.3	1.9	1.4	0.8
as % of imports	3.9	6.2	5.1	2.7
as % of domestic investment	5.7	9.6	5.0	4.9
as % of FDI inflows	42.4	213.5	43.7	21.7
as % of total private capital inflows	42.9	666.1	44.9	20.2
as % of official flows	260.1	120.6	361.7	867.9
Other current transfers ^a	27.2	6.1	14.0	7.1
Remittances and other current transfers	99.5	25.3	49.9	24.4
Total remittance payments	22.0	1.2	1.7	19.1
excluding Saudi Arabia	6.9	1.2	1.7	4.0

a. Other current transfers include gifts, donations to charities, pensions received by currently retired expatriate workers, and so on. They may also include personal transfers by migrant workers to families back home. See data annex for more details.

Sources: IMF, *Balance of Payments Yearbook 2001*; World Bank, *World Development Indicators 2001*.

20 percent; reducing them by even 5 percentage points could generate annual savings of \$3.5 billion for workers sending money home.

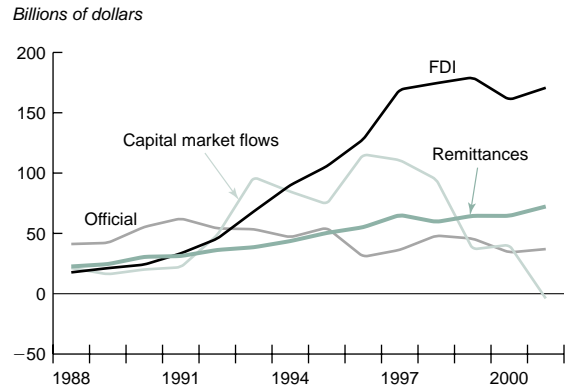
- Facilitating international labor mobility is an even more crucial—and controversial—means of increasing remittance flows to developing countries. Greater international migration could generate substantial benefits to the world economy. Developed countries remain wary of relaxing immigration policies, however, as it is feared that immigration would increase competition in local job markets and pose a fiscal burden on local tax payers. Developed countries also fear that large scale immigration may erode cultural values and undermine national security. Developing countries worry about a “brain drain” even though any output losses from emigration of skilled workers may be more than offset by remittances and positive network effects on trade and investment. One positive, though somewhat limited, step in the direction of greater international labor mobility is the so-called Mode-4 proposal for supplying services under consideration in the current round of the General Agreement on Trade in Services.

The first section of the chapter analyzes trends and cycles in workers’ remittances in developing countries and compares them to other sources of foreign exchange earnings—among them exports, private capital, and official flows. The next section examines the impact of remittances on growth, investment, and income distribution in recipient economies. The third section discusses means of strengthening the infrastructure for sending remittances. The fourth section deals with international migration—the precondition for remittances. The final section outlines the near- and long-term outlooks for remittances flows to, and migration from, developing countries.

Trends and cycles in workers’ remittances in developing countries

In 2001, remittances to developing countries from overseas resident and nonresident workers amounted to \$72.3 billion or 1.3 percent of GDP (table 7.1).¹ Remittances were smaller than FDI inflows, but larger than international capital market flows during 1999–2001 (figure 7.1). For most of

Figure 7.1 Workers’ remittances and other inflows, 1998–2001

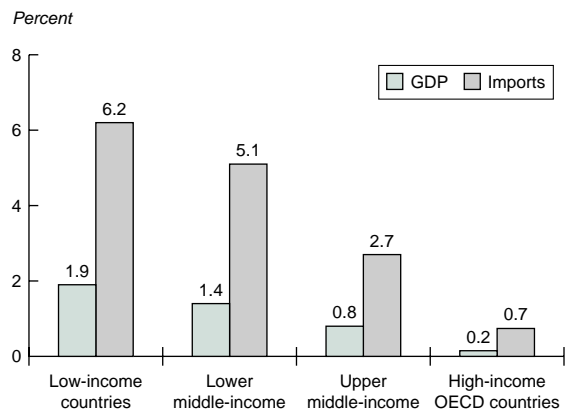


Sources: World Bank, *Global Development Finance*; IMF, *Balance of Payments Yearbook*, various years.

the 1990s, remittance receipts have exceeded official development assistance.

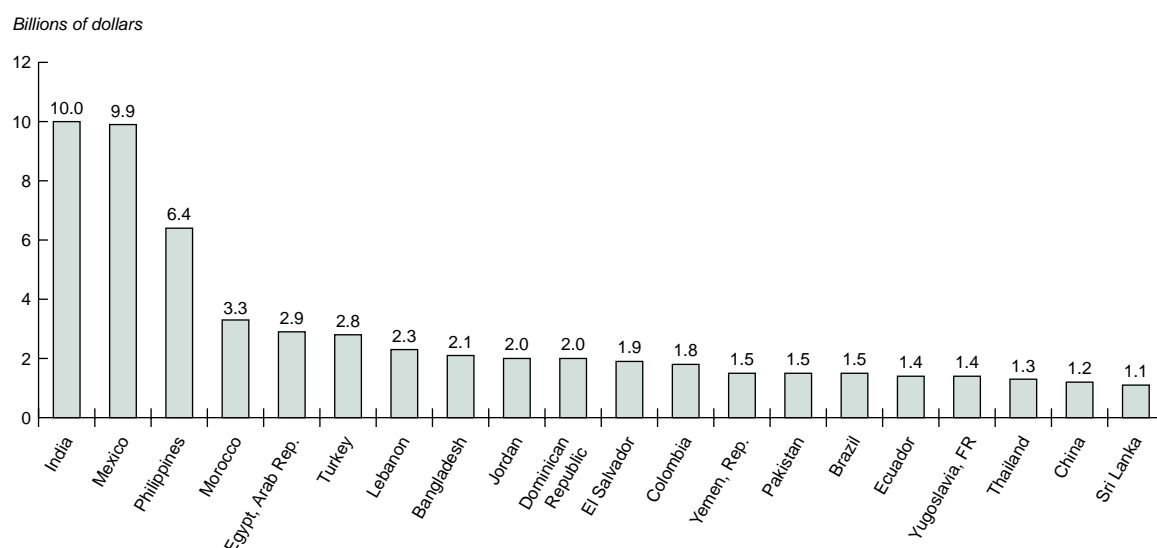
As a share of GDP and other key economic indicators, remittances are significantly higher in low-income countries than in other developing countries. In 2001, remittances to low-income countries were 1.9 percent of GDP and 6.2 percent of imports; in the upper-middle-income countries they were 0.8 percent of GDP and 2.7 percent of imports (figure 7.2). Although in nominal terms the top recipients of remittances included several large countries—India, Mexico, and the Philippines (figure 7.3)—remittances as a share of GDP were larger in low-income countries (see figure 7.4). Latin America and the Caribbean were the largest

Figure 7.2 Remittances as a share of GDP and of imports, 2001



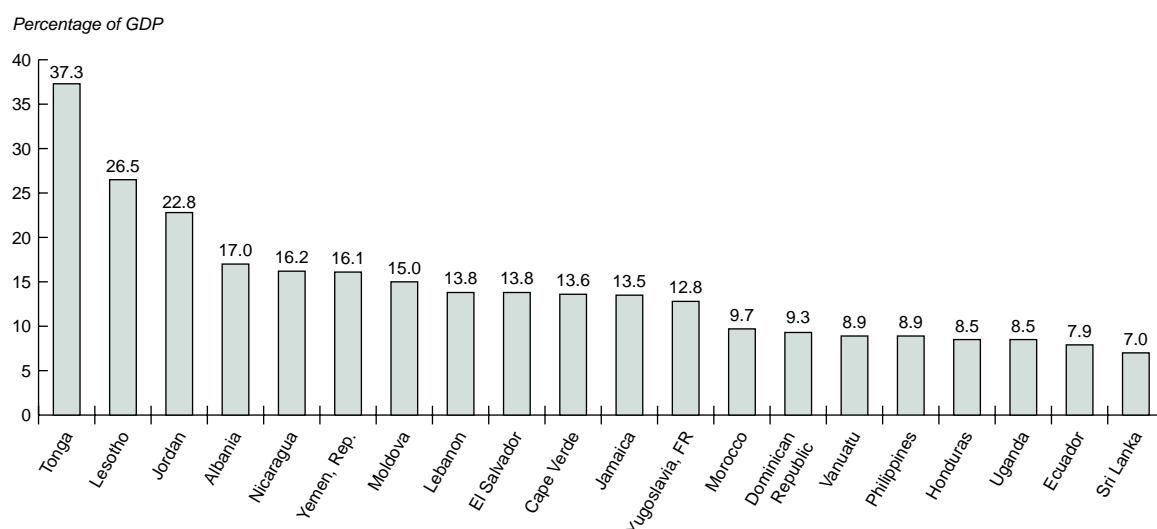
Source: World Bank staff calculations.

Figure 7.3 Top 20 developing-country recipients of workers' remittances, 2001



Source: IMF, *Balance of Payments Yearbook*.

Figure 7.4 Top 20 developing-country recipients of workers' remittances, 2001



Source: IMF, *Balance of Payments Yearbook*.

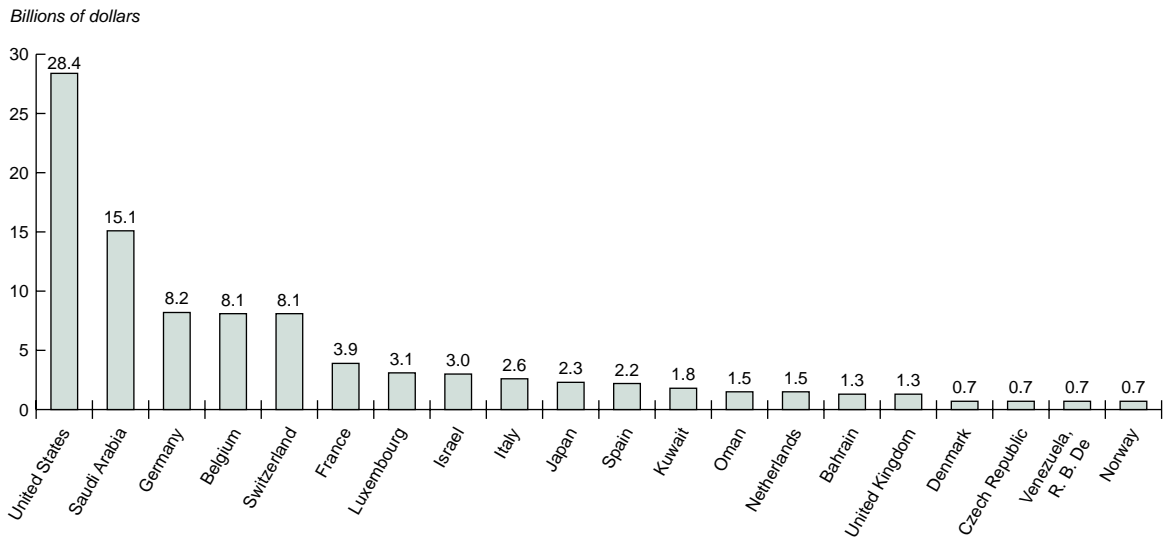
recipient of remittances in nominal terms, but relative to the size of GDP, South Asia was the largest recipient, with remittances of nearly 2.5 percent of GDP in 2001 (table 7.2). Remittance flows to Sub-Saharan Africa were also significant.

Workers' remittances are more evenly spread among developing countries than are capital flows: the 10 countries that received the most remittances in 2001 received 60 percent of total remittances to developing countries, significantly

below the top 10's share of GDP (68 percent), exports (72 percent), and FDI (74 percent).

The United States and Saudi Arabia are the largest sources of workers' remittances to developing countries. Other top sources are Germany, Belgium, and Switzerland (figure 7.5). Although it is difficult to disaggregate the remittance data, anecdotal evidence suggest that developing countries may have received nearly \$18 billion in 2001 from the United States alone.² Until the mid-1990s,

Figure 7.5 Top 20 country sources of remittance payments, 2001



Source: IMF, *Balance of Payments Yearbook*.

Table 7.2 Workers' remittances received by developing countries, by region, 1999–2002

Billions of dollars	1999	2000	2001	2002
Total	67	66	72	80
East Asia and Pacific	11	10	10	11
Europe and Central Asia	8	9	9	10
Latin America and the Caribbean	17	19	23	25
Middle East and North Africa	12	11	14	14
South Asia	15	13	14	16
Sub-Saharan Africa	4	3	3	4
<i>As a percentage GDP</i>				
Total	1.2	1.1	1.3	1.3
East Asia and Pacific	0.7	0.7	0.6	0.6
Europe and Central Asia	0.9	0.9	0.9	1.0
Latin America and the Caribbean	1.0	1.0	1.2	1.5
Middle East and North Africa	2.2	1.9	2.3	2.2
South Asia	2.6	2.3	2.3	2.5
Sub-Saharan Africa	1.3	0.8	1.0	1.3

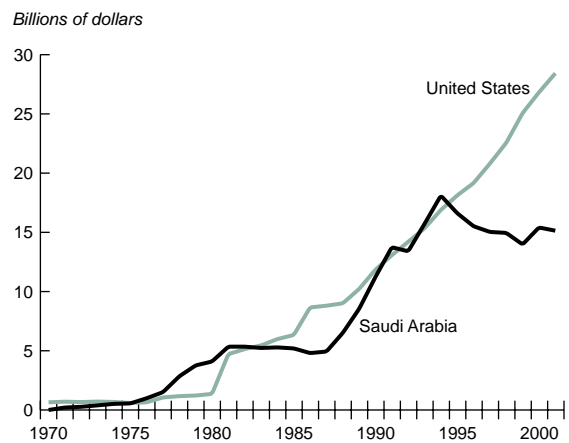
Sources: IMF, *Balance of Payments Yearbook*; World Bank, *World Development Indicators*.

when its economic boom (driven by oil exports) subsided, Saudi Arabia was the largest source of remittance payments in the world (figure 7.6), and it still is the largest source on a per capita basis.³

A relatively stable source of foreign exchange

Remittances were one of the least volatile sources of foreign exchange earnings for de-

Figure 7.6 The top two sources of remittance payments, 1970–2001



Source: IMF, *Balance of Payments Yearbook*.

veloping countries in the 1990s (see figure 7.1). While capital flows tend to rise during favorable economic cycles and fall in bad times, remittances appear to react less violently and show remarkable stability over time. For example, remittances to developing countries continued to rise steadily in 1998–2001 when private capital flows declined in the wake of the Asian financial crisis. Even the more stable components of capital flows—FDI and official flows—declined in 2000–01, while remittances have continued to rise.

Remittances intended for consumption (by recipient households) should be less volatile than those intended for investment. Migrants may increase remittances in times of economic hardship, especially in low-income countries where their families may depend significantly on remittances as a source of income and may live at close to subsistence levels. Economic downturns may also encourage workers to migrate abroad—and to begin transferring funds to families left behind.

Even when the purpose behind remittances is investment, remittances are less likely to suffer the sharp withdrawal or euphoric surges that characterize portfolio flows to emerging markets. Overseas residents are more likely to continue to invest in their home country despite economic adversity than are foreign investors, an effect that is similar to the home-bias in investment (World Bank 2001). This relative stability has encouraged some emerging market economies to use remittances as collateral against which to borrow on international capital markets on substantially better terms than they otherwise could (box 7.1).

The banking relationships associated with remittance transfers have also attracted some significant FDI deals in developing countries. For banks, intermediating funds transfers from overseas workers to families back home is a high margin business. Some authors estimate that remitters collected about \$12 billion in fees in 2001 (Maldonado and

Robledo 2002). While the size of this business itself is attractive to banks, new customers who start a relationship with a bank initially for remittance purposes also bring a host of other businesses. The large and fast-growing business opportunities associated with workers' remittances have attracted at least two major FDI deals in Mexico recently. Valued at \$12.5 billion, the Citigroup-Banamex deal in 2001 is the single biggest investment south of the border for any U.S. company (*Wall Street Journal*, December 12, 2002). In December 2002, Bank of America paid Santander \$1.6 billion for part of Serfin.

Despite greater overall stability, remittances do respond to dramatic changes in economic activity in recipient countries. They rose steadily in the Philippines as the investment climate improved in the early 1990s, becoming more volatile following the financial crisis in the late 1990s (figure 7.7). Similarly, Turkey's remittance receipts increased for most of the 1990s but suffered a decline as the economy slipped into crisis in 1999 and 2000 (figure 7.8). In both cases, however, the decline in remittances, and the volatility, were smaller than those of capital flows.

There is some evidence that remittances have been increasingly used for investment purposes in developing countries, especially in low-income countries. Some studies estimate that remittances from the United States are responsible for almost

Box 7.1 Securitizing future flows of workers' remittances

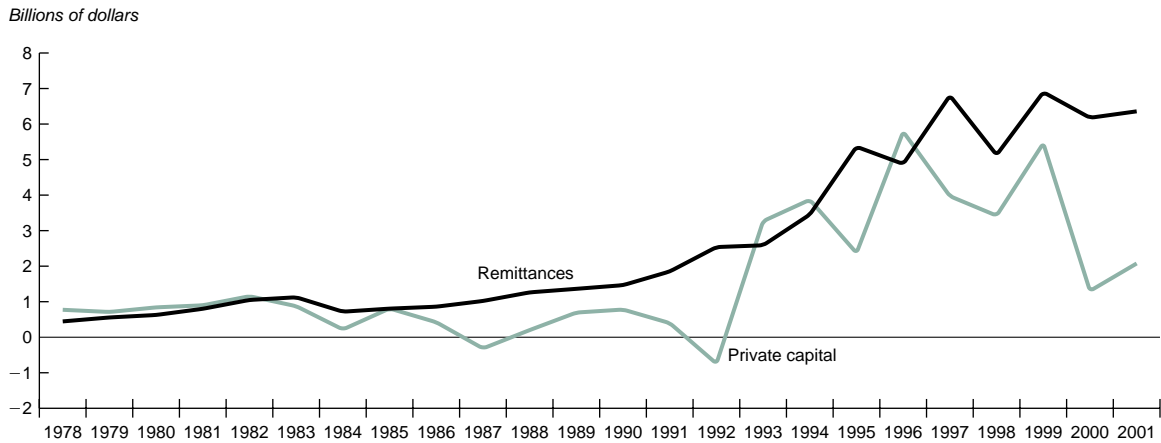
In recent years, many emerging market issuers have resorted to future-flow securitization to access international markets, often to avoid credit rationing in the face of deteriorating sovereign risks. Workers' remittances have been used quite frequently along with other future-flow receivables such as oil exports or credit card receivables (Ketkar and Ratha 2001). In the hierarchy of future flows that are amenable to international securitization, major international rating agencies rank electronic remittances in the same category as airline ticket receivables, credit card receivables, and telephone receivables, next only to crude oil exports.

For example, in August 2001 Banco do Brasil issued \$300 million worth of bonds (with five year maturity) using as collateral future yen remittances from Brazilian workers in Japan. The terms of these bonds were significantly more

generous than those available on sovereign issues. Rated BBB+ by Standard and Poors, these securities were several notches higher than Brazil's sovereign foreign currency rating BB– at the time. Other countries, such as El Salvador, Mexico, Panama, and Turkey, have also used future workers' remittance-backed securities to raise external financing. Assuming that about half of all recorded remittances pass through the banking system, and assuming an over-collateralization ratio of 5:1, developing country issuers could potentially raise about \$7 billion a year using future remittance-backed securitization. However, developing countries should carefully weigh the trade-off between lower borrowing costs and longer maturities that securitized debt offers and the inflexibility associated with servicing such debt.

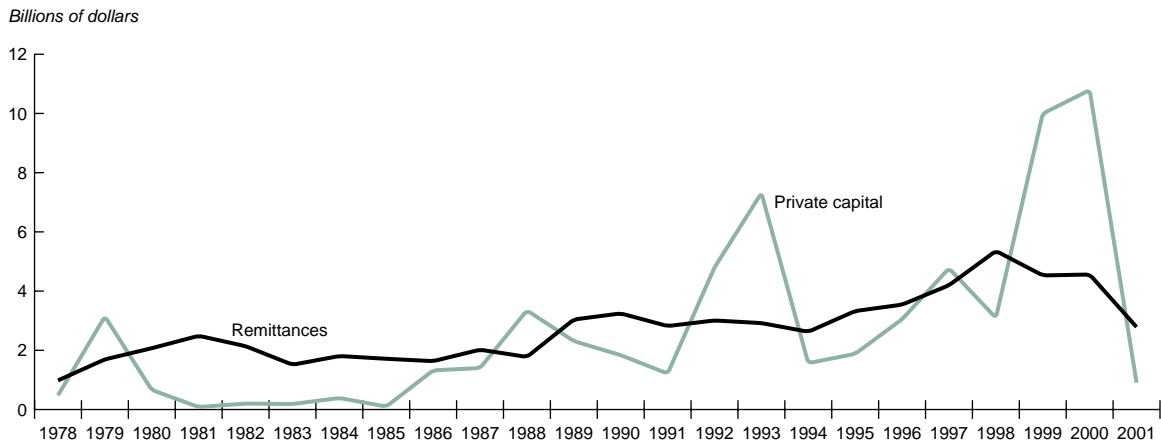
Source: Ketkar and Ratha 2001.

Figure 7.7 Remittances and private capital flows to the Philippines, 1978–2001



Sources: IMF, *Balance of Payments*; World Bank, *Global Development Finance* database.

Figure 7.8 Remittances and private capital flows to Turkey, 1978–2001



Sources: IMF, *Balance of Payments*; World Bank, *Global Development Finance* database.

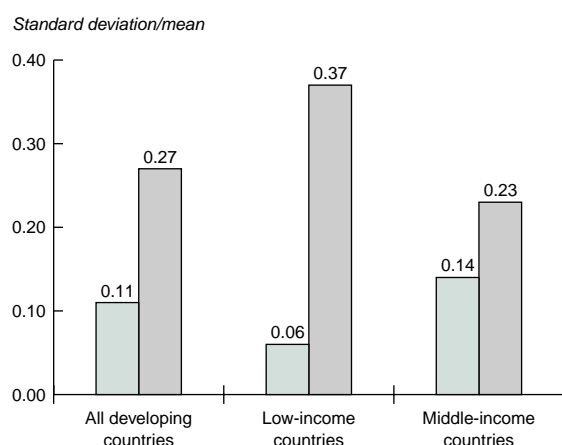
one-fifth of the capital invested in microenterprises in urban Mexico (Woodruff and Zenteno 2001).⁴ Similarly, in the Arab Republic of Egypt, a large proportion of returning migrants in the late 1980s set up their own enterprises using funds brought back from abroad⁵ (McCormick and Wahba 2002). As low-income countries lifted exchange restrictions and liberalized their current and capital accounts in the 1990s, remittance receipts rose sharply, and the volatility of remittances also rose, presumably because these remittances were used for investment purposes (figure 7.9).⁶

Cross-country comparison reveals that remittances are affected by the investment climate in recipient countries in the same manner as capital

flows—though to a much lesser degree. During 1996–2000, for example, remittance receipts averaged 0.5 percent of GDP in countries with a higher-than-median level of corruption (as indicated by the index of the International Corruption Research Group) compared to 1.9 percent in countries with lower-than-median corruption (table 7.3). Countries that were more open (in terms of their trade/GDP ratio) or more financially developed (M2/GDP) also received larger remittances.

In contrast to capital flows, however, remittances were significantly higher in countries that were high-risk (as measured by their *Institutional Investor* rating) and had a high level of debt relative to GDP.⁷ This is consistent with the finding,

Figure 7.9 Volatility of remittances in the 1990s



Source: World Bank staff estimates.

Table 7.3 Workers' remittance receipts in developing countries relative to key indicators (as a percentage of GDP, 1996–2000)

	High	Low
Corruption	0.5	1.9
Inequality (Gini index)	0.9	1.5
M2/GDP	1.2	0.9
Trade/GDP	1.2	1.0
Debt/GDP	2.3	0.8
Country risk (Institutional Investor rating)	2.4	1.0

Note: High and low usually refer to above and below the median for the concerned variable. The numbers reported are the sum of remittances of all countries in the group divided by the sum of GDP of the same countries. Average remittances and average GDP during 1996–2000 are used for each country included in these calculations. Lesotho is excluded from these computations.

Sources: World Bank, *World Development Indicators*; World Bank, *Global Development Finance*; IMF balance-of-payments data; World Bank staff estimates.

mentioned earlier, that low-income countries, which are usually high-risk, receive relatively more remittances as a share of GDP than do countries with higher incomes. In fact, in 1996–2000 remittances tended to be higher in poor countries that had lower than median growth rates, probably because most remittances to low-income countries that are performing poorly are for consumption. By contrast, middle-income countries with higher-than-median growth rates had higher remittances, presumably because remittances tend to behave more like investment flows in these countries (table 7.4).

As one would expect, remittance flows are affected by the economic cycle of the source countries. An upturn in the source country increases the income earned by migrant workers. It also attracts

Table 7.4 Remittances relative to growth rate by income group

(remittances as a percentage of GDP, 1996–2000)

	Poor countries	Other
Higher than median growth	3.4	1.0
Lower than median growth	4.2	0.8

Note: Poor countries and other developing countries are defined as in *GDF 2002*.

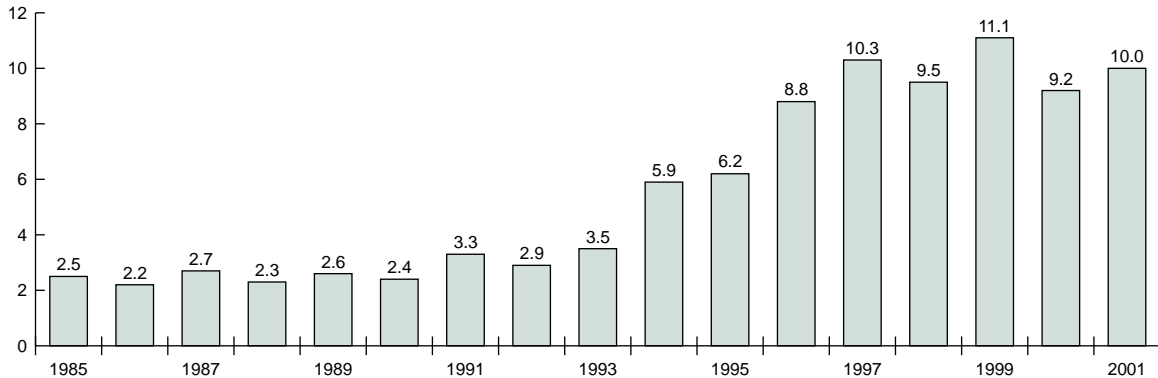
Source: World Bank, *World Development Indicators*; World Bank, *Global Development Finance*; IMF balance-of-payments data; World Bank staff estimates.

more migrants looking for better incomes.⁸ For example, remittance payments from the United States surged in tandem with the strong economic growth in the second half of the 1990s. Led by the information-technology sector, the boom caused the United States to revise its immigration policies to enable companies to hire more technology workers from abroad.⁹ Remittance payments from Saudi Arabia rose during the oil boom years of the 1970s and early 1980s, but declined in the mid-1980s as oil prices fell, the budget deficit mounted, and the government put limits on hiring foreign workers.¹⁰

Remittances may remain stable even in economic downturns in source developed countries, however. The source developed countries often have fiscal systems with automatic stabilizers that may offer some income protection to migrant workers during economic downturns. Taylor (2000) found that public income transfer schemes in the United States resulted in increased remittances to Mexico—other things being equal, immigrant households that received Social Security or unemployment insurance were 10 to 15 percent more likely to remit, and their monthly remittances abroad (especially Mexico) were \$150 to \$200 higher, than immigrant households not receiving public transfers. Another reason for the relative stability of remittances in the face of economic downturns in source countries may be that if migrant workers are forced to return to their home country, they may bring back their entire savings (which shows up as migrants' transfers in the balance of payments). This may have been the case in India during the Gulf War of 1990–91 which forced a large number of Indian workers in the Gulf to return home, but remittances to India did not decline (figure 7.10). (Unlike India, however, remittance flows to Jordan and Yemen from Kuwait and Saudi Arabia declined during the Gulf War.)

Figure 7.10 India's remittance receipts, 1985–2001

Billions of dollars

Source: IMF, *Balance of Payments Yearbook*.

Economic effects of remittances

Remittances augment the recipient individuals' incomes and increase the recipient country's foreign exchange reserves. If remittances are invested, they contribute to output growth, and if they are consumed, then also they generate positive multiplier effects (see, for example, Stahl and Arnold 1986). Thus, remittances offset some of the output losses that a developing country may suffer from emigration of its highly skilled workers.¹¹ Adelman and Taylor (1990) found that for every dollar Mexico received from migrants working abroad, its GNP increased by \$2.69 to \$3.17, depending on whether remittances were received by urban or rural households.¹² Remittances also more than offset the loss of tax revenue in most developing countries. For example, the net fiscal loss associated with Indian emigration to the United States was estimated at 0.24 to 0.58 percent of Indian GDP in 2001 (Desai, Kapur, and McHale 2001b), but remittances amounted to at least 2.1 percent of GDP in the same year. In the case of unskilled workers who emigrate to escape unemployment, remittances are likely to prove an even clearer net gain to the developing country.

Inward remittances are believed to have a positive impact on savings and investment. Household surveys in Pakistan indicated that in the later 1980s and early 1990s, the marginal propensity to save was higher (0.711) for income from international remittances than from domestic urban-rural remittances (0.49) or rental income (0.085) (Adams 2002 and 1998). Furthermore, such transfers provide the hard currency required for

importing scarce inputs that are not available domestically. Remittances may serve as insurance policies against risks associated with new production activities (Taylor 1999). Faini (2001) found that remittances have a positive effect on growth. As mentioned earlier, remittances were a source of investment in Mexico and the Arab Republic of Egypt. Remittances are used in many countries to build schools and clinics (for example, see Martin, Martin, and Weil 2002 for a study of remittances sent to Mali from France; see also Orozco 2000). Lucas (1985) estimated that in five Sub-Saharan African countries, emigration (to work in South African mines) reduced labor supply and crop production in the short run, but enhanced crop productivity and cattle accumulation through invested remittances in the long run.

The evidence on the impact of remittances on income inequality is mixed. Remittances augment incomes and can lift people out of poverty. Some studies argue that remittances may have had an equalizing effect on the distribution of income among socioeconomic groups in Mexico (Taylor 1999; Adelman and Taylor 1990). But remittances may also raise inequality because rich (workers) are better able to pay the high fixed costs associated with international travel.¹³ Indeed, household survey data from Pakistan reveal that the share of income originating from external remittances rose with the income groups—the highest income group received the highest share of income from external remittances (table 7.5). Such patterns may be reinforced where remittances are exempted from tax.

Table 7.5 Remittances by income group in Pakistan, 1986–87 to 1990–91

	Average income per capita (1986 rupees, 5-year average)	Percentage of per capita income from external remittances
Lowest 20%	1,176	1.0
Second 20%	1,721	1.7
Third 20%	2,200	4.8
Fourth 20%	2,876	7.2
Highest 20%	5,261	13.8

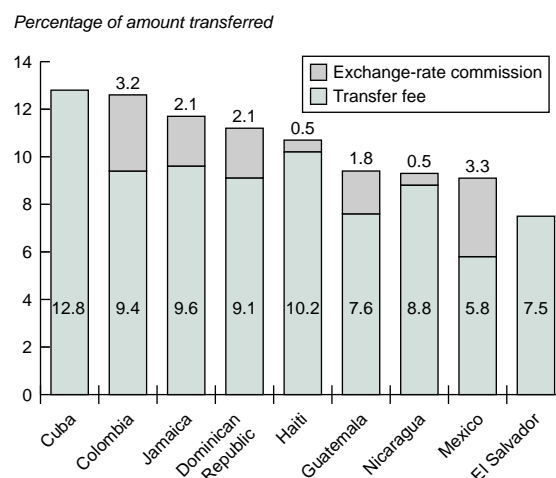
Source: Adams 1998, based on a survey of 469 Pakistani households during 1986–87 and 1990–91.

Remittances do not necessarily go to countries with poor income distribution, however. During 1996–2000 remittances were nearly twice as high (1.5 percent of GDP) in countries that had relatively even income distribution (represented by Gini index) than in other countries (0.9 percent of GDP). Some studies argue that remittances increase urban-rural inequality as they tend to finance investments in real estate or in enterprises in urban areas. McCormick and Wahba (2002) found that returning migrants in the Arab Republic of Egypt in 1988 tended to set up enterprises in greater Cairo; however, this may have been due to distortions in the economy that discouraged investments in rural areas.

Strengthening the infrastructure supporting remittances

Despite the clear welfare benefits of remittances, weaknesses in the financial sector and in government administration impose substantial transaction costs on migrant workers who send them. Easing these constraints could increase remittance receipts, while bringing a larger share of remittance payments into the formal financial system. Anecdotal evidence suggests that inefficiencies in the banking system—long delays in check clearance, exchange losses, or improper disclosure of transaction costs¹⁴—deter inward remittances.

The average cost of transferring remittances to Central and South America is in the range of 13 percent, and often exceeds 20 percent (figure 7.11; see also Orozco 2002).¹⁵ These charges, which are astronomical in comparison with the costs of bank transfers among industrial economies, are largely due to the fixed cost of wire transfers combined with the fact that the average remittance transaction tends

Figure 7.11 Average transfer fee and exchange-rate commission for sending \$200, February 2000


Note: The exchange-rate commission for Cuba and El Salvador is zero. Sources: Multilateral Investment Fund 2002; Orozco 2002.

to be small, usually below \$200. Reducing such transactions costs to less than 10 percent would imply an annual savings of \$3.5 billion to overseas workers. No doubt a substantial portion of this savings would be remitted.

Improved banking sector technology could substantially reduce transaction costs by expediting check clearance, reducing exchange losses, and improving disclosure, especially in rural areas in developing countries. One promising approach is to establish partnerships between leading banks and the government post office network in countries that do not have banks with extensive branch networks in rural areas. Remittance activities may also be attractive for banks, as margins can be very high.

Banks in many developing countries have not shown much interest in workers' remittances in the past, presumably because of cumbersome paperwork and lack of widespread branch networks. This is beginning to change, however. The efforts to crack down on money laundering and financing terrorism have affected remittances through the informal networks, and a large number of workers are looking for formal banking channels to remit funds. These developments, and the high margins associated with this business, have attracted some new entrants. For example, the International Remittance Network has started offering funds transfer services by linking credit union cooperatives (such as of unionized agricultural workers) with

Citibank branches in the United States and in receiving countries such as El Salvador, Guatemala, and Mexico. Reportedly, the cost of remittance through this new network is only \$6.50 per transaction, significantly lower than the costs of using informal networks.

Industrial countries should consider facilitating efforts to reduce the transaction costs of remittances to developing countries. Mexico and the United States are already collaborating to provide better financial services to Mexican migrants (including illegal immigrants), an effort that promises to significantly improve the migrants' access and use of banking services, especially for wiring funds to families back home. Such policies—including measures to improve disclosure¹⁶ in fund transfers—are likely also to benefit the source-country (by generating more tax revenues), as well as banks (by generating fees for fund transfers and other banking services).

Recent surveys of migrants in Los Angeles and New York show that migrants are discouraged from opening bank accounts because of minimum balance requirements—and to a lesser extent, stringent identification requirements. When these obstacles are eased—for example, by accepting Mexican consulates' *matriculas* or IRS's individual taxpayer identification numbers¹⁷ as valid forms of identification—immigrants can become the source of substantial banking business over and beyond wire transfers (box 7.2). In recent years, “financial fairs” have been held to promote remit-

tances and encourage migrant workers to use the formal banking system (box 7.3).

Facilitating international labor mobility

Facilitating labor mobility between source and destination countries is perhaps the most crucial—and controversial—means of increasing remittance flows to developing countries. Even though world migration pressures have risen, the progress of globalization has been slower in the area of migration (Hatton and Williamson 2002, World Bank 2002) than in trade (Findlay and O'Rourke 2002) and capital flows (Obstfeld and Taylor 2002).

The main concerns of developed countries regarding immigration center on (a) the local job-seekers' fear of competition from migrant workers, (b) the fiscal burden that may result on native taxpayers for providing health and social security to migrants, (c) fears of erosion of cultural identity and problems of assimilation of immigrants, and (d) national security (especially after September 11, 2001).

On the first issue, conceptually increased labor supply due to immigration is expected to depress wages or raise the unemployment rate. Empirical evidence, however, has remained inconclusive as researchers have been unable to isolate the effects of immigration from those of other factors such as differences (between local workers and migrants) in skills, sex, age, and professional education and

Box 7.2 Mexican *matriculas consulares* boost remittances

For decades, Mexican consulates have been issuing a simple identity card, known as *matricula consular*, to Mexican citizens living in the United States—legally or illegally. According to a study by the Pew Hispanic Center (2002), 740,000 *matriculas* were issued in the United States during the first nine months of 2002. Designed originally to help police identify persons involved in accidents (or crime), *matriculas* are increasingly accepted as proof of identity when opening accounts at U.S. banks. Some 66 banks (and 801 police departments in 13 states in the United States) now accept the *matricula* as a valid

identification document. (More recently, U.S. banks are showing reluctance in accepting these documents because of concerns about illegal funds transfers.)

At present, only the Mexican government offers such an identification document to its citizens abroad. Several Central American governments are also considering such cards, which would help their migrant population obtain a bank account and use banks to transfer funds cheaply and transparently.

Source: Pew Hispanic Center.

Box 7.3 Financial fairs to promote remittances and good banking habits among migrants

Developing countries interested in increasing remittance flows from the United States can benefit from the experiences of some innovative “financial fairs” organized in August 2002 in Kansas City and Chicago. Recognizing the multifaceted potential of migrant workers as a source of remittances, tax revenues, and savings, the Community Affairs Office of the Federal Deposit Insurance Corporation staged the fairs in collaboration with the Mexican Consulate, the Internal Revenue Service (IRS), and six private banks. All participants appeared to benefit from the event.

At the fairs, the Mexican consulate issued an identification card (*matricula*) with photo and U.S. address to undocumented migrant workers from Mexico. The IRS collected back taxes from workers and issued individual taxpayer identification numbers (ITINs) on the spot, sparing everyone the 6–8-week wait. The tax payments entitled workers who were becoming legal residents to claim earned income tax credits—good for an average tax refund of about \$1,700 per year—once their papers were processed. The banks accepted the *matricula* and ITIN as identification from migrants wishing to open bank accounts. Already legalized workers were able to receive earned income tax credits on the spot; some deposited their tax refunds in their newly opened bank accounts.

The documentation requirement for opening new accounts (according to section 326 of the Patriot Act) allows



other forms of identification such as passports or even voter registration cards. Some financial institutions (such as U.S. Bank in Kansas City and Second Federal Savings in Chicago) have started accepting voter registration cards as valid identification documents. Following the Mexican model, the Guatemalan consulate has also started issuing identification cards to its citizens in the United States. The cards are accepted by Wells Fargo for opening bank accounts.

Source: Federal Deposit Insurance Corporation.

experience obtained abroad (Coppel, Dumont, and Visco 2001). The dynamic nature of this problem has made it more difficult to assess the effects of migration on labor supply. For example, local workers may move to another location and this may show up as lower employment in their original location, but it would be hard to attribute this fall in employment rate to immigration (see Borjas, Freeman, and Katz 1997; Borjas 1994). Some studies that distinguish between long run and short run impact find that in response to immigration, while unemployment may increase in the short run, in the long run the overall rate of unemployment falls permanently (Gross 1999). The effects of immigration on wages are found to have been negative as expected. Borjas, Freeman, and Katz (1997) found that the 21 percent increase in the number of unskilled migrant workers

in the United States from 1975 to 1995 reduced the wage earnings of unskilled local workers by up to 5 percent, not a small amount considering that wages should have increased during this period. (See also World Bank 2002.)

Although the potential adverse effect of immigration on unemployment and wage rates receives a lot of attention, immigration also generates many positive effects. First, migrant workers may relieve the labor shortage in many areas in which native workers do not want to work, and where there were also no substitutes for human labor (e.g., caring for the elderly). Migration may thus increase productivity and moderate inflation as was the case in the United States (especially in the technology sector) in the 1990s. Second, migrant workers tend to be more responsive to labor market conditions than local workers; thus, migration may

help soften labor market rigidities and improve productivity (Coppel, Dumont, and Visco 2001). Third, the multiplier effects generated by migrants' spending in the host countries should not be underestimated. Finally, the competition faced by local less skilled workers in developed countries from migrant workers is "neither more nor less than the challenge posed to such workers by imports of labor intensive goods from developing countries" (Winters forthcoming).

On the question of whether immigrants are a fiscal burden on destination industrial countries, again the evidence is mixed. Smith and Edmonston (1997) conclude that immigrants with less than a high school education continue to be a fiscal burden into the next generations, but that skilled immigrants pay more in taxes than what they receive in social security from the state. Other studies have argued that even in the case of unskilled immigrants, the fiscal costs, if any, are limited to the first generation; it is believed that the next generation earns and contributes more in taxes than the corresponding generation of native workers (Borjas 1994). Another contentious point is that the fiscal burden is usually borne by localities, with the federal/national governments getting benefits. Fiscal costs are obviously reduced if migrant workers did not stay in the country until they are eligible to receive social security. Some policy makers have suggested greater use of temporary unskilled workers (as in the Mexican guest workers proposal of U.S. Senator Phil Gramm).¹⁸ However, enforcement of such "revolving door" policies may prove extremely difficult (Mattoo 2002, introduction).

The social costs of immigration, including cultural fears, crime, and national security, are not quantifiable and will continue to act as brakes against attempts to liberalize immigration laws in advanced countries. However, the rising migration trend is unlikely to be reversed as these costs have to be traded off against the benefits of letting in more immigrants at the margin (Winters 2002).

Considering the huge income gap between rich and poor countries, most economists and developing country policy-makers see large benefits in greater international mobility of labor. Winters (forthcoming) estimates that world welfare would increase by more than \$150 billion per year if developed countries were to increase their quotas of international temporary workers to 3 percent of their workforce. (See also Rodrik 2001.)

For developing countries, the benefits of migration—and its costs—are more obvious. Countries benefit from workers' remittances and from the rise in real wages (especially for unskilled and unemployed workers) that often occurs as emigration clears the labor market. On the negative side, the emigration of highly skilled workers has been linked to skill shortages, reductions in output, and tax shortfalls in many developing countries. Such burdens appear even heavier for countries where educated workers emigrated in large numbers after receiving highly subsidized technical education. Carrington and Detragiache (1998) estimate that over one-third of individuals with tertiary education from Africa, the Caribbean, and Central America emigrated to the United States and other countries of the OECD. Migration rates are also high in the Islamic Republic of Iran, the Republic of Korea, the Philippines, Taiwan, and Turkey. The International Organization for Migration (1999) estimates that for 40 percent of African countries, more than 35 percent of college graduates reside abroad. Desai, Kapur, and McHale (2001b) discuss the emigration of a significant share of India's information-technology professionals to the United States in the late 1990s. They estimate forgone income-tax revenues associated with that emigration to be one-third of current Indian income-tax receipts.

The negative effects of brain drain are offset to some extent by inward remittances from migrant workers. Source developing countries may also benefit from network effects (business contacts, investments, technological help) from their skilled and successful emigrants abroad (Desai, Kapur, and McHale 2001b). And it is debatable whether the skilled workers, had they not emigrated, would have been used to their full potential given the imperfect work environment in many developing countries.¹⁹ Finally, skilled workers may return to their home country if the investment climate and work environment improve.

From limiting to managing migration

Bhagwati (2003) believes that developed countries should shift the focus of their immigration policies from limiting to managing migration. The goal of such a shift would be to glean the shared benefits of greater international labor mobility and

to avoid the undesirable effects of immigration quotas—chief among which are the sufferings of those trying to cross borders illegally and the abuse of illegal immigrants. For their part, developing countries could benefit by adopting a “diaspora approach” in dealing with the emigration of workers, exploiting their potential as a source of capital, remittances and other transfers; building “networks” for trade, tourism, investment promotion, and training youngsters at home; and otherwise harnessing their knowledge, skills, and assets for economic development.²⁰ At the very least, developing countries could remove the hurdles that their nationals may face in undertaking overseas travel.²¹

Immigration policies in developed countries are so complex that making a direct investment in a developing country is often less cumbersome than bringing in workers to a developed country (Mattoo 2002). To improve transparency in immigration policies Bhagwati (2003) proposes a World Migration Organization that would codify immigration policies and spread best practices. Rodrik (2001) similarly proposes “multilateralizing” immigration rules so that two countries participating in a special arrangement to share workers would not generate adverse spillover effects on other countries.

One positive, albeit limited, step in this direction is the so-called Mode 4 proposal for supplying services under consideration in the current round of the General Agreement on Trade in Services (GATS). The agreement proposes greater freedom for the “temporary movement of individual service suppliers.”²² Although little progress was made when this issue was first negotiated in the Uruguay Round, the member countries of the WTO now seem more willing to negotiate. However, the Mode 4 trade proposal is presently limited in scope to managers, executives, and professionals; thus, countries that are not significant foreign investors and those with unskilled workers are not going to benefit much from progress in the current negotiations.

Prospects for remittance flows to developing countries

Remittance flows have shown remarkable stability over time, and the rising trend evident in recent years is likely to continue in the medium- to

long-term. In particular, remittance flows from nonresident or temporary workers are expected to surge in the medium-term. The search for lower costs is driving multinational corporations to hire overseas workers for cross-border jobs. This trend towards more mobility of temporary workers may be reinforced if progress is made on Mode 4 trade in services in the GATS negotiations. Improvements in transportation and communications will complement this trend.

Migration pressure is likely to continue to rise in the foreseeable future (box 7.4).²³ The most important factor in the rise is perhaps the aging of the population—and the implied surge in pension costs—in the developed nations (see, for example, United Nations 2000). Since skilled workers pay more taxes and need less support from state social security systems, future changes to immigration policies are likely to favor permanent-skilled and temporary-unskilled migrants (Desai, Kapur, and McHale 2001a).

In addition to differential changes in dependency ratios, Hatton and Williamson (2002) identified three historical economic determinants of world migration:

- Wide wage gaps between developed and developing countries
- High but falling costs of migration relative to the low incomes in developing countries
- The size of existing migrant stocks in receiving countries (which affects the extent of influx of friends and relatives through family reunification).

Economic growth in some parts of the developing world, for example, East Asia and South Asia, may imply less migration pressure from these regions, but it is unlikely to reduce the migration pressure from Africa. Also South-South migration is likely to increase faster than South-North migration as many fast-growing newly industrialized countries in the South are expected to attract more migration than the industrial countries (Hatton and Williamson 2002). (The only factor that may moderate migration is the casualty from HIV/AIDS.) The possible induction of up to 10 Central and Eastern European countries into the EU is also likely to increase migration from these countries into the EU, but movement of temporary workers is especially likely to surge.²⁴

Box 7.4 World migration pressure is high—and rising

In 1994, about 3.6 million persons were on the waiting list for admission to the United States (Hatton and Williamson 2002, Smith and Edmonston 1997). Each year a million people enter the United States legally, 500,000 illegally. The numbers are similar in Europe. Immigration to many Asian countries—among them the Republic of Korea, Malaysia, Taiwan, and Thailand—surged in the 1990s. And the number of asylum seekers remains high. Worldwide asylum applications reached 914,855 in 2001, according to the United Nations High Commissioner for Refugees, with about 940,226 cases awaiting decision.

As demand for migration has risen, so have payments to human traffickers. Fees range from \$200–400 along the Mexico-Los Angeles route to \$35,000 along the China-New York (see table).

The fees paid to *coyotes*, professional people-smugglers along the U.S.-Mexican border “have doubled, tripled or even quadrupled, depending on the entry corridor and the services offered” (Cornelius 2001). Although this increase is due in part to stricter border enforcement

(the total INS budget for the 2002 fiscal year was \$5.5 billion, more than triple what it was in 1993; the size of the Border Patrol has more than doubled in size since then), it is also due to rising demand for migration.

Payments to traffickers for selected migration routes (dollars per person)

Kurdistan-Germany	3,000
China-Europe	10,000–15,000
China-New York	35,000
India/Pakistan-United States	25,000
Arab states-United Arab Emirates	2,000–3,000
North-Africa-Spain	2,000–3,500
Iraq-Europe	4,100–5,000
Middle East-United States	1,000–15,000
Mexico-Los Angeles	200–400
Philippines-Indonesia/Malaysia	3,500

Source: “Migrant Trafficking and Human Smuggling in Europe,” International Organization for Migration, 2000 (as reproduced in *The Economist*, Survey of Migration, November 2, 2002).

However, in the near to medium term, this positive outlook for remittance flows to developing countries needs to be moderated in view of the sluggish labor markets in G-7 economies and tighter scrutiny of international travelers following the events of September 1, 2001—factors that are likely to change the geographical composition, as well as the volume, of remittance flows. Given the geopolitical risks of war and conflicts, developing countries in the Middle East and North Africa region and South Asia who supply workers to

countries such as Kuwait and Saudi Arabia are likely to experience some declines in remittance flows. Increased migration from central and eastern Europe, after the EU enlargement, may crowd out migration from other countries. These declines are, however, likely to be dominated by positive effects on remittance flows of greater labor mobility, progress in (Mode 4) GATS negotiations, depending on how quickly G-7 economies overcome the economic down cycle.

Annex: Sources of remittance data

IN THIS STUDY, WORKERS' REMITTANCES are defined as the sum of three components: (a) workers' remittances recorded under the heading "current transfers" in the current account of the balance of payments; (b) compensation of employees which includes wages, salaries, and other benefits of border, seasonal, and other non-resident workers (such as local staff of embassies) and which are recorded under the "income" subcategory of the current account; and (c) migrants' transfers which are reported under "capital transfers" in the capital account of the IMF's *Balance of Payments Yearbook* (item codes 2391, 2310, and 2431 respectively).

This broader definition is believed to capture the extent of workers' remittances better than the data reported under the heading of workers' remittances alone. In the Philippines, for example, remittances from overseas Filipino workers through the banking system are largely recorded under compensation of employees (which, strictly speaking, should include only remittances by temporary workers). In the year 2001, compensation of employees amounted to \$6.2 billion whereas workers' remittances were just \$122 million. In contrast, in India, most remittances reported by authorized dealers are captured under workers' remittances (nearly \$10 billion in 2001), and the compensation-of-employees figure (\$126 million in 2000) is known to be underestimated. In Turkey, workers' remittances exclude other current transfer credits such as "imports with waiver," that is, imports financed from the earnings of Turkish nationals living abroad; this item needs to be added to remittances.²⁵

The above definition does not include transfers through informal channels—such as hand-carries by friends or family members, or in-kind remittances of

jewelry, clothes, and other consumer goods, or through hawala. These are believed to be significant in many countries, ranging from 10 to 50 percent of total remittances, but often are not recorded in the official statistics (Puri and Ritzema 2000; El-Qorchi and others 2002). If and when they are recorded, it is not clear to what extent they reflect actual transfers rather than imports. For example, in recent years India has started recording as imports gold brought in by incoming international passengers, previously this was classified as remittances. Thus, data for private transfers in recent years show a slight decline, even though substantially nothing has changed.

The unrecorded portion of remittances may be heading down due to better technology and efforts to crack down on money laundering. These changes make it difficult to interpret current trends. For example, in the first nine months of 2002 remittances to Mexico were up 9.9 percent over the previous year; how much of this rise reflects better reporting and how much a rise in underlying activity is difficult to tell. More extreme is the case of Pakistan which recorded a whopping \$2.4 billion in remittance receipts in fiscal year 2002, more than double the \$1.1 billion recorded a year earlier (table 7A.1). According to the State Bank of Pakistan (2002), "the turning point was the international crackdown on the Hundi net-

Table 7A.1 Workers' remittance inflows to Pakistan, fiscal 1999–2002
(millions of dollars)

	FY99	FY00	FY01	FY02
Total	1,060	984	1,087	2,389
From U.S.	82	80	135	779
From U.K.	74	73	81	152

Source: State Bank of Pakistan, Annual Report, 2001–02.

work” (especially in the United States and Britain, after September 11, 2001); the other reason might have been the “waning attraction of foreign exchange holdings due to an appreciating Rupee.”

Nor does the definition include “other current transfers,” which often reflect workers’ remittances.

Remittances are supposed to be current transactions that do not involve transfers of ownership of assets. In practice, however, it may be difficult to identify or estimate such transactions. For example, remittances can be masked as capital inflows to take advantage of tax and other incentives. In many countries, nonresident deposits, although classified under the capital account, may in part reflect workers’ remittances. For example, the nonresident rupee deposits in India are most likely remittances disguised as deposits—upon maturity, they do not return to the nonresident depositor, because the rupee is not convertible into hard currency.

As with most of the items in the global balance of payments, the estimates of remittances suffer from the fact that inflows and outflows reported by countries do not match. World inflows of remittances totaled \$111 billion in 2001—more than 7 percent higher than recorded outward flows (\$103 billion).

Notes

1. Remittances are defined as the sum of workers’ remittances, compensation of employees and migrants’ transfers (see data annex). Remittances are known to be underestimated significantly in the balance-of-payments statistics of the IMF. If other current transfers—which cover food, clothing, consumer goods, medical supplies, gifts, dowries, payments from unfunded pension plans from nongovernmental organizations, and so on—were also to be included, remittance receipts would amount to \$99.5 billion or 1.6 percent of GDP in 2001. A frequent practice in the literature is to also include migrants’ transfers in remittance receipts. See annex for a discussion of data issues relating to remittances. Remittance payments by developing countries stood at \$22 billion in 2001. Most of this amount (\$15.1 billion) was paid by Saudi Arabia.

2. One reason why remittance flow data are not disaggregated by source countries or by destination countries is that financial institutions that act as intermediaries often report funds as originating in the most immediate source country. For example, the Philippines tends to attribute a large part of its remittance receipts to the United States because many banks route their fund transfers through the United States. Orozco (2002) suggests that more than 90 percent of remittance flows to Latin American countries originate in the United States.

3. These numbers do not reflect Saudi Arabia’s indirect contribution to remittance flows in the form of training unskilled workers, many of whom arrive as unskilled workers in Saudi Arabia and then migrate to other developed countries after acquiring substantial skills.

4. Some governments are trying to encourage the use of remittances for investment purposes. For example, government bodies in Zacatecas, in northern Mexico, give three dollars for every dollar contributed by migrants’ associations for investment projects (*The Economist*, February 21, 2002).

5. The funds brought back by return migrants is reported as migrants’ transfers in the balance of payments. Unfortunately very few countries report this as a separate item. Presumably a large part of this item is already included in remittance receipts. Among the developing countries, only the Russian Federation reports any sizeable amount of migrants’ transfers; but even there, the size has steadily declined, from \$4.5 billion in 1994 to \$417 million in 2001. The aggregate migrants’ transfers to developing countries as reported in the IMF balance-of-payments statistics was only about \$1 billion in 2001.

6. For example remittances rose sharply when countries allowed residents to hold onshore foreign currency deposits. Private transfers to Uganda increased from \$80 million in 1991 to \$415 million in 1996 in response to measures that permitted residents to open foreign currency accounts onshore (Kasekende 2000). In October 2002, Uganda’s foreign exchange accounts deposits were 27.8 percent of all deposits.

7. See also Russell (1992, p. 277), Meyers (1998), and Elbadawi and Rocha (1992). Reinforcing this argument, El-Sakka and McNabb (1999) found that inflation had a positive and significant impact on inflow of remittances, probably reflecting the need to boost family support in times of rising prices.

8. Swamy (1981) argues that the economic situation in the host country is the main determinant of the size of remittance flows to developing countries. Straubhaar (1986) similarly argues that “international migration flows are demand-determined by the existence of restrictive immigration control systems.”

9. See Clark, Hatton, and Williamson (2002) and World Bank (2002) for a description of changes in U.S. immigration rules and trends. The increase in remittance flows to developing countries coincided with an increase in the migrant population in developed countries. Estimates suggest that migrant stocks in developed countries increased from 3.1 percent in 1965 to 4.5 percent in 1990 (Hatton and Williamson 2002); in all likelihood this trend has continued through the 1990s.

10. The decline in remittances from Gulf countries in the mid-1980s was most likely due to restrictions on hiring new workers from overseas. Birks, Secombe, and Sinclair (1986) reported that the collapse of oil prices did not result in large-scale exodus of foreign labor from the Arab Gulf states. Remittances intended for investment purposes may decline when the source country’s economy is strong and rates of return are high. El-Sakka and McNabb (1999) found that remittance inflows to Egypt were lower when rates of return were higher in Arab source countries during 1967–91.

11. The same skilled workers could be significantly less productive in a developing country (where the unemployment rate is higher and investment climate worse) than in an industrial country. See also Nayyar (1994).

12. Rural households tend to consume more domestically produced goods—and hence generate larger multiplier effects—than urban households.

13. Adams (1993) found from Egyptian household survey data collected in the second half of the 1980s that the relationship between migration and income had an inverted U-shape, suggesting that it is the middle-income types who migrate; the very poor do not migrate because they cannot pay the costs associated with international travel, while the very rich do not want to migrate. After adding land to income, he dismissed this view and concluded that it is the very poor who migrate because they have the most to gain from migrating (and they are able to meet travel costs by presumably selling land).

14. A 2002 survey by the Pew Hispanic Center (sponsored by the Interamerican Development Bank) of 302 Latin American born adults residing in Los Angeles and Miami also found that remitters had significant concerns about the high cost of transferring funds due to flat fees and unfavorable exchange rates. Other concerns include delays in money being delivered to the recipient. This survey revealed that nearly 83 percent of persons interviewed sent money through international money transfer companies such as Western Union or Moneygram, and only 9 percent through banks. The Bank of Mexico (1997) estimated that in 1995, 40 percent of remittances came in through money orders, 24 percent through wire transfers, 27 percent through other electronic means, and 8 percent through cash transfers. Lozano-Ascencio (1998), using surveys of migrants themselves, estimates that 15 percent of remittances entered Mexico as pocket transfers.

15. The cost of transfers through informal channels, such as Hawala, used in other parts of the world is said to be much lower than it is through institutional channels (El-Qorchi 2002).

16. In 2001, the United States amended the Electronic Fund Transfer Act (see the Wire Transfer Fairness and Disclosure Act of 2001), instructing financial institutions or money transmitters initiating an international money transfer to prominently disclose the exchange rate used in the transaction, the exchange rate prevailing at a major financial center of the foreign country as of close of business on the business day immediately preceding the transaction date, all commissions and fees charged, and the exact amount of foreign currency to be received by the customer in the foreign country (see www.ncua.gov, H.R. 1306—Wire Transfer Services).

17. An individual taxpayer identification number (ITIN) is required to open interest-bearing accounts in U.S. banks. Without an ITIN, only checking accounts that do not pay interest can be opened.

18. Senator Gramm has proposed that Mexican “guest workers” be hired on an annual or seasonal basis, and a 15.3 percent payroll tax imposed on their employers would pay for the worker’s emergency medical care and an IRA account, which the worker could withdraw at the time of departure back to Mexico. See http://migration.ucdavis.edu/rmn/archive_rmn/oct_2001-10rmn.html.

19. Nayyar (1994) argues that the magnitudes of emigration from India are small compared to the substantial

reservoir of unemployed among the educated, and thus the macroeconomic impact is perhaps negligible.

20. Some authors argue that developing countries should also try to tax their rich and successful migrant workers abroad, by changing their tax rules to one based on “nationality” (as in the case of Eritrea, the Philippines, and the United States) from one based on “residence.” See Desai, Kapur, and McHale (2001a) and Bhagwati (2003).

21. Such hurdles may include restrictions on or delays in issuance of passports, access to foreign exchange to undertake the initial travel, or simply lack of a communication infrastructure that slows down job search or results in delays in finalizing job contracts. Political instability often disrupts international migration. For example, the number of Mozambican workers in South African mines dropped by half around the period preceding and following Mozambique’s independence from the Portuguese in 1975. To some extent, this drop reflected mistrust of “leftist” workers by South African mine owners, but to a large extent, it was also a result of disruption in passport issuance by Mozambique authorities (Lucas 1987).

22. See Mattoo 2002 for a detailed discussion of various aspects of this issue. The other three modes of GATS are: “cross-border supply” (trade in goods), consumption abroad (tourism or study abroad), and commercial presence (supplying services through a branch abroad).

23. The industrial countries may respond to these rising migration pressures by relaxing immigration laws, in particular, by encouraging more temporary migration (akin to the U.S. H-1B visa).

24. A seven-year delay before workers from central and eastern Europe are allowed to work in the EU has been proposed, similar to the “transitional period” arranged for Spain and Portugal when they entered the EU in 1985. Several studies estimate that migration from these countries into the EU would rise to about 2–3 percent of the population of the sending country (see, for example, Boeri and Brucker 2000), but others (Borjas 1999, Drinkwater 2002) estimate smaller numbers. There appears to be a consensus, however, that temporary movement of workers from these countries will increase significantly.

25. One of the techniques devised to cope with the deteriorating external imbalance was a form of foreign borrowing known as the “convertible Turkish Lira deposit” scheme or the Dresdner Bank scheme. The program, dating from the late 1960s, was designed to attract the savings of Turkish nationals working in foreign countries and also the cash deposits that might have been earned in black-market trade, smuggling, or the mis-invoicing of imports and exports. According to the scheme, the Central Bank of Turkey offered interest rates on foreign exchange deposited in Turkish commercial banks 1.75 points above the Euromarket rate while also guaranteeing the foreign exchange value of both principle and interest. Beginning in 1975, the program was broadened to allow nonresidents in general, and not only Turkish nationals working abroad, to hold these deposits. Foreign exchange receipts from this source were transferred from commercial banks to the Turkish central bank and on-lent to government and state enterprises, with expansionary effects on the money supply. Inflation accelerated markedly (still with a fixed exchange rate), worsening

the underlying disequilibrium in the external sector. The Dresdner deposits constituted short-term foreign loans, and therefore the maturity of Turkey's external indebtedness became increasingly short term as the decade progressed, despite earlier rescheduling intended to spread out debt servicing over time. The scheme was withdrawn for a few years, but reintroduced recently. At the end of 2001, such deposits by Turks living in Europe amounted to \$10 billion. See Barth and Hemphill (2000).

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