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INTERNATIONAL MIGRATION, ECONOMIC DEVELOPMENT & POLICY

Editors
Çağlar Özden • Maurice Schiff



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Çağlar Özden
and Maurice Schiff, Editors

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FOREWORD

International trade and capital flows increased rapidly in the second half of the twentieth century. However, it was not until the 1990s that the world witnessed an upsurge in international migration, particularly in skilled labor migration. Furthermore, remittances have grown to the point where they constitute the largest flow of funds to developing countries after FDI. Given the large North-South disparities in population growth and per capita incomes, these trends are likely to be with us for the foreseeable future.

The growing importance of international migration as a contributor to the integration of the world economy has led to renewed interest—including analysis of institutional and policy reforms designed to ameliorate its impact—in source and destination countries, international organizations, and the research community. However, the renewed policy and research interest, until recently, was not matched by the available knowledge. In order to help put migration research on a more solid footing, the World Bank initiated the Research Program on International Migration and Development in 2004, with the objective of producing and disseminating new migration data as well as rigorous conceptual and empirically-based policy analysis.

The present volume is the second emanating from the Research Program on International Migration. The first one, published in 2006, examined the determinants and impact of migration and remittances in several developing countries as well as various aspects of the brain drain. It also provided the most extensive brain drain database ever produced and which has since become the reference in this area.

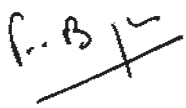
This volume reflects the expansion of the World Bank Research Program on International Migration and Development into new substantive and geographic areas. It presents a new global migration database and includes studies of the

determinants and impact of return and circular migration, the impact of the flow of ideas on fertility, host country policies and their impact on immigrants, and the impact of international migration and remittances on poverty and other development indicators.

The studies cover countries from Latin America, North Africa, South Asia, the South Pacific, and Western Europe, and show that the impact of migration on education and health tends to benefit girls more than boys, that its impact on labor force participation tends to be stronger for women than men, that return migrants tend to do better than non-migrants, and that fertility has tended to decline in countries whose migration has been to the West and has failed to do so in countries whose migration has been to the Gulf.

The new brain drain and migration databases have already served as a basis for a number of studies, and I hope that the present volume will serve to stimulate further research and provide a stronger basis for policy analysis in this important area.

Sincerely,



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ABBREVIATIONS

CAPMAS	Central Agency of Public Mobilization and Statistics
CDC	Centers for Disease Control (United States)
DHS	Demographic and Health Survey
EEA	European Economic Area
EFTA	European Free Trade Association
ELMS	Egypt Labor Market Survey
FDI	foreign direct investment
FSU	former Soviet Union
GCC	Gulf Cooperation Council
GMF	Global Migration Forum
HAZ	height-for-age Z-score
IV	instrumental variables
LFSS	Labor Force Sample Survey
NWFP	North-West Frontier Province (Pakistan)
OLS	ordinary least squares
PAC	Pacific Access Category (New Zealand)
PPP	purchasing power parity
PRHS	Pakistan Rural Health Survey
SD	standard deviation
WFS	World Fertility Survey
WAZ	weight-for-age Z-score

OVERVIEW

Çağlar Özden and Maurice Schiff

Over the centuries millions of people have migrated—despite the physical, cultural, and economic obstacles—to other lands in search of better lives for themselves and their children. Currently, the number of people living outside their country of birth is estimated to be over 180 million or 3 percent of the world population (World Bank 2006). Movement of such large numbers of people creates significant economic benefits to the migrants, their families back home, and their adopted countries. For example, remittances now constitute the largest source of foreign capital for dozens of source countries.[1] At the same time, migration creates social, cultural, and political challenges that can create strong opposition and overwhelm any rational policy debate in source and destination countries.

As a result of their rapidly increasing economic, political, and social significance, migration issues have become the focus of attention in a variety of forums. For instance, in 2003 the United Nations Secretary-General and a number of governments launched a Global Commission on International Migration that presented its final report in 2005. In September 2006 the United Nations held the first High-Level Dialogue on International Migration and Development, which resulted in creation of the Global Migration Forum.[2] Migration and related debates are moving away from bilateral and regional dialogues to a multilateral platform and starting to occupy a higher position on the global policy agenda.

Despite the public attention, however, a wide gap exists between the growing importance of migration as an economic and social phenomenon and rigorous empirical analysis of that phenomenon. The absence of detailed and reliable data has until recently constrained empirical studies and thus sound policy analysis. Given the urgency of dealing with the issue and the paucity of data, the World Bank launched the International Migration and Development Research Program in 2003.

The objectives of this program are to provide solid analysis and empirical evidence to serve as a basis for expanding understanding of the determinants and effects of international migration and remittances and to identify policies, regulations, and institutional arrangements that lead to superior development outcomes.[3]

Most academic studies on migration can be divided into three categories on the basis of methodology. The first group includes macroeconometric studies that perform cross-country comparisons based on aggregate data. The second group is comprised of microeconometric analyses that generally focus on a single country and that employ survey data. Finally, there are descriptive case studies that tend to be policy centric. These three levels of studies contribute to understanding of migration in different ways. Macro studies and aggregate data provide the overall picture, but they give limited insight into the causes and consequences of migration in individual countries. The country econometric studies fill that gap. The purpose of the case studies is to illustrate and clarify many theoretical mechanisms and to advance understanding of the impact of different migration policies, given that introducing policy variables in econometric regressions is generally difficult. Each study in this volume aims to answer a variety of development- and policy-related questions using the most appropriate of these three methodologies.

These empirical studies and analyses include exploration of some novel hypotheses; they are also new in terms of the topics selected and the regions/countries examined. The topics can be classified as data, return and circular migration, fertility and demographic transition, and host-country policies. The regions (and countries) covered in this volume are the Caribbean (Dominican Republic, Haiti, and Jamaica), North America (Mexico), Central America (El Salvador, Guatemala, Honduras, and Nicaragua), South America (Bolivia, Ecuador, Paraguay, and Peru), the Middle East (Egypt), the Near East (Turkey), North Africa (Morocco), South Asia (Pakistan), the South Pacific (New Zealand and Tonga), and Western Europe (Norway and Switzerland).

One of the daunting obstacles faced by scholars working on international migration is notoriously incomplete and low-quality data. A major contribution of this volume is the presentation of the most extensive international migration database constructed to date; this database includes new data on South-South migration. Additional contributions include the empirical analysis of the determinants of return and repeat migration and of the labor-market performance of return migrants. A fascinating and highly original new study examines the impact of migration on the diffusion of host countries' behavioral norms and on fertility in the migrants' source countries. Another contribution of the volume is the presentation of immigration policies in Switzerland and New Zealand and a discussion of their impact on the immigrants in these countries. Additional studies examine the impact of international migration and remittances on poverty, on

labor market participation, and on girls and boys' health and education outcomes in various countries.

An earlier output of the International Migration and Development Research Program was *International Migration, Remittances and the Brain Drain* (Ozden and Schiff 2006). The volume generated extensive academic and policy interest because of the topics examined, the presentation of a new comprehensive brain-drain database, and innovative research with important policy implications.[4] The present volume constitutes a natural progression of this work, first by applying the analysis of the impact of migration and remittances to new countries and second by extending the analysis in terms of issues and methodology, as described above. The volume is organized in four parts. The new migration database, which is presented in Part I, provides a matrix of *bilateral* migrant stocks for 226 countries. The new database also aims to shed some quantitative light on one of the most fundamental yet often ignored questions in policy debates and academic analysis: who is a migrant? Some countries define a migrant according to place of birth and others according to nationality. Chapter 1 shows that these distinctions make a big difference in terms of the actual level of migration.

Chapters 2–4 in Part II estimate the impact of migration and remittances on poverty in 12 Latin American countries, on education and health outcomes for girls and boys in Pakistan, and on male and female labor market participation and on children's education in El Salvador. These studies place special emphasis on econometric issues such as selection and endogeneity biases. Chapter 5 examines the hypothesis that international migration affects birth rates and the demographic transition in the migrants' countries of origin and that the extent of the effects depends on the characteristics of, and behavioral norms in, the host countries where the migrants live.

Part III consists of two chapters dealing with host-country immigration policies and their impact on migrants for two migration corridors that are generally overlooked within the European Union- and U.S.-centric world of migration research and policy debate: the Pacific Islands-New Zealand and the Balkans-Switzerland corridors. One chapter examines the effectiveness of restrictions in New Zealand's immigration regime in terms of impact on the migration of Tongans; the other chapter explores Swiss immigration polices and their impact on Serbians and other former Yugoslavs in Switzerland. An important contribution of this volume is to draw attention to these important but understudied destination and source countries as well as to their unique migration policies and programs.

Return migration is a crucial development issue, especially if the source countries are expected to benefit from human, physical, and social capital acquired during their citizens' stay in destination countries. Part IV consists of two chapters; the first one examines the determinants of return and repeat migration in Norway, and

the second one analyzes the degree of success and the occupational choice of return migrants to Egypt relative to similar individuals who did not migrate.

The next section provides an overview of the main findings presented in this volume. Rather than providing a detailed description of each chapter, the section examines questions of interest for policymakers and researchers. It presents answers based on the findings in the chapters.

Who Is a Migrant? What Is the Extent of International Migration?

Despite the rapidly increasing attention that migration and migrants are receiving in development research and policy debate, little is known about the total number of migrants. One reason is the large extent of undocumented migration. Another reason is the reluctance of some governments to collect and publish data on migrants.[5] Yet another reason is disagreement on the definition of a migrant; many countries use different legal definitions, making cross-country comparisons difficult. The first chapter in the book is the outcome of the Herculean task of collecting and classifying globally comparable bilateral migration data.

In chapter 1, Christopher R. Parsons, Ronald Skeldon, Terrie L. Walmsley, and L. Alan Winters present four versions of two matrixes for 226 countries by 226 countries.[6] In the first matrix, migrants are defined by their country of birth (the foreign-born population in the destination country); in the second matrix, a migrant is defined by his or her nationality. This distinction is crucial, because different destination countries employ different legal definitions of a migrant when collecting data. These different definitions are carefully elaborated and presented through interesting examples from Portugal and the United Kingdom.

The data are collected from the latest round of censuses (2000/01), the latest available censuses, or other sources that are meticulously documented in the chapter. The first version of the matrix presents the currently available data. Each subsequent version progressively employs different techniques to estimate the missing data, and the techniques are carefully explained to the potential users of the data. The final matrix provides global data on international bilateral migration stocks. The aim is to clearly identify and collate comparable data across countries—data that can be used by all migration researchers across many disciplines, including demography, economics, and sociology. In addition, the authors give a first account of the contents of the database by quantifying the patterns of international migration. For instance, the data show that South-to-North emigration accounts for 37 percent of total emigration, South-South emigration, for 24 percent, and North-North emigration, for 16 percent.[7] By making the census data from different countries comparable across the globe, the authors create a common ground for policy makers, contributing to better empirical research on migration and a more informed policy debate.

Do International Migration and Remittances Reduce Poverty?

In chapter 2, Pablo Acosta, Pablo Fajnzylber, and J. Humberto Lopez present the findings of studies conducted in 12 Latin American and Caribbean countries. They use two headcount poverty measures based on poverty lines of $1 per day ("extreme" poverty) and $2 per day ("moderate" poverty). They find that remittances have large poverty-reducing effects when migration is assumed to be exogenous—that is, when migration is assumed to have already taken place. These effects are largest in countries such as Mexico and El Salvador, where migrants come from the lower part of the income distribution. Extreme poverty falls by over 35 percent in both countries, and moderate poverty falls by 15 percent for Mexico and 21 percent for El Salvador. The reduction in extreme poverty and moderate poverty for the 12 countries averages 14 percent and 8 percent, respectively.

One of the key contributions of chapter 2 is treatment of migration decisions as endogenous. The impact on poverty is smaller though still positive when migration has not yet taken place and must occur before remittances can be sent back home. The reason is that the impact of remittances on the migrants' household income is the difference between remittances and the loss of the migrants' home earnings in the premigration situation. When this difference is taken into account, the reduction in extreme poverty and moderate poverty in Mexico and El Salvador averages only 3 percent.

The second finding is that the poverty-reduction impact of remittances is much larger if measured only for recipient households rather than for the population as a whole. For the absolute reduction in extreme poverty, the largest absolute difference between that of recipient households and that of the population as a whole is found in Guatemala and Haiti, where it equals 10.7 and 15 percentage points, respectively. The largest differences in moderate poverty are found in Bolivia, Ecuador, Guatemala, Haiti, and Honduras; they amount to between 10 and 17 percentage points.

The findings in chapter 2 are consistent with those in the literature. Adams (2006) confirms the results for Guatemala, and Yang and Martinez (2006) find that an increase in remittances leads to a reduction in migrant-household poverty in the Philippines. They also find spillover effects, including falling poverty in households without migrant members. Mora and Taylor (2005) find that for Mexico both internal and international remittances have an equalizing effect on incomes in high-migration areas but not in low-migration areas and that the larger the share of households with migrants in a region, the more favorable the effect of increases in remittances on rural poverty. The two effects are consistent with one another, as noted by McKenzie (2006), who obtains a similar result. He argues that, as networks develop and migration costs decline, individuals from lower-income households migrate, and poverty declines as well. Duryea and Olmedo (2005) confirm

these results. Using a sample of 2,400 observations in all municipalities in Mexico, they find that those municipalities with a larger share of households receiving remittances have lower levels of poverty.

What Is the Link between Migration and Remittances on the One Hand and Investments in Education and Educational Outcomes on the Other?

In chapter 3, Ghazala Mansuri provides an analysis of the impact of migration on education that is more detailed than analyses found in previous studies. She examines the impact on schooling at both the intensive (enrollment) and extensive (completed grades) margins. In addition, she explores the impact on accumulated schooling conditional on current enrollment and previous enrollment. Conditional analyses of the impact of migration offer a better measure of progress through school.

Mansuri shows that migration has a positive impact on all measures of educational attainment. Children from migrant households are more likely to attend school, stay in school during the age range of peak dropout rates, have higher completed grades, and progress through school at a significantly better rate than children in nonmigrant households. The key finding is that these effects vary according to gender. Enrollment rates increase by 54 percent (from 0.35 to 0.54) for girls but only by 7 percent (from 0.73 to 0.78) for boys. Mansuri suggests that because boys start with a higher enrollment rate, further increasing the rate may be harder for boys than for girls. The decline in dropout rates is also substantially larger for girls: 55 percent (from 0.56 to 0.25), compared with a decline for boys of 44 percent (from 0.25 to 0.14).

As for accumulated schooling conditional on previous school enrollment, Mansuri finds that girls in migrant households complete almost two years more than girls in nonmigrant households, whereas boys complete only around one year more. This finding implies that boys are almost a full grade ahead of girls in their age cohort in nonmigrant households, whereas the school attendance of girls exceeds that of boys by 0.2 of a grade in migrant households. These effects are further strengthened if the sample is more tightly restricted by conditioning accumulated schooling on current enrollment.

The study by Acosta, Fajnzylber, and Lopez presented in chapter 2 examines the impact of remittances on the share of expenditures allocated to education. It finds that remittances have a positive impact on educational expenditures among middle- and upper-class households. In addition, remittances have a positive impact on educational spending on children in households with low parental schooling.

In the case of children, a perfect negative relationship exists between labor force participation and time spent in school (whether through higher enrollment,

more years of schooling, or both). Consequently, it follows from the findings of Mansuri in chapter 3, Cox-Edwards and Ureta (2003), Hanson and Woodruff (2003), and Yang and Martinez (2006) that migration and remittances reduce the labor force participation of children; their impact on girls is greater than that on boys. These findings are consistent with Pablo Acosta's results in chapter 4. Acosta shows that international migration and remittances reduce the labor force participation of girls. They reduce such participation only for boys below the age of 14. Remittances reduce the labor force participation of adult women and have no impact on that of adult men or boys age 14 and older. These findings suggest that international migration and remittances lead women to work more inside the home, thereby resulting in greater intrahousehold specialization.

A general finding that arises from the gender-specific studies in this volume is that the allocation of resources to daughters is more responsive to income shocks than the allocation of resources to sons. In other words, resources allocated to daughters tend to be the marginal resources, whereas those allocated to boys tend to be intramarginal and are therefore less sensitive to income fluctuations. Consequently, the positive income impact of migration and remittances on daughters' education and labor outcomes is typically much larger than that for boys.

How do these results compare with those from other studies in the literature? None of these other studies have examined the impact of international migration and remittances on child schooling at the level of detail of Mansuri's analysis in chapter 3. Studies have typically focused on years of schooling or enrollment though not on both and not on the other matters covered in chapter 3.[8]

In examining years of schooling, Hanson and Woodruff (2003) obtain a positive impact, though mainly for girls and only in households with low maternal schooling. The results confirm those of Acosta, Fajnzylber, and Lopez in chapter 2 and those of Yang and Martinez (2006). The results are also consistent with the idea that remittances help relax credit constraints in low-income households and raise children's educational attainment. Cox-Edwards and Ureta (2003) find that remittances have a significantly positive impact on school attendance, especially compared with other sources of income; Adams (2006) finds the same effect on educational expenditures.

Do Migration and Remittances Contribute to Health Outcomes?

The study by Acosta, Fajnzylber, and Lopez in chapter 2 also examines the impact of remittances on child health on the basis of detailed data from Nicaragua and Guatemala. The authors investigate the impact on health measures (weight for age and height for age) and inputs (child delivery by a doctor and vaccinations). They find that remittances received by households in Guatemala improve health

measures and inputs; all the effects are significantly different from zero. All the effects are also positive in Nicaragua, but only the doctor-assisted delivery input is significant. Another finding in both countries is that the impact of remittances on children's health is particularly strong for low-income households, which suggests that credit constraints may be important.

Chapter 3 also examines the impact of migration on two measures of children's health in Pakistan, namely, weight for age and height for age. Mansuri finds a large positive effect on both measures of child growth; gains for girls are larger than those for boys. Young girls in migrant households are taller than girls of the same age in nonmigrant households. Boys are taller than girls in nonmigrant households, but given that girls benefit more than boys from migration, girls in migrant households actually do better than boys in absolute terms. By splitting the sample into two age groups, Mansuri finds that the differential gender effect that holds for the younger girls is almost fully sustained among the older girls. On the basis of these results, she concludes that girls probably bear more of the household income risk than boys in rural Pakistan. Thus, migration can have positive growth effects that last later in the girls' life than in the boys' life. Mansuri obtains similar results for the weight-for-age measure. Girls from migrant households do better than those from nonmigrant households. Boys have a better weight-for-age score than girls in nonmigrant households, but the differential impact of migration more than compensates for this loss, so that the score for girls is higher than that for boys in migrant households.

Do Migration and Remittances Raise Investments in Capital Assets and Small Businesses?

Mansuri's study in chapter 3 examines the impact of migration on investment in rural Pakistan. She considers three types of capital investment—establishment of a nonfarm enterprise, purchase of major farm implements (tractors and tubewells), and purchase of agricultural land—and distinguishes between ongoing and completed migration episodes. She finds that migration has a significant negative impact on household nonfarm business investment that is entirely reversed once the migrant has returned. Thus, migrant households to which the migrant has returned are as likely to have a nonfarm business as nonmigrant households. Moreover, migrant households are as likely to invest in farm assets as nonmigrant households, and return migration has no impact on the result. Finally, migration has a large positive impact on land purchase, an impact entirely due to ongoing migration.

These results are consistent with those of Glytsos (2001), who finds that investment increases with remittances in the majority of the Mediterranean countries he

analyzes. Similar results are obtained by McCormick and Wahba (2003) for small enterprises in Egypt and by Woodruff and Zenteno (2001). The latter find that investment in microenterprises in urban Mexico—mostly for self-employment—is higher in states with higher migration rates and higher remittances.

What Is the Impact of Migration on Origin Countries' Birth Rates and on the Extent to Which Demographic Transition Has Been Attained?

The study by Philippe Fargues in chapter 5 provides an intriguing analysis of the relationship between the destination of international migrants and birth rates in migrants' countries of origin, a relationship that has been examined by neither economists nor demographers. Although it appears plausible to assume that international migration has had no impact on the total world population, Fargues posits the opposite. He contends that migration from developing countries to developed countries since the 1970s may have resulted in a world population that is smaller than the population that would have existed in the absence of international migration.

The reason is that most recent migration has been from high to low birth-rate countries. Migrants can affect their home countries' views on family structure, because they typically adopt ideas and behaviors prevailing in the destination countries and transmit them to their countries of origin. By transmitting ideas on demographic modernity, migrants are likely to contribute to the reduction of birth rates in their origin countries. On the other hand, if correct, the hypothesis suggests that migration to high birth-rate countries will lead to increases in birth rates. Fargues originally formulated this hypothesis in 1993, when large fertility surveys that became available in the late 1980s and early 1990s revealed surprisingly large cross-country demographic differences. Following Fargues (1993), Courbage (1995) offered a similar hypothesis, arguing that migration affected marriage patterns, which in turn affected fertility.

Fargues presents empirical evidence for his hypothesis from three source countries: Morocco and Turkey (from which most people migrate to Western Europe) and Egypt (from which most people migrate to the oil-rich Persian Gulf countries). Because destination countries in the West (Gulf) are more (less) advanced in their transition from high to low fertility rates than migrants' home countries, migration should help accelerate the transition to low birth rates in Morocco and Turkey and delay it in Egypt. Empirical evidence of a strong negative relationship between migration and birth rates among nonmigrants for Morocco and Turkey and of a positive relationship for Egypt supports these assumptions. Fargues

obtains similar results for cross-sectional analyses in Morocco and Turkey. Moreover, other data suggest that education—the single most important determinant of demographic transition—has been promoted by emigration in Morocco and Turkey but not in Egypt.

Transmission of modern demographic ideas could be thought of as a positive externality of international migration, because migrants contribute to human capital formation by transmitting new information to their communities in their countries of origin.[9] The hypothesis that migrants generate positive externalities may be true for other areas as well. For example, migrants to modern democratic societies might have a positive impact on social, economic, and political institutions in their home countries. The International Migration and Development Research Program will examine this hypothesis.

What Are the Impacts of Host-Country Regulations on Migrants?

Economic analysis has focused on the impact of migration on natives in developed countries and developing countries rather than on migrants, even though the latter constitute one of the three pillars—together with natives in source and host countries—on which the "win-win-win" strategy for sustainable migration relations rests. The International Migration and Development Research Program has undertaken studies of the situation of migrants in destination countries. Two of these studies are presented in part II of this volume.

One key question is what kind of migrants a specific migration policy attracts. Australia and Canada employ "points systems" wherein migrants are chosen on the basis of qualifications and are allowed to seek jobs once they enter the country. Other regimes, such as the U.S. H1-B program, explicitly require migrants to have a job offer before they are granted permanent residency. In chapter 7, John Gibson and David McKenzie use data generated by a specially designed survey in Tonga to study New Zealand's Pacific Access Category (PAC) policy, which explicitly requires potential migrants to obtain a job offer before they migrate to New Zealand. The aim of Gibson and McKenzie is to identify the types of migrants selected by the policy to apply for migration. They find that the policy selects people with large existing social networks in New Zealand, because these networks are crucial to potential migrants' ability to obtain a job offer. However, they also find that delays in applications processing prevent many migrants from taking offered jobs, thereby undermining the program's intent. Furthermore, most of the PAC migrants pick entry-level, low-skilled jobs in sectors with rapid turnover, such as construction and retail. These are sectors in which the migrants would easily have been able to find jobs on migration. Therefore, the program punishes people without existing family

networks in New Zealand and does not necessarily select people with relatively high human capital levels. The impacts of the New Zealand PAC policy, which requires *any* job offer, are likely to differ from those of the U.S. H1-B program, which requires firm sponsorship and relatively high skill employment.

In chapter 6, Dominique M. Gross focuses on Switzerland, a destination country with one of the highest immigration rates in the world. According to 2003 statistics, the migrant population makes up over 20 percent of the total population and, unlike the migrant populations of the United States and Canada, includes second and third generations. Historically, shortages of unskilled workers in Switzerland have created pressures in the labor market, which in turn produced political sentiments against migration. Since the 1960s, the Swiss government has had to balance demands for access to foreign labor with demands for immigration controls through a closely managed and relatively complicated quota regime. Initially, the government granted annual work permits to permanent residents, because it assumed that migrants would return to their home countries at some point. Most temporary migrants became permanent in practice, if not in legal terms. As the Swiss economy experienced expansions and contractions, the demand for migrant labor also fluctuated, and permit quotas were adjusted. During the economic crisis of 1974–76, Swiss immigration policies appeared to work, and many migrants voluntarily left Switzerland without increasing already-high unemployment. During the 1980s, the dynamics changed. Many migrants who received "established permits" after a 10-year stay began to bring their family members to Switzerland. These relatives were not subject to a quota regime. During Switzerland's 1990 recession, no exodus of migrants occurred, and unemployment levels rose. This situation triggered evaluation of Switzerland's immigration policies, which became more nuanced and began to differentiate migrants on the basis of their skill levels.

One interesting aspect of the Swiss experience is how migrants from different countries reacted to the revised policies. In the 1970–90 period, the majority of migrants were from member countries of the European Union (EU). After that period, the share of EU migrants steadily declined, especially as the economic environment in Greece, Italy, and Spain improved. However, by 2000, the share of the new European migrants was more than 50 percent due to Switzerland's signing of a free mobility agreement with the European Union.

In chapter 6, Gross considers migration to Switzerland from the former Yugoslavia since the agreement took effect. Previously, Yugoslav migrants represented a tiny share of Switzerland's migrant population. In 2003 they accounted for the largest portion (24 percent), despite immigration policies that discriminated against low-skilled workers, because they took advantage of Switzerland's family reunification policies.

The econometric evidence indicates that the key determinants of the migration patterns analyzed by Gross are relative incomes, the presence of a cultural network, and the unemployment rate. These factors are especially important for migrants from southern countries and became especially influential after 1995, when Switzerland's migration policies began to target skilled workers from southern countries. However, Yugoslav migrants appear to be less sensitive to financial incentives than other migrants from southern countries, probably because of political instability in the country of origin that encourages emigration.

What Determines Return and Repeat Migration?

Return migration is one of the most passionately discussed issues in immigration policy debates and one of the most studied phenomenon in theoretical models, yet empirical analysis in this area is scarce. Regarding determinants of migration, it appears even more difficult to establish "who returns" than "who emigrates." Selection effects are of particular importance, because the least successful migrants are expected to return home.

In chapter 9, Bernt Bratsberg, Oddbjørn Raaum, and Kjetil Sørlie use a unique individual longitudinal database to study repeat and return migration behavior of migrants in Norway. Their data cover all immigrant admissions between 1967 and 2003 and their employment history during this time frame. Their key finding is that more than 50 percent of the migrants had returned to their home countries by 2004, and most emigration occurred within three years. This finding probably indicates that migrants quickly learn their economic potential and social adaptability and therefore quickly decide whether to stay or return. Immigrants from member countries of the Organisation for Economic Co-operation and Development (OECD) are more likely to return to countries of origin than immigrants from non-OECD countries, because they have more attractive options back home. During the study period, 14 percent of migrants moved to a third country, and 15 percent came back to Norway, providing evidence of a large degree of circular migration.

The basis for admission to Norway proves to be among the most important determinants of overall migration behavior, including return and circular migration. Asylum seekers or family members who take advantage of reunification policies are least likely to return to their countries of origin. This phenomenon is related to conditions back home for asylum seekers and to the selection effect for family members. Because they are professionals, immigrants who arrived with work visas are most likely to return home. Migrants from less developed countries are the most likely to move to a third country, such as the United Kingdom

or the United States, because they view the move to Norway as the first step in making a new life in the West. As expected, economic and political conditions in Norway, as well as in the home country, are significant in determining migration patterns.

How Do Return Migrants Fare Relative to Nonmigrants with Similar Characteristics?

Theoretical papers on return migration abound (Galor and Stark 1991; Dustmann 1997; Dustmann and Kirchkamp 2002; Mesnard 2004), but empirical work on this topic is scarce. Moreover, most empirical studies do not focus on developing countries. Those studies that deal with developing countries have traditionally focused on the impact of savings accumulated during temporary migration on self-employment and entrepreneurship (Dustmann and Kirchkamp 2002; McCormick and Wahba 2001, 2003; Mesnard 2004). However, no study appears to have examined how temporary migration affects migrants' human capital and economic performance upon return home.

Chapter 8 by Jackline Wahba attempts to fill that void by examining the labor market performance of return migrants to Egypt relative to the performance of similar nonmigrant individuals. More specifically, Wahba studies the returns to overseas work experience in terms of the impact on migrants' wages on the migrants' return to Egypt. The impact on self-employment is not examined here; McCormick and Wahba (2001, 2003) address that topic. Because self-selection is likely to be involved in the decision to work for wages rather than to become self-employed, Wahba controls for this potential selection bias as well as for the one arising from the migration choice in the estimation of wages of return migrants and nonmigrants. Her findings provide strong evidence that temporary overseas employment results in a wage premium on migrants' return. On average, return migrants earn about 38 percent more than similar nonmigrants. Both the duration of migration and the length of time since return home have a positive impact on return migrants' wage premium, but the destination country has no impact on return migrants' wage premium.

Future Research

The studies in this volume address various issues in the migration literature and policy debate. These issues include data challenges, the impact of migration on various development measures (such as health, education, investment, and labor market participation), analysis of unique host-country policies, and return and circular migration. Several ongoing projects within the World Bank's International

Migration and Development Research Program are designed to generate original data through detailed household surveys (for example, in Brazil, Fiji, Ghana, New Zealand, Pakistan, and Tonga) that include an explicit migration module. One project is collection of detailed data on the impact of temporary migration from Kerala, India, and Sri Lanka to the Persian Gulf countries. Another project is expansion of the global brain-drain database, which provides bilateral brain-drain data for nearly 200 countries and three levels of educational attainment for 1990 and 2000. The database will include data from earlier periods, data on gender dimensions, and information on migrants who completed their education in the country of origin and those who completed it in the destination country. Related to brain-drain work is the creation of a bilateral medical brain-drain database and its use in an analysis of the relationship between medical brain drain and various health outcomes in developing countries, such as the spread of HIV/AIDS in Sub-Saharan Africa. Yet another project is analysis of the impact of various permanent and temporary migration schemes (including guest worker programs and the temporary movement of service providers under Mode IV of the General Agreement on Trade in Services) on the welfare of host and source countries.

The next volume to emerge from the International Migration and Development Research Program will focus on the gender dimensions of international migration. Future volumes will present the research noted above.

Notes

1. Due to unrecorded remittances flows, particularly informal ones, the true size of these flows is likely to be significantly greater. On the other hand, part of the measured increase in remittances flows may be due to an improvement in the accuracy with which these flows are recorded.

2. The Global Migration Forum (GMF) is planned to serve as a platform for the presentation of individual countries' concerns as well as of analyses and potential solutions to some of the problems in this area. The first meeting of the GMF was sponsored by the government of Belgium and took place in Brussels in July 2007.

3. The program has many focus areas. The main ones are (1) the determinants of migration and remittances and their impact on development indicators, including poverty and inequality, investment in human and physical capital, entrepreneurship, labor force participation, and entry into capital-intensive activities; (2) the brain drain; (3) temporary migration, including Mode IV of the General Agreement on Trade in Services; and (4) the relationship among migration, trade, and foreign direct investment. Additional research is being conducted in various areas, including the situation of migrants in receiving countries, the economic and social impact of return migration, the impact of remittances on macroeconomic stability, the impact of migration on institutions in the country of origin, the impact of the brain drain on growth, and the medical brain drain and its impact on HIV/ AIDS.

4. Part I of the first volume examined the determinants of international and internal migration as well as the impact of migration and remittances on poverty and a number of development outcomes—including education, health, housing, entrepreneurship, and child labor—in Mexico, Guatemala, and the Philippines. Part II consisted of four brain-drain-related studies. These studies presented the largest brain-drain database to date, an analysis of the brain gain in source countries, the possible brain

waste of educated migrants in the United States, and the impact of these migrants and foreign students on U.S. technological progress.

5. Only the United Nations collects global data on international migration; however, until now it has only provided the total migrant stock for each country. It provides no data on bilateral stocks.

6. The first two versions of matrixes are available on the Web site of the Development Research Centre on Migration, Globalisation and Poverty at www.migrationdrc.org/research/typesofmigration/global_migrant_origin_database.html. The other two versions are available to researchers by request to the same center. Version 4c only, aggregated to a 87 × 87 matrix, is available at www.gtap.agecon.purdue.edu/models/labor_migration.asp.

7. Migration among the countries formed after the breakup of the Soviet Union accounts for approximately 10 percent of total migration but is not included in these calculations. Overnight the breakup produced millions of additional international migrants, without actual movement of people, as new boundaries were drawn and new nationalities were created.

8. Some studies have examined the impact on educational expenditures, that is, on one of the inputs rather than on a measure of output.

9. On the other hand, by retarding the transition to low birth rates, migration to more conservative, high birth-rate countries may generate negative externalities.

References

Adams, R. Jr. 2006. "Remittances, Poverty, and Investments in Guatemala." In *International Migration, Remittances and the Brain Drain,* ed. C. Özden and M. Schiff, 53–80. New York: Palgrave McMillan.

Cox-Edwards, A., and M. Ureta. 2003. "International Migration, Remittances and Schooling: Evidence from El Salvador." *Journal of Development Economics* 72: 429–61.

Courbage, Y. 1995. "Fertility Transition in the Mashriq and the Maghrib: Education, Emigration, and the Diffusion of Ideas." In *Family, Gender and Population Policy: Middle-Eastern Realities,* ed. Carla Obermeyer, 80–104. Cairo: American University in Cairo Press.

Dureya, S., E. López-Córdova, and A. Olmedo. 2005. "Migrant Remittances and Infant Mortality: Evidence from Mexico." Mimeo, Inter-American Development Bank, Washington, DC.

Dustmann, C. 1997. "Return Migration, Savings and Uncertainty." *Journal of Development Economics* 52: 295–316.

Dustmann, C., and O. Kirchkamp. 2002. "The Optimal Migration Duration and Activity Choice after Remigration." *Journal of Development Economics* 67: 351–72.

Fargues, P. 1993. Demographic Explosion or Social Upheaval? In *Democracy without Democrats?* ed. Ghassan Salamé, 155–81. London: I.B. Tauris.

Galor, O., and O. Stark. 1991. "The Probability of Return Migration, Migrants' Work Effort, and Migrant Performance." *Journal of Development Economics* 35: 399–405.

Glytsos, N. P. 2001. "Dynamic Effects of Migrant Remittances on Growth: An Eonometric Model with an Application to Mediterranean Countries." Centre of Planning and Economic Research, Athens.

Hanson, G. H., and Christopher Woodruff. 2003. "Emigration and Educational Attainment in Mexico." Working Paper, University of California at San Diego.

McCormick, B., and J. Wahba. 2001. "Overseas Work Experience, Savings and Entrepreneurship amongst Return Migrants to LDCs." *The Scottish Journal of Political Economy* 48: 164–78.

———. 2003. "Return International Migration and Geographical Inequality: The Case of Egypt." *Journal of African Economies* 12: 500–32.

McKenzie, D. 2006. "Beyond Remittances: The Effects of Migration on Mexican Households." In *International Migration, Remittances and the Brain Drain,* ed. C. Özden and M. Schiff, 123–47. New York: Palgrave McMillan.

Mesnard, A. 2004. "Temporary Migration and Capital Market Imperfections." *Oxford Economic Papers* 56: 242–62.

Mora, J., and J. E. Taylor. 2005. *Remittances, Inequality and Poverty: Evidence from Rural Mexico*. Working Paper 05-003, Department of Agricultural and Resource Economics, University of California, Davis.

Ozden, C., and M. Schiff, ed. 2006. *International Migration, Remittances and the Brain Drain*. New York: Palgrave McMillan.

Woodruff, C., and R. Zenteno. 2001. "Remittances and Microenterprises in Mexico." Mimeo, University of California, San Diego.

World Bank. 2006. *Global Economics Prospect 2006: International Remittances and Migration.* Washington, DC: World Bank.

Yang, D., and C. Martinez. 2006. "Remittances and Poverty in Migrants' Home Areas: Evidence from the Philippines." *International Migration, Remittances and the Brain Drain*, ed. C. Özden and M. Schiff, 81–121. New York: Palgrave McMillan.

1

QUANTIFYING INTERNATIONAL MIGRATION: A DATABASE OF BILATERAL MIGRANT STOCKS[1]

Christopher R. Parsons, Ronald Skeldon, Terrie L. Walmsley, and L. Alan Winters

Economists have become increasingly cognizant of the importance of international migration. In developed countries, debate about appropriate immigration policies (for example, Borjas 2003) has been intense; among development economists, interest has focused on the links between migration and development (for example, Lucas 2005; Ozden and Schiff 2006). Topics include the determinants of migration (for example, Hatton and Williamson 2002); the role of migration and remittances in poverty alleviation (Ozden and Schiff 2006, part 1); migration and human development (for example, McKenzie and Rapoport 2005; McKenzie and Hildebrandt 2005); the brain drain (Stark 2003; Commander, Kangasniemi, and Winters 2004; Docquier and Marfouk 2005); South-South migration (for example, Ratha 2006); and the links among migration, trade, and investment (Rauch 2001). At a global level, research has explored the benefits of potential agreements to foster South-North migration (Walmsley and Winters 2005; Pritchett 2006).

Given this increasing interest in migration, it might seem surprising that researchers have made few attempts to take a global view of the patterns of international migration between countries and regions. This deficiency essentially reflects

the lack of comprehensive and reliable data on bilateral flows of migration. The Organisation for Economic Co-operation and Development (OECD) produces detailed stock and flow data on immigrants in the OECD and in a few non-OECD countries (for example, OECD 2002a and 2002b), early versions of which have been used for analysis (for example, Mayda 2006). The United Nations (UN) adopts a global perspective when summarizing international migrant movements, but its work provides only total migrant stocks for each country. National data sources frequently allow some geographical disaggregation, but attempts to combine these sources into a broader framework exhibit many failings—for example, data availability only for a particular region and serious challenges in comparing the data of one country to the data of another, including the problem of how to define migrants by place of origin. Migrants most often are defined by country of birth or by country of citizenship, and typically no distinction is made between the two approaches, despite the large disparities that exist between them.

This chapter makes a start toward rectifying these data shortcomings by introducing four versions of two origin-destination matrixes for 226 countries and territories using the data from the 2000 round of censuses.[2] The first of these matrixes records foreign population by country of birth, and the second records the population by nationality, which, for the purpose of the chapter, is treated as analogous to citizenship.[3] Though countries employ many methods for collecting and presenting these data, this chapter attempts to reconcile these methods to create as full and comparable a dataset as possible. The four versions reflect different trade-offs between the comprehensiveness of coverage and the use of assumption and interpolation to compensate for missing data. The chapter reports all four versions, because each will be appropriate for different uses, and it discusses them in as transparent a fashion as possible so that readers may choose the version that best suits their needs.

The first version simply contains the raw data with some minor adjustments and will be of use to demographers. The later versions contain bilateral entries, and despite the fact that individual entries are less accurate (indeed, some are crude approximations), they may well prove more useful to applied economists. The final version (version 4), though covering only the foreign born, represents as full a picture of bilateral international migrant flows as data permit. By introducing the data in this way, the chapter provides a pathway into a rich resource for further research.[4]

The data in the four matrixes are generated by the stock of migrants at destination country and territory disaggregated by country and territory of origin around the year 2000. They make no reference to the time at which a migration has taken place; they provide only an estimate of the cumulative migrations to date into an area (net of re-emigrations). At present, no global source exists for flow data in which immigration (or emigration) can be related to specific periods of time—for example, movements over the previous one of five years. Flow data

of this type are available only for a relatively few, generally more developed, countries. In a way, international migration statistics are not far from where data on internal migration were some 40 years ago.

The chapter concludes with a brief description of the patterns that are revealed by this new data source. The most important finding is that patterns do indeed differ substantially across migration corridors. For example, immigration to the United States is dominated by Latin America, whereas Western European immigration draws heavily on Eastern Europe, Central Asia and the Mediterranean region. Over one-third of world migration is from developing countries to developed countries; only about a quarter is between developing countries, and a sixth is between developed countries. Flows among developed countries and migration among countries of the former Soviet Union (FSU) each account for a little over 10 percent of the total. Over half of migration is between countries with linguistic ties. Africa accounts for 8 percent of Western Europe's immigration and much less of immigration to other rich regions.

The remainder of the chapter describes who qualifies as a migrant under both of the definitions used in this chapter and investigates the sources of migration statistics and their interpretation. The discussions highlight the heterogeneity that exists among the available statistics and the challenges entailed in making them comparable.[5] The final sections of the chapter outline the different versions of the matrixes and provide some summary statistics of the patterns observed.

Who Counts as a Migrant?

Definitions of a "migrant" vary. International migrants may be recorded in terms of

- country of birth,
- country of citizenship,
- last country of previous residence,
- duration of time spent away from birthplace or last place of previous residence,[6] and
- purpose of stay (visa type).

The above classification comes from Bilsborrow et al. (1997), who also discuss other possible definitions, such as those based on ethnicity. UN (1998) defines a migrant as "any person who changes his or her country of usual residence," though residence may refer to a change of residence or of residential status. Tourists and business travellers, among others, are therefore not included in the international migration statistics, as their movements do not involve a change in their usual place of residence. Tourists are often recorded in separate statistics, and business visitors are often not recorded among the migrant population.

Statistically, the migrant population can be equated directly with the number of foreigners: those recorded by country of birth (the foreign born) or that fraction of the population with foreign nationality (the foreign population). The confusion over migrants is exacerbated, however, by the fact that a migrant's nationality need not be the same as the migrant's country of birth. Nationality can be changed; birthplace cannot (not legally, at any rate). Thus, a person may be born locally but qualify as a foreign national if born to foreign parents, or conversely, a person can be born a national but characterized as foreign born if born overseas. Table 1.1 summarizes the various possibilities of what constitutes the foreign population under each definition, taking the examples of Ireland and the United Kingdom. Only domestic nationals residing in their home country of birth do not qualify as immigrants under one or other of the definitions. A third possibility is that a person can adopt the nationality of his or her country of residence after some time through naturalization procedures.

Given the variety of nationality criteria and the differences among countries in their willingness to naturalize immigrants, the foreign-born criterion is more useful for economic analysis than the foreign population. In this chapter's final version of the data, use of nationality statistics is made only where foreign birth data are unavailable. The former corresponds more closely to the notion of

Table 1.1. Who Qualifies as a Migrant?

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<tr><td>Foreign population in United Kingdom by nationality</td><td>Not foreign population by nationality</td><td>Foreign population in United Kingdom by nationality</td></tr>
<tr><td rowspan="2">Residing in Ireland</td><td>Foreign population in Ireland by country of birth</td><td>Foreign population in Ireland by country of birth</td><td>Not foreign population by country of birth</td><td rowspan="2">Does not qualify as a migrant</td></tr>
<tr><td>Foreign population in Ireland by nationality</td><td>Not foreign population by nationality</td><td>Foreign population in Ireland by nationality</td></tr>
</table>

Source: Authors.

Table 1.2. Disparities between the Foreign Born and Foreign Migrants in Portugal

Former colony	Migrants from colony defined as foreign born	Migrants from colony defined as foreign citizens	Migrants born in the colony but with Portuguese nationality
Brazil	49,891	31,869	18,022
Mozambique	76,017	4,685	71,332
Angola	174,210	37,014	137,196
Cape Verde	44,964	33,145	11,819
Guinea-Bissau	21,435	15,824	5,611
São Tomé and Principe	12,490	8,517	3,973
Macau	2,882	71	2,811
Timor-Leste	2,241	137	2,104
Total	**384,130**	**131,262**	**252,868**

Source: Authors.

international movement: defined by country of birth, a person will generally have had to move at some point in his or her life to be classified as a migrant.[7]

One problem arising from these definitional issues is encountered when dealing with former colonies. For example, many Portuguese nationals are born abroad in one of Portugal's former colonies. As outlined in table 1.2, the Portuguese census reports nearly 50,000 people born in Brazil, but only 32,000 with Brazilian nationality. Care should be exercised, because a large proportion of foreign-born migrants will have a domestic nationality.

About the Data

This section presents the data sources used to compile the migration matrixes, as well as some issues related to comparability and consistency of the various sources.

Sources of Migrant Stock Data

Immigrant stocks[8] are usually recorded by demographic methods that measure the total population; the most important of these measures are population censuses. The census, a retrospective system for surveying the entire population at a single point in time, is generally considered the most comprehensive record of the total population. Perhaps the greatest strength of census data for measuring migrant populations, aside from their universal coverage, is the limited scope of their questions, which facilitates comparability across countries. However, censuses are infrequent, and although virtually every country in the world conducts censuses, they invariably do so on different dates within census "rounds" that

usually span a decade. The latest, 2000, round of censuses that included nearly all countries[9] covers censuses taken between 1995 and 2004.[10]

Two definitions of the total (resident) population are commonly applied in censuses: de facto and de jure. The de facto population refers to all persons physically present in a country at the census moment. The de jure population refers to all those persons who are usually resident or who qualify as legally resident at the census moment. They are often defined as those who have been resident in that country for a particular length of time, which can range from between three months to one year. Traditionally, censuses define migrants either as the foreign born or as the foreign population, although in recent years recognition of the value of obtaining both sets of data has grown.

An alternative source for calculating migrant stocks is the population register, which is more often used to measure flows. Population registers are continuous reporting systems for recording births, deaths, and changes of residence in a population and so offer data quite different from those in censuses. However, few countries maintain population registers, and those that do rarely offer a comprehensive view of either country of birth or nationality. Data from registers are employed in this study only where appropriate census data were unavailable.

Ideally, flow data as well as stock data on migration would be available. Flow data can be inferred from census data through the inclusion of questions about where people lived in the past. Unfortunately, these data are available for too few countries to provide a broad coverage of origin and destination flows for specific time periods. A second potential source of flow data is immigration records, which provide a continuous register of all legal migrants into a country within specific periods of time and which are usually published annually. Again, however, the coverage of such records is patchy, and the information collected and processed is highly variable, so that ultimately they are not a basis for a global dataset. Even developed countries rarely maintain a record of those people, whether they are natives or foreigners, who migrate. In a utopian future, immigration and emigration records could provide an ideal source for the study of international migration, especially if they are linked to migrants' domestic records, as security services increasingly request.

Comparability of Migration Statistics

Compilation of comparable data across countries is hampered by many disparities in collection practices. These disparities include surveying on different dates, omitting different categories of people,[11] and defining migration differently, as well as a lack of standardization in the questions asked during the census, and alternative country coding used to record the responses.[12] UN (1980) recommends that migrants be enumerated according to the borders in existence at the

time of census or survey. Over time, however, borders are redefined, and new countries are created; those interviewed may simply be unaware of boundary changes and may misclassify their country of birth. Indeed, foreign-born migrants who have been residents for many years may classify themselves as native even when they should be otherwise classified, thus biasing results. In other instances, the nonresponse level of migrants may be very significant, as census takers are often poorly trained, and many mistakes go undetected. During the 1969 Kenyan census, for example, 78,756 individuals did not respond to the place of birth question, a high figure relative to the 158,692 that stated they were foreign born (Bilsborrow et al. 1997).

The problem of measuring illegal immigration is also considerable, and the omission of illegal immigrants will distort official migration figures. The extent to which census data record these immigrants will vary across countries, in part reflecting the likelihood that census returns could be used to detect and apprehend people without proper authorization. A pertinent example is Russia, a "migration magnet" in recent years, and the country with the longest border, with approximately 450 official border posts. Estimates of the number of illegal migrants residing in the Russian Federation range from 3.5 million to 6 million (Heleniak 2002), but researchers have no way of ever accurately pinning down the number. In the United States, which arguably conducts the most comprehensive census, the best estimate of the number of unauthorized persons is calculated using a residual method—that is, subtracting known authorized persons from the total number of foreign-born persons (Passel 2005). Numerous migrants are therefore likely to remain unrecorded, not least because it is not in their interest for the authorities to know that they are residing illegally. In some cases, it is also not in the political interest of the authorities to know or recognize the extent of the problem of illegal entrants.

The rate of naturalization also negatively impinges on the quality of migration statistics. This rate varies significantly among countries, and differences in a country's propensity to offer citizenship could seriously affect migration statistics recorded by nationality. Naturalizations in Southeast and East Asia, for example, are so rare that in many cases foreign nationality data can be directly equated to the foreign born. In these countries, first-generation migrants and immigrant births contribute almost solely to the foreign population. Indeed, in the specific case of Japan, migrants of even older generations must apply for citizenship, a lengthy and arduous process. Owing to increased marriages between Japanese and foreigners, the number of naturalizations has increased steadily, though the figure remains comparatively low. Conversely, in countries such as Belgium, where naturalizations are far more common, additional migrants and immigrant births probably contribute significantly to the domestic population as foreign citizens become naturalized. For the purpose of this study, the disparity between two

immigration systems will affect the proportion of the foreign population relative to the national population.

Finally, it should be noted that the way in which immigration statistics are measured has caused several discontinuities in the data, such as those resulting from the breakups of Czechoslovakia, the Soviet Union, and Yugoslavia. These events produced millions of additional international migrants overnight as new boundaries were drawn and new nationalities were created. The data have been adjusted accordingly to include these new migrants. On the other hand, the return of Hong Kong to Chinese sovereignty in 1997 did not reduce the number of migrants: the Chinese are still regarded as "migrants" and contribute over 2 million (1 percent) to the UN total.

The Data Collected

Fully reflecting the authors' awareness of the challenges of data compilation, this section describes the new dataset. The aim of this study was to cover as many as the world's migrants as possible, to assign them *all* to specific countries of origin with the highest degree of accuracy, and to produce as full and comparable a bilateral database of international migration stocks as possible. In its final form, the dataset should be easy to interpret, suitable for a wide range of academic purposes, and easy to update should further material become available. In most cases, data were recorded from their original source. Data from the latest census round were preferred, as these were considered most comparable at the global level, although given the significant lags that often exist between the timing of censuses and their publication "latest" was not always very recent. Data on both the foreign born and foreign nationals were compiled where feasible. Population registers were then drawn on where censuses were unavailable for the 2000 round.[13] In some cases in which neither source was available, data were obtained from reliable secondary sources that cite the original.[14] Some regions of the world provide significantly better data than others, and some data simply do not exist in the public domain or at all. Although the data for Europe, the Americas, and much of Oceania are of a fair standard, the data for parts of Asia and much of Africa are of more dubious quality. Annex 1.1 provides a summary of the raw data collected, as well as shows whether the data are bilateral and presents the corresponding sources and years.

Versions of the Data Matrix

As noted above, this chapter presents four versions of the database, each progressively more complete but more speculative than the last. Each of the first three versions of the database contains two matrixes covering both emigration and immigration for each of 226 countries or territories,[15] one recording the foreign

born and the other, the foreign nationals. The fourth version covers only the foreign born. Version 1 contains all the raw data collected with a few adjustments. In the sources drawn on in this chapter, migrants who cannot be assigned to a specific country of birth/nationality typically are recorded in remainder categories that generally have the designation "other." Version 1 makes no attempt to reassign these migrants, and the "other" category, which often contributes significantly to the overall total, is simply reported below the matrix in the relevant (host nation) column. In a few cases, large "unknown" categories were recorded in the original data—for example, the German data collected from the OECD. These "unknowns" were removed from the matrixes, because they may or may not refer to migrants and will often contain members of the domestic population (domestic populations are normally far larger than foreign populations). Where countries used country coding referring to Czechoslovakia, the Soviet Union, or Yugoslavia, and where bilateral information on migrants' destination postbreakup was available, these aggregated totals were distributed on the same basis, implicitly assuming therefore that migration proportions were the same after the breakup.[16] Zeros were entered where it could be inferred from the data that no migrants were assigned to a specific country. Dependencies and recoded countries were also aggregated into one of the 226 countries and territories included in the database.

In version 2 of the matrixes, composite or regional origins for which no country-specific migration data were available (including break-up countries) are disaggregated according to their shares in total population.[17] Though a rudimentary method of estimation, as migrants are more likely to come from countries in proximity at the regional level (Harrison, Britton, and Swanson 2003), this method was deemed a reasonable exercise. As an example, the 1996 New Caledonia census recorded one category as "Melanesia," which included 86,788 unassigned migrants from Fiji, Papua New Guinea (PNG), and the Solomon Islands. Vanuatu was not included under "Melanesia," because it constituted a separate category in the census. Table 1.3 demonstrates how these migrants for New Caledonia were distributed

Table 1.3. New Caledonia Migrant Split on the Basis of Population Shares for Melanesia

Country	Population (1996)	Percent of total Melanesian population	Number of migrants assigned
Fiji	786,603	13.5	11,710
Papua New Guinea	4,456,781	76.4	66,346
Solomon Islands	410,641	7.0	6,113
Total	5,829,952	100	86,788

Source: Authors.

Table 1.4. Population Splits

Region/country group	Split into:
Union of Soviet Socialist Republics	Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russian Federation, Tajikistan, Turkmenistan, and Ukraine
Yugoslavia	Bosnia and Herzegovina, Croatia, former Yugoslav Macedonia FYR, Serbia and Montenegro, and Slovenia
Czechoslovakia	Czech Republic and Slovakia
Dominicans	Dominica and Dominican Republic
Other U.S. island areas and Puerto Rico	American Samoa, Federated States of Micronesia, Guam, Marshall Islands, Northern Mariana Islands, Puerto Rico, and U.S. Virgin Islands
Korea	Democratic People's Republic of Korea and Republic of Korea
South Asia (SAS)	Bangladesh, India, Pakistan, and Sri Lanka
Middle Eastern countries	Bahrain, Cyprus, Iraq, Islamic Republic of Iran, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates, West Bank and Gaza, Yemen
West Indies	Anguilla, Antigua and Barbuda, Barbados, British Virgin Islands, Dominica, Grenada, Guadeloupe, Guyana, Jamaica, Martinique, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, and U.S. Virgin Islands
Polynesia	American Samoa, Cook Islands, French Polynesia, Niue, Pitcairn Islands, Samoa, Tokelau, Tonga, Tuvalu, and Wallis and Futuna Islands
Melanesia	Fiji, New Caledonia, PNG, Solomon Islands, and Vanuatu
Southeast Asian countries	Brunei, Cambodia, East Timor, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam
UK-dependent territories	Anguilla, Bermuda, British Indian Ocean Territory, British Virgin Islands, Cayman Islands, Falkland Islands, Gibraltar, Montserrat, Pitcairn Islands, St. Helena, Turks and Caicos Islands

across these countries in direct proportion to their populations. Table 1.4 outlines regions and their constituent countries.[18]

Version 3 removes nationality headings that use ethnic background to distinguish migrants—for example, "Crimean Tatars." Because these categories proved difficult to assign geographically, they were removed from the dataset, and their

Table 1.4. (continued)

Region/country group	Split into:
Commonwealth Caribbean	Anguilla, Antigua and Barbuda, Bahamas, Barbados, British Virgin Islands, Cayman Islands, Dominica, Grenada, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, Trinidad and Tobago, and Turks and Caicos Islands
French Equatorial Africa	Central African Republic, Chad, Republic of Congo, and Gabon
Micronesia	Federated States of Micronesia, Guam, Kiribati, Marshall Islands, Nauru, Northern Mariana Islands, and Palau
Other Western Asia	Armenia, Azerbaijan, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordon, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, and Yemen
Southern Africa	Botswana, Namibia, South Africa, and Swaziland
Arab Gulf Co-op Council	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates
Other Arab	Algeria, Comoros, Djibouti, Egypt, Arab Rep. Eritrea, Islamic Republic of Iran, Iraq, Jordan, Lebanon, Libya, Mauritania, Morocco, Somalia, Sudan, Syria, Tunisia, West Bank and Gaza, and Yemen
Trust Territory of the Pacific	Federated States of Micronesia, Marshall Islands, Northern Mariana Islands, and Palau
Overseas French territories	French Polynesia, Mayotte, New Caledonia, St. Pierre and Miquelon, and Wallis and Fortuna
Leeward Islands	Anguilla, Antigua, Barbuda, British Virgin Islands, Dominica, Guadeloupe, Montserrat, Netherlands Antilles, and St. Kitts and Nevis
Windward Islands	Barbados, Grenada, Martinique, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago
French West Indies	Guadeloupe and Martinique
U.S. Indies	Puerto Rico and U.S. Virgin Islands
Borneo	Brunei, Indonesia (Kalimantan), and Malaysia (Sabah, Sarawak)
English Caribbean	Anguilla, Antigua and Barbuda, Bahamas, Barbados, British Virgin Islands, Cayman Islands, Dominica, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago
Nordic countries/Scandinavia	Denmark, Finland, Norway, and Sweden
Indian Ocean	Madagascar, Mayotte, and Reunion

Source: Authors.

Note: SAS = South Asia.

numbers were subtracted from the country totals. These categories had previously been included to facilitate research on ethnicity. Other headings referring to totals largely incorporating nationals were likewise removed. These totals included those persons who possessed dual nationality as well as ambiguous "ignored" totals. Additionally, the database was supplemented with information from Srivastava and Sasikumar (2005) on the estimated number of migrants from India in the Middle East.

Version 4, though the fullest, is arguably the least accurate set of data. This version supplements the foreign-born matrix with shares across sending countries derived from the nationality matrix, augments the foreign-born matrix with the UN (2004) totals for 2000 where no other data were available, and reconciles all of the remainder categories. Finally, it scales all the data predating 2000 to the UN (2004) total for that year. As each of these steps represents a large adjustment, version 4 is split into three subcomponents (versions 4a–4c). The decision to produce the final matrix using the foreign-born definition was based on the fact that a greater number of countries report data by place of birth; that this definition is less vulnerable to differences in naturalization policies across countries; and that it more readily accords to the actual movement of migrants, which is the economist's principal interest. The three iterations of version 4 are described in greater detail below.

Version 4a

The 2003 UN dataset (UN 2004) covering migrant stocks for the year 2000 is generally considered the most comparable source on international migrant stocks, despite the fact that some of the data were extrapolated from older sources. Indeed, the dataset is held in high esteem even though, where no foreign-born data are available, researchers must interpolate numbers from data on the basis of nationality and ethnicity concepts. Where no other data were available, the present study uses the UN data for country totals; these data are essentially calibrated to the UN totals.

A high degree of correlation has been understood to exist between the foreign-born and foreign-nationality populations (Harrison, Britton, and Swanson 2003). If so, it would be feasible to use information from the nationality matrix to supplement information from the foreign-born matrix. First, it was important to check that the association between the foreign-born and foreign-nationality populations existed in relation to the data collected.

For those 35 countries for which data were available for both the foreign-born and the foreign-national population for comparable years, the study used a technique based on the entropy measure devised by Walmsley and McDougall (2004)

(annex 2). This methodology calculates the differences in the shares between the foreign-born matrix and the nationality matrix as the equally weighted average of the simple share from a particular coefficient in the foreign-born matrix multiplied by the natural log of the ratio of that share to the equivalent share in the nationality matrix. The two major advantages of this technique are that it allows comparison of shares between two tables while ignoring any zero entries and that the differences between two large shares are given less weight than the same absolute difference in two relatively smaller shares.

On average, the entropy difference between shares for the 35 countries for which data were available for both the foreign-born and the foreign-national population was negligible. Having found that the two data series were indeed highly correlated, the shares from the nationality matrix were multiplied by the UN totals in the foreign-born matrix for those countries for which no bilateral information was available. Southeast and East Asian countries[19] with detailed bilateral data were not subjected to this treatment, because naturalizations are so rare that it is fair to assume that these data may be directly equated to data for the foreign-born population. The study calculated the magnitude of the margin of error of treating foreign nationals as equivalent to the foreign born to be approximately 1.22 percent for Japan and 0.15 percent for South Korea.[20] The foreign-born coefficients for those 75 countries until now lacking any bilateral foreign-born information were therefore filled.

Version 4b

Residual categories, labelled "other," are common in the reported data (for example, "Other Caribbean"). As the study aims to assign every migrant to a specific country, it systematically distributed migrants—who numbered approximately 11.9 million and 9.6 million, respectively, under the two definitions of foreign born and foreign national—across the countries within the "other" region. The study performed this task according to each country's propensity to send its nationals abroad relative to the propensity of the other countries in the "other" category:

$$P_{r/other} = \frac{M_r}{\sum_{s \in other} M_s} \tag{1}$$

where $P_{r/other}$ is country r's propensity to send nationals abroad relative to the propensity of other countries located in the "other" region, M_r is the number of migrants abroad from country r, and M_s is the number of migrants abroad from countries s in the "other" region.

These propensities are shares, so they sum to one. The study disaggregated the remainder categories by multiplying the propensity shares for those countries contained within an umbrella remainder heading by the total number of migrants to be redistributed. This process relied on a specific ordering in which, for each successive allocation, the largest number of migrants was used to recalculate the propensity shares. Therefore the smaller, regional remainder categories (for example, "Other Caribbean") were disaggregated before the larger categories (for example, "Other"). As most of the remainder headings refer to continental groupings, users who choose to aggregate the data by continent would avoid most of the approximation introduced here.

An illustrative case is that of Portugal. All migrants in the 2001 Portuguese census had been designated to specific countries with the exception of six migrants in the heading "Other Oceania." These six migrants had to be divided among the countries of Oceania. Applying the equation above, the propensity to send migrants anywhere abroad was calculated for each of these countries. Table 1.5 contains these propensity shares and shows how many immigrants were distributed on the basis of these numbers for each country. This method was assumed to be the most pragmatic for distributing the remainder categories, though three weaknesses are evident. First, migrants are not distributed as integers and, thus, rounding is required. Second, the propensity to send migrants abroad is based on the sum of the relevant row (the total number of migrants abroad from any particular country). If a specific country sends many people to a country for which no data were collected, its propensity will be underestimated.

Version 4c

Some countries provide no bilateral information, and so only the UN totals are available. As the main aim of the present study is to produce a full bilateral matrix, calculating these coefficients is important. The study calculated these coefficients on the same basis as the remainder "other" categories—that is, on the basis of the propensity for countries to send people abroad (see the equation in version 4b). The only difference was that, rather than restricting the number of countries used to calculate the shares to those countries comprising the remainder category, the study calculated the shares for all 226 countries to obtain global shares, as opposed to regional shares. The study therefore estimated coefficients for the 30 countries for which bilateral data had been lacking. Lastly, once the foreign-born matrix was filled, all of the data before 2000 were scaled to the UN (2004) mid-year totals for 2000 so that a complete bilateral matrix for the foreign-born population for the years 2000–02 resulted (data for 2001 and 2002 were not scaled to the UN totals). Although the study could have used a later

Table 1.5. Propensity Shares for "Other Oceania" Split for Portugal

Country	Propensity share	Share × number of migrants to be assigned (rounded)
Australia	0.25863	2
New Zealand	0.36202	2
American Samoa	0.02795	0
Cook Islands	0.01569	0
Fiji	0.09991	1
French Polynesia	0.00064	0
Guam	0.05765	0
Kiribati	0.00170	0
Marshall Islands	0.00606	0
Micronesia, Federated States of	0.01331	0
Nauru	0.00066	0
New Caledonia	0.00112	0
Norfolk Island	0.00026	0
Northern Mariana Islands	0.00518	0
Niue	0.00458	0
Palau	0.00390	0
Papua New Guinea	0.02229	0
Samoa	0.07457	1
Solomon Islands	0.00188	0
Tokelau	0.00170	0
Tonga	0.03565	0
Tuvalu	0.00109	0
Vanuatu	0.00166	0
Wallis and Fortuna	0.00189	0
Total	1.0	6

Source: Authors.

UN dataset to extrapolate the data further into the future, for the purpose of accuracy it used that year for which most of the data are recorded, thereby allowing inclusion of many countries that have either not collected or not released the relevant migration statistics. The drawback in these circumstances is that the migration history between the date that the older survey was conducted and 2000–01 will be lost as the relative shares are maintained over time. Table 1.6 provides details of the data contained in each version of the database, together with the number of immigrants included.

Table 1.6. Database Versions

Version	Millions of migrants treated	Content	Main countries whose status in one version changed in the next version
1	FB 108.5 Nat. 55.3	Version 1 reflected older primary sources where later information was unavailable, omitted meaningless "unknown" totals, redistributed prebreakup totals according to postbreakup bilateral migration stocks, and entered zeros where applicable.	
2	FB 111.0 Nat. 56.2	Version 2 separated jointly reported nations and prebreakup nations where no postbreakup migration data were available, according to population shares.	**Disaggregated according to subsequent migration statistics:** Canada, Denmark, Finland, Germany, Italy, Sweden
3	FB 111.0 Nat. 57.6	Version 3 removed ethnic nationalities with little or no correlation to states or regions, added additional DFID figures on the number of Indians residing in Middle Eastern economies, removed "unknown" or "ignored" categories (as these most likely account for domestic population and not migrants), and removed individuals recorded with dual nationality.	**Removed meaningless ethnicities:** Belarus, Bulgaria, Croatia, Kazakhstan, Kyrgyzstan, Moldova, Romania, Slovakia, Tajikistan, Turkmenistan, Uzbekistan **Removed unknown and ignored figures:** Argentina, Bulgaria, Greece, Hungary, Netherlands, Sweden, Thailand **Added DFID figures:** Bahrain, Kuwait, Qatar, Oman **Removed dual nationality:** Liechtenstein

(*Table continues on the following page.*)

What the Data Show

The principal purpose of this chapter is to introduce a dataset useful for other researchers for several purposes, such as updating the Walmsley and Winters (2005) analysis of the economic benefits of migration, in which the lack of bilateral

Table 1.6. (continued)

Version	Millions of migrants treated	Content	Main countries whose status in one version changed in the next version
4a	FB = total = 175.7	Version 4a entered UN data for country of birth totals where data were missing, used entropy measure to compare nationality and country of birth shares, used the additional information content in the nationality matrix to supplement the information in the FB matrix with additional coefficients of interest.	**Countries included where no data previously:** Algeria, China, Democratic People's Republic of Korea, Indonesia, Morocco, Yemen **Countries with nationality data used to supplement FB matrix:** Italy, Japan, Mozambique, Philippines, Thailand, Vietnam
4b		Version 4b disaggregated remainder categories on the basis of countries' propensity to send migrants abroad.	
4c		Version 4c used shares based on countries' propensity to send migrants abroad to fill all remaining bilateral coefficients and scaled data to UN (2004).	

Source: Authors.

Notes: FB = foreign born; Nat. = nationality (foreign population).

migration data severely hampered estimation of the distribution of those benefits. The aim of this section is to illustrate the patterns that the bilateral data display both for their intrinsic interest and to allow readers to judge whether the whole enterprise is plausible. Most of the value of the bilateral data lies in their country detail, but that is far too great to summarize here. Thus, data are presented only for the World Bank-defined regions of developing countries and for geographical aggregations of high-income countries.[21]

The final version of the database, version 4c, contains 175.7 million international migrants. This figure corresponds closely to the UN figure for 2000 of 175 million, although the data here refer to 2000–02. Table 1.7 reports the top 15 migrant recipient and sending countries in absolute terms according to the dataset. The database excludes three countries from the former Soviet Union—the Russian Federation, Ukraine, and Kazakhstan—that are not representative of

Table 1.7. Share of Migrant Population in Total and from/to Neighboring Country

Top 15 receiving countries	Number of immigrants	Percent of host population	Immigrants from neighboring countries	Percent from neighboring countries	Top 15 sending countries	Number of emigrants	Percent of home population	Emigrants to neighboring countries	Percent to neighboring countries
United States	34,634,798	12.5	10,281,887	29.7	Mexico	10,098,858	10.0	9,347,744	92.6
Germany	9,143,244	11.2	957,016	10.5	India	8,958,965	0.9	1,646,792	18.4
France	6,277,188	10.5	1,274,652	20.3	Bangladesh	6,638,008	5.0	3,807,203	57.4
India	6,270,659	0.6	5,822,700	92.9	China	5,793,974	0.5	2,442,169	42.2
Canada	5,717,003	18.3	945,091	16.5	United Kingdom	4,193,174	7.1	248,527	5.9
Saudi Arabia	5,254,812	23.0	596,912	11.4	Germany	4,047,061	4.9	915,277	22.6
United Kingdom	4,865,541	8.2	537,885	11.1	Philippines	3,405,471	4.3	—	—
Pakistan	4,242,691	3.0	724,233	17.1	Pakistan	3,386,516	2.4	1,360,069	40.2
Australia	4,073,213	21.0	—	—	Italy	3,283,208	5.7	704,628	21.5
Hong Kong (China)	2,703,491	37.7	2,193,425	81.1	Turkey	3,001,152	4.5	184,940	6.2
Côte d'Ivoire	2,336,359	15.4	1,908,976	81.7	Afghanistan	2,695,589	9.9	1,898,925	70.4
Iran, Islamic Rep. of	2,321,453	3.6	2,298,835	99.0	Morocco	2,614,663	9.0	346,073	13.2
Spain	2,172,201	5.5	530,358	24.4	United States	2,269,220	0.8	620,712	27.4
Israel	1,978,103	31.1	34,882	1.8	Egypt, Arab Rep. of	2,248,937	3.5	216,555	9.6
Jordan	1,945,210	39.0	218,582	11.2	Algeria	2,085,260	6.7	100,668	4.8
Total	93,935,966	5.0	28,325,434	30.2	Total	64,720,056	1.9	23,840,282	36.8

Source: Authors.

Note: Neighboring countries include all countries with land borders to the receiving/sending country. According to this definition, island countries have no neighboring countries.

"normal" migration behavior. As a single country, the former Soviet Union had considerable internal mobility (some forced); when it split up, many of the people were recorded as migrants as the result of changed country definitions rather than of any movement that they chose to undertake. These data contain no bilateral information but are reported merely to demonstrate that they correspond well to the UN totals by country.

As is well known, the United States is the largest recipient of migrants and now 12.5 percent (some 35 million) of its population is foreign born. Australia, Canada, Saudi Arabia, and the countries of Western Europe also have high percentages of migrants. Among developing countries, India and Pakistan have high immigration, as did Côte d'Ivoire and the Islamic Republic of Iran during the sample period. Turning to countries of emigration, Mexico, Afghanistan, and Morocco have major outflows in proportionate terms, and India and Bangladesh have major outflows in absolute terms. Rich countries are also important sources of outflows; the United Kingdom, Germany, Italy and even the United States are within the top 15. Because the study uses an absolute criterion, all the countries in table 1.7 are large. Large countries generally experience proportionately much less migration than small countries, several of which have more people abroad than at home or more immigrants than locals among the resident population.

More interesting than the aggregates in table 1.7 are the columns on migration between neighboring countries. For these major migrant countries, the study uses the bilateral dataset to calculate the proportion of migrants who come from or go to countries with a land border with the target country. The striking feature of these columns is the wide variety of experience. For India and the Islamic Republic of Iran, over 90 percent of the flow is from neighboring countries, and for Hong Kong and Côte d'Ivoire, over 80 percent. Pakistan, on the other hand, receives most migrants from Bangladesh and only 17 percent from contiguous countries. At the other extreme, Australia and Israel have hardly any. An intuitive explanation of these patterns is not difficult. Australia has no land neighbors, and Israel's immigration is mainly religious in nature, but a statistical confirmation of the intuitive explanation is useful, as is recognition of the difficulty of making generalizations about neighborhood effects on migratory flows.

Turning to the genuinely bilateral data, table 1.8 aggregates the data into 12 receiving and sending regions, expressing the recorded stocks as percentages of the total migratory stock: each 0.01 percent corresponds to about 17,500 people. The first feature to note is the strong diagonal: much migration takes place within regions. Nearly 17 percent of recorded migration occurs within Eastern Europe and Central Asia (ECA); the majority may be created by border changes. The second largest item in this aggregation is the stock of Latin Americans (including Mexicans) in the United States. The third and fourth largest are those

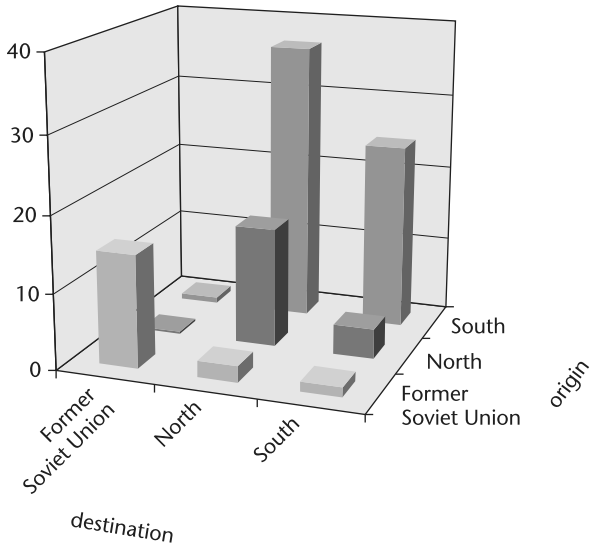
Table 1.8. Percentage of World Migrants Recorded as a Bilateral Movement between Pairs of Countries/Regions

Countries/ regions of origin	Destination countries/regions												
	United States	Canada	EU15 + EFTA	Australia + New Zealand	Japan	High-income MENA	LAC	ECA	MENA	AFR	EAP	SAS	Total
United States	**0**	0.16	0.34	0.04	0.02	0.03	0.43	0.04	0.05	0.03	0.15	0.02	**1.29**
Canada	0.54	**0**	0.10	0.02	0.00	0.01	0.02	0.01	0.00	0.01	0.01	0.01	**0.74**
EU15 + EFTA	2.22	0.98	**5.59**	1.13	0.01	0.14	0.68	0.78	0.16	0.39	0.20	0.19	**12.47**
Australia + New Zealand	0.06	0.02	0.16	**0.23**	0.00	0.00	0.00	0.01	0.00	0.01	0.03	0.01	**0.55**
Japan	0.28	0.02	0.06	0.02	**0**	0.00	0.04	0.01	0.00	0.00	0.05	0.01	**0.50**
High-income MENA	0.10	0.03	0.06	0.01	0.00	**0.12**	0.00	0.02	0.72	0.01	0.04	0.03	**1.14**
LAC	10.22	0.36	1.45	0.05	0.13	0.10	**2.07**	0.17	0.08	0.14	0.14	0.25	**15.15**
ECA	1.25	0.39	4.75	0.26	0.00	0.92	0.07	**16.98**	0.33	0.34	0.18	0.41	**25.88**
MENA	0.47	0.17	2.85	0.10	0.00	1.49	0.04	0.16	**1.79**	0.28	0.05	0.12	**7.52**
AFR	0.41	0.12	1.58	0.10	0.00	0.25	0.02	0.11	0.18	**7.00**	0.03	0.16	**9.97**
EAP	3.32	0.71	1.09	0.63	0.54	0.48	0.06	0.14	0.14	0.09	**3.86**	0.27	**11.32**
SAS	0.83	0.31	1.13	0.12	0.01	2.66	0.02	0.13	2.07	0.14	0.37	**5.67**	**13.46**
Total	**19.71**	**3.25**	**19.14**	**2.72**	**0.74**	**6.22**	**3.45**	**18.56**	**5.53**	**8.44**	**5.10**	**7.15**	**100**

Source: Authors.

Note: "EU15 + EFTA" includes Switzerland. EU = European Union. EFTA = European Free Trade Area. ECA = Europe and Central Asia. MENA = Middle East and North Africa. LAC = Latin America and the Caribbean. EAP = East Asia and Pacific. SAS = South Asia. AFR = Sub-Saharan Africa.

Figure 1.1. Bilateral Migration Stocks (percent of world total)



Source: Authors.

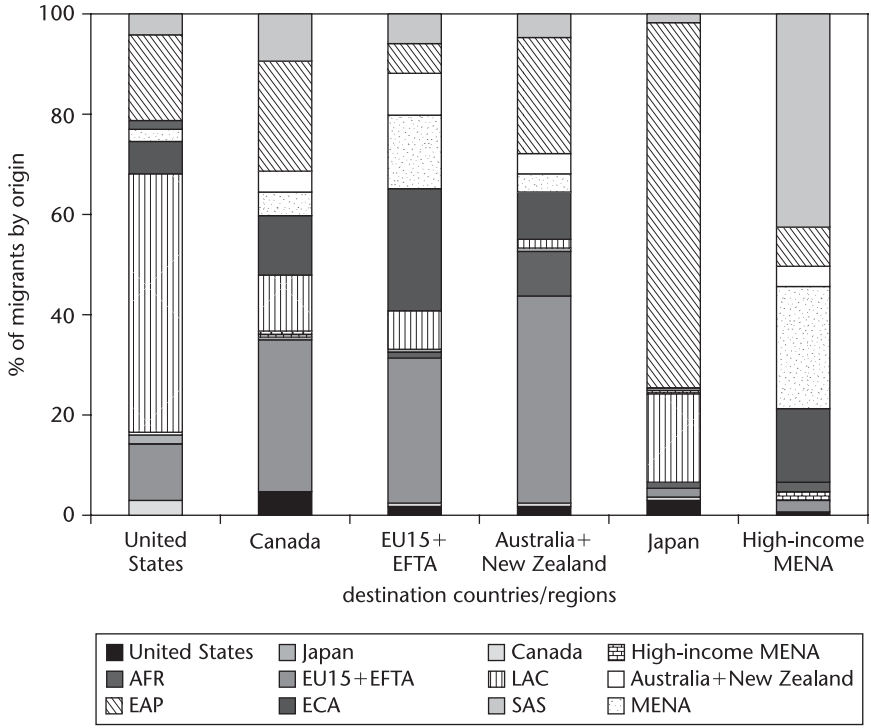
within Sub-Saharan Africa (AFR) and South Asia (SAS). The latter two show clearly that South-South migration is quantitatively significant.

Figure 1.1 summarizes these data graphically, distinguishing North (rich), South (poor), and FSU countries. The bulk of FSU migration is intraregional and probably largely spurious. For northern emigrants, the principal destination is other northern countries, reflecting mainly the propensity of Europeans to migrate not only within Europe (5.6 percent of the world total), but also to North America and Oceania. Southern emigrants, on the other hand, go more to northern destinations than to southern ones and outnumber northern migrants in those countries. But as recipients, southern countries get most of their immigrants from other poor countries. Overall, South-to-North emigration accounts for 37 percent of total emigration, South-South for 24 percent and North-North for 16 percent.

Embedded in table 1.8 is evidence of large differences among hosts in the sources of their immigrants and differences among sources in their hosts. Figures 1.2 and 1.3 illustrate these differences more obviously.

For each developed country (northern) group, figure 1.2 presents the breakdown of its immigration by origin. Europeans account for significant shares of

Figure 1.2. Source Country Shares of Certain Destination Regions



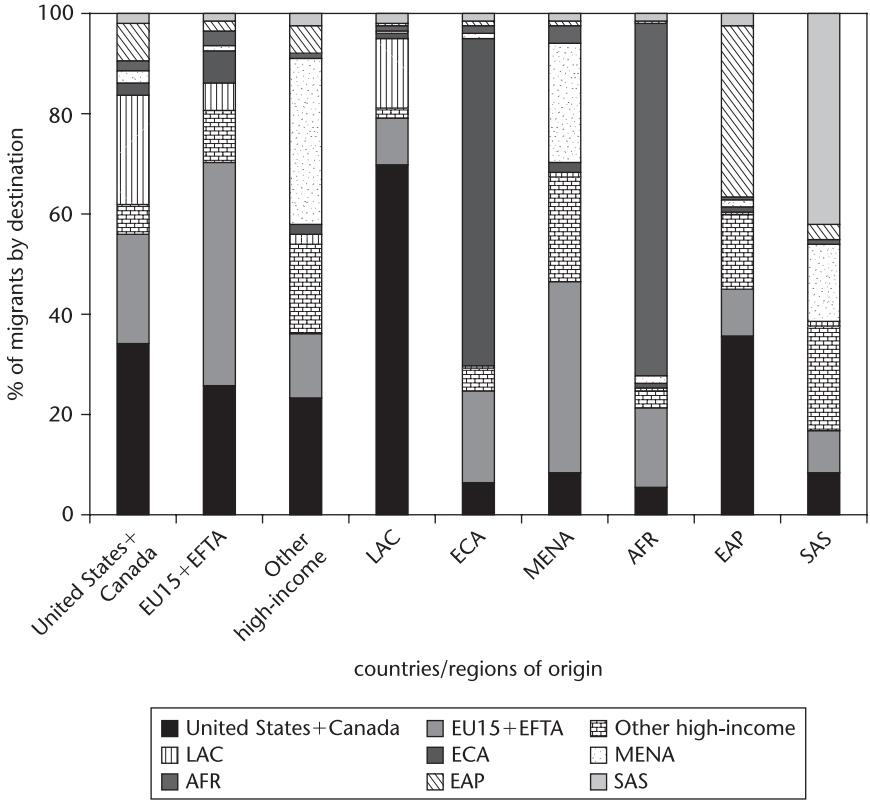
Source: Authors.

Notes: MENA = Middle East and North Africa. EAP = East Asia and Pacific. ECA = Europe and Central Asia. LAC = Latin America and the Caribbean. SAS = South Asia. AFR = Sub-Saharan Africa.

immigration in Europe, Canada, and Australia, but nowhere else. Latin Americans account for 52 percent of immigrants to the United States, and that region is also an important contributor to Japan's (admittedly small) total number of immigrants. Japan offers special treatment to Latin Americans of Japanese origin. Even more striking is the share of immigrants from East Asia and the Pacific in Japan's total immigrant stock, although in absolute numbers, Australia and New Zealand are more important destinations for that region. Among high-income regions, only the Gulf (high-income countries of the Middle East and North Africa) has a high share of South Asians and, perhaps tellingly, no region has a high share of Africans.

Figure 1.3 presents the choice of destinations for each source region. For northern regions, the principal destinations are northern countries: fully

Figure 1.3. Destinations of Emigrants from Source Regions



Source: Authors.

Notes: LAC = Latin America and the Caribbean. ECA = Europe and Central Asia. EAP = East Asia and Pacific. MENA = Middle East and North Africa. SAS = South Asia. AFR = Sub-Saharan Africa.

80 percent for Europe. On the other hand, because Europe's outflow is so much larger than that of the other northern regions, its absolute supply of people to each of the developing regions is larger (table 1.8). For developing source countries, the principal destinations are intraregional, especially for Europe and Central Asia and Africa.

Degrees of reliance on a given region vary. Reliance on the Gulf is high for South Asia and the Middle East and North Africa, and relatively low for Europe and Central Asia and Africa. Reliance on Europe is high for Europe and Central Asia and relatively low for East Asia and the Pacific and South Asia. Reliance on North America is low except for Latin America and the Caribbean and East Asia

and the Pacific. The role of geography in the creation of these corridors is easy to discern, but geography is not the only factor.

Interesting as table 1.8 and figures 1.1–1.3 are, they do not readily show whether migration patterns are biased in the sense that migrants from one region are more likely to go to one place than another. The importance of, say, North America as a destination for East Asia and the Pacific may arise because North America is a major recipient of migrants from every region or because East Asia and Pacific residents have a particular propensity or ability to migrate there. To determine whether migration patterns are biased in this way, a series of migration intensity indexes are calculated as

$$(X_{i,j}/X_{.,j})/(X_{i,.}/X_{.,.}),$$

where $X_{i,j}$ is the stock of migrants from country i in region j and a dot (.) denotes summation across the corresponding subscript. This equation expresses the share of i in j's stock of immigrants relative to i's share of world total immigrants. Thus an intensity index exceeding 1 implies that i is a more important source for j's immigrants than it is for world immigrants on average. (The intensity index also equals j's share of i's stock of emigrants relative to j's share of world emigrants. Hence, a value above 1 indicates that j is a more important destination for i's emigrants than for source countries on average.) If bilateral flows were random, so that all emigrants from all countries had an equal chance of ending up in, say, Europe, and an equal (albeit different) chance of ending up in, say, Africa, the intensity indexes would be unity. If they exceed unity for a bilateral link, they indicate that there is a bias toward that link. Table 1.9 reports the indexes.

Table 1.9 demonstrates the strong bias toward intraregional migration. Every diagonal element exceeds unity (except where it is zero because only one country is in the region)—much so in some cases. Migration between Australia and New Zealand is high, perhaps reflecting the integrated labor market created under the Closer Economic Relations Agreement or perhaps the two countries' isolation. Intra-African migration is nearly as high, probably reflecting Africans' relative lack of welcome elsewhere. Among the off-diagonal elements of note are the strength of the East Asia and Pacific-Japan link, the close links between the United States and Canada, the above-noted bias toward the United States by emigrants from Latin America and the Caribbean, the bias of U.S. emigrants toward Latin America and the Caribbean, Europeans' tendency to choose other destinations in the North, and the strong relative movement from high-income countries of the Middle East and North Africa (the Gulf) to developing countries of that region. Quantification of these patterns will perhaps inspire subsequent research to explain them.

The bilateral data allow exploration—descriptively here, but possibly econometrically in future—of many possible factors affecting migration. One concerns the influence of a common language. For 163 of the countries in the dataset

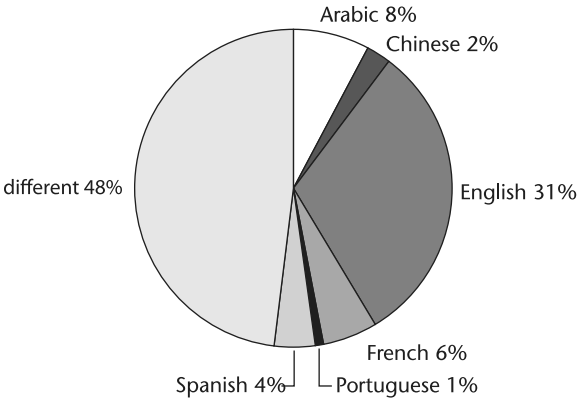
Table 1.9. Migration Intensity Measures

Countries/ regions of origin	Destination countries/regions											
	United States	Canada	EU15 + EFTA	Australia + New Zealand	Japan	High-income MENA	LAC	ECA	MENA	AFR	EAP	SAS
United States	**0**	3.77	1.36	1.09	2.32	0.37	9.56	0.16	0.70	0.23	2.21	0.23
Canada	3.69	**0**	0.73	0.99	0.74	0.12	0.73	0.09	0.11	0.13	0.31	0.25
EU15 + EFTA	0.90	2.41	**2.34**	3.34	0.15	0.18	1.58	0.34	0.23	0.37	0.31	0.22
Australia + New Zealand	0.54	0.96	1.50	**15.76**	1.21	0.13	0.14	0.12	0.13	0.17	1.17	0.30
Japan	2.87	0.95	0.65	1.42	**0**	0.07	2.48	0.08	0.16	0.10	1.98	0.24
High-income MENA	0.47	0.72	0.28	0.28	0.03	**1.63**	0.13	0.08	11.45	0.09	0.65	0.42
LAC	3.42	0.73	0.50	0.11	1.19	0.11	**3.96**	0.06	0.10	0.11	0.18	0.23
ECA	0.25	0.46	0.96	0.36	0.02	0.57	0.08	**3.54**	0.23	0.16	0.13	0.22
MENA	0.32	0.68	1.98	0.49	0.06	3.20	0.15	0.11	**4.31**	0.44	0.13	0.21
AFR	0.21	0.38	0.83	0.38	0.03	0.41	0.05	0.06	0.33	**8.31**	0.06	0.22
EAP	1.49	1.94	0.50	2.06	6.43	0.68	0.16	0.07	0.22	0.09	**6.68**	0.33
SAS	0.31	0.71	0.44	0.33	0.13	3.18	0.04	0.05	2.78	0.13	0.54	**5.89**

Source: Authors.

Notes: "EU15 + EFTA" includes Switzerland. MENA = Middle East and North Africa. LAC = Latin America and the Caribbean. ECA = Europe and Central Asia. EAP = East Asia and Pacific. SAS = South Asia. AFR = Sub-Saharan Africa.

Figure 1.4. Migration and Common Language



Source: Authors.

a predominant international language—Arabic, Chinese, English, French, Portuguese, or Spanish—is identifiable.

Figure 1.4 shows that over half of international migration takes place between countries with a common language; the lion's share of such migration is between English-speaking countries. Dividing each language group into North and South shows that much of the common language flow is within the North or within the South, but the North-South common language flow is also strong. Every group of northern language speakers draws a large share of immigrants from regions in the South that share the group's language and, where such immigrants do not make up the largest share of immigrants in the group, another well-trodden South-North path is evident. The Arabic North has a higher percentage of immigrants from the English-speaking South (South Asia to higher-income Middle East and North Africa migration), the English North has its greatest share from the Spanish-speaking South (Mexico to the United States migration), and the French North takes a majority of its immigrants from the Arabic-speaking South (North Africa to France migration).

Table 1.10, which presents the data as intensity indicators, also shows the importance of a common language in explaining migration patterns. The intensities are generally highest within language families but are often higher for the North-South or South-North links than for the other links (see the shaded matrixes along the main diagonal). There are also some strong cross-language intensities, mainly reflecting location. Thus, the French, Spanish, and Portuguese North is strongly integrated; the Arabic South feeds the French North; and the Portuguese South feeds the Chinese South.

Table 1.10. Migration and Language: Migration Intensity Measures

Countries/regions of origin	Destination countries/regions											
	Arabic North	Arabic South	Chinese North	Chinese South	English North	English South	French North	French South	Portuguese North	Portuguese South	Spanish North	Spanish South
Arabic North	**1.19**	8.95	0.17	0.52	0.36	0.29	0.13	0.05	0.02	0.11	0.05	0.08
Arabic South	2.83	**3.47**	0.09	0.29	0.27	0.29	4.21	0.58	0.03	0.29	1.67	0.08
Chinese North	0.05	0.07	**2.12**	6.30	2.09	0.14	0.11	0.07	0.38	0.36	0.00	0.20
Chinese South	0.06	0.08	16.42	**0**	0.87	0.73	0.16	0.09	0.08	0.22	0.31	0.17
English North	0.15	0.21	0.10	1.15	**1.91**	0.40	0.38	0.12	0.42	0.23	0.74	1.18
English South	1.89	0.84	0.28	1.37	0.75	**2.05**	0.11	0.55	0.12	1.09	0.13	0.05
French North	0.26	0.35	0.04	0.46	0.74	0.29	**4.03**	2.22	9.74	0.78	5.98	0.50
French South	0.05	0.96	0.01	0.05	0.20	1.41	1.15	**7.04**	0.09	0.41	0.16	0.31
Portuguese North	0.06	0.08	0.05	0.17	0.66	0.21	7.61	0.13	**0**	17.23	2.19	0.95
Portuguese South	0.04	0.08	0.03	7.85	0.30	2.72	0.43	0.92	23.83	**2.01**	0.83	1.52
Spanish North	0.07	0.10	0.04	0.24	0.51	0.28	6.45	0.12	2.12	3.80	**1.81**	6.03
Spanish South	0.09	0.08	0.05	0.40	1.84	0.12	0.08	0.15	0.21	0.69	2.19	**3.17**

Source: Authors.

Note: Calculations are based on the subsample of 163 countries.

A second factor affecting migration is distance. This factor is clearly related to the question of migration to and from neighboring countries, but even for noncontiguous countries distance matters. On the basis of calculations of great circle distances between the geographical centers (CIA, 2006) of the 226 countries in the full dataset, table 1.11 reports the average distance travelled within each cell of the regional bilateral matrix. The distances for the various bilateral country-to-country links are weighted together by the amount of migration for that link. Of course, the distances are exogenous features of geography, so, for example, the distance from South Asia to North America is inevitably about 12,000 kilometers. Hence, not much can be read from the numbers per se. North-North migrants (in the top left of the matrix) generally have to travel shorter distances than South-South migrants (lower right) or North-South or South-North migrants, but when Oceania is included in the North, the difference is not huge. The mean distance for all migrants in the world is 4,225 kilometers.

Migration numbers, on the other hand, are not exogenous and, therefore, can be tested to determine whether they reflect distance. For the developing country regions, figure 1.5 reports the average distance migrants have travelled to North America and Western Europe and the number who have migrated. The figure shows a negative relationship between distance and number, especially for Europe. In addition, the last row and column of table 1.11 report the correlations (at the regional level) between the migration stock reported in table 1.7 and the distance reported here. All are negative, and half are significantly different from zero (the critical value at 5 percent is 0.582). This finding strongly suggests that distance is an important determinant of migration behavior throughout the world.

A third influence on migration is income. Most migrants are expected to have increased incomes as a result of migration, although in particular instances nonpecuniary benefits may dominate monetary ones. Income is, of course, an individual or household matter, dependent on the individual or household's circumstances before and after migration, which cannot be gauged with country-level data. Nonetheless, table 1.12 provides a perspective on the question of whether migration is predominantly from low-income to high-income countries. Each region-to-region link presents a calculation of the percentage change in average gross national income (GNI) per capita for the average migrant. That is, for each bilateral link the table provides a calculation of the change in current U.S. dollar GNI per capita and then weighs these together into regional summaries by the number of migrants reported for the link.[22] The GNI is generated in U.S. dollars using the method of conversion described in the World Bank Atlas (2004) and divided by the mid-year population and that is taken from the World Development Indicators for 2001 (World Bank, 2001). The matrix is best thought of in terms of

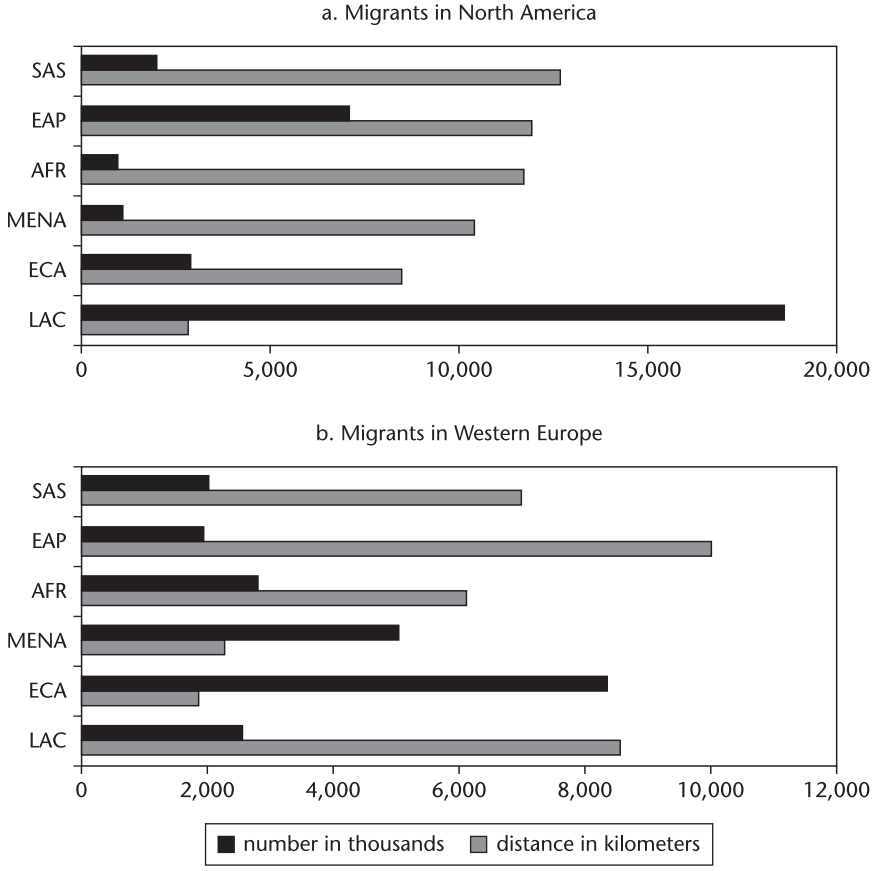
Table 1.11. Average Distance between Original and Destination Countries (kilometers)

Countries/regions of origin	Destination countries/regions									
	United States + Canada	EU15+ EFTA	Other high income	LAC	ECA	MENA	AFR	EAP	SAS	Correlation with numbers by origin
United States + Canada	2,451	7,170	12,624	3,064	8,805	10,566	11,211	12,570	11,604	−0.87
EU15 + EFTA	7,151	937	14,136	9,044	2,417	3,232	6,839	11,340	6,164	−0.38
Other high income	10,859	11,938	3,627	15,886	7,411	901	9,055	5,226	5,175	−0.42
LAC	2,815	8,571	14,734	1,386	11,546	11,738	10,560	15,863	14,319	−0.68
ECA	8,429	1,880	5,674	11,405	3,012	3,177	7,886	9,352	3,754	−0.47
MENA	10,387	2,253	2,334	10,807	2,932	1,246	3,659	10,924	5,026	−0.60
AFR	11,718	6,124	4,815	9,017	6,901	3,137	1,272	11,207	7,013	−0.61
EAP	11,935	10,024	5,167	16,143	6,735	8,668	11,061	4,344	4,212	−0.17
SAS	12,681	6,968	3,187	14,998	4,155	2,186	6,951	5,680	1,494	−0.58
Correlation with numbers by destination	−0.51	−0.88	−0.47	−0.75	−0.38	−0.59	−0.72	−0.54	−0.48	

Source: CIA (2006).

Notes: EU15 + EFTA includes Switzerland. "Other high income" includes Australia, New Zealand, Japan, and high-income countries of the Middle East and North Africa. Figures are weighted by the number of migrants. Calculations are based on each country's geographic coordinates, which are rounded latitude and longitude figures of each country's approximate geographic center as identified in CIA (2006). LAC = Latin America and the Caribbean. ECA = Europe and Central Asia. MENA = Middle East and North Africa. EAP = East Asia and Pacific. SAS = South Asia. AFR = Sub-Saharan Africa.

Figure 1.5. Migrants and Distance



Source: Authors.

Notes: SAS = South Asia. EAP = East Asia and Pacific. MENA = Middle East and North Africa. ECA = Europe and Central Asia. LAC = Latin America and the Caribbean. AFR = Sub-Saharan Africa.

blocks. The (3 × 3) block in the top left-hand corner refers to North-North movements, which are small and which show the North Americans always "losing," for example. The (3 × 6) block in the top right-hand corner refers to North-South movements and shows massive "income losses" for northern people migrating to developing countries. The (6 × 3) block in the bottom left-hand corner refers to South-North movements and shows huge income gains from migration. The (6 × 6) block in the lower right-hand corner refers to South-South movements and shows gains and losses as expected, given the spread of incomes from essentially middle-income regions in Latin America and the

Table 1.12. Average Difference in GNI Per Capita between Original and Destination Countries (current US$)

Countries/regions of origin	Destination countries/regions								
	United States + Canada	EU15+ EFTA	Other high income	LAC	ECA	MENA	AFR	EAP	SAS
United States + Canada	6,918	−8,026	−10,907	−27,428	−29,265	−32,099	−31,287	−30,939	−29,570
EU15 + EFTA	8,694	3,334	−4,332	−12,129	−20,061	−20,297	−20,041	−21,571	−21,367
Other high income	5,419	2,743	1,152	−29,321	−17,856	−14,407	−19,881	−18,316	−19,147
LAC	29,523	17,560	22,511	2,290	−2,944	−2,626	−3,890	510	−3,933
ECA	29,018	20,755	15,123	2,586	269	487	−839	10,862	−1,268
MENA	29,244	21,298	9,853	1,577	−107	168	−1,220	9,209	−1,207
AFR	31,290	21,395	12,700	4,667	819	1,825	199	2,226	−50
EAP	27,820	19,959	16,827	−977	−1,432	465	−2,843	11,320	−3,191
SAS	30,879	24,034	13,046	5,681	989	4,036	−39	9,204	62

Source: World Development Indicators.

Notes: "EU15 + EFTA" includes Switzerland. "Other high income" includes Australia, New Zealand, Japan and high-income countries of the Middle East and North Africa. Figures are weighted by the number of migrants. Note that the calculations are based on 180 countries, excluding those for which data on GNI per capita were unavailable for 2001. LAC = Latin America and the Caribbean. ECA = Europe and Central Asia. MENA = Middle East and North Africa. EAP = East Asia and Pacific. SAS = South Asia. AFR = Sub-Saharan Africa.

Caribbean and East Asia and the Pacific to the very poor regions of Sub-Saharan Africa and South Asia.

Two statistics show the general tendency for migrants to move up the GNI per capita ladder. First, every element on the diagonal—that is, every intraregional migrant link—shows gains. On the diagonal, the sets of receiving countries and the sets of sending countries are identical, so the unweighted difference in GNI per capita between them is zero. Thus, the positive signs must reflect the fact that more people move along the paths with increasing GNI per capita than along those with falling GNI per capita. Second, if the whole world is collapsed into a single entity and the differential is calculated, the sets of recipients and senders are identical and, therefore, the average gain of $9,479 must again reflect a bias in the movement toward paths of increasing GNI per capita. Although GNI per capita will clearly reflect not only returns to labor, and although migrants will typically have above-average earning power in their home countries and probably below-average earning power in their new countries, this average gain is large and suggests large returns to migration.

Conclusion

In spite of the inherent inaccuracy due to a lack of bilateral data for some countries, the assumptions made and the rough-and-ready methodologies used, the database developed here should provide a reasonably realistic view of current migration patterns. Considering the heterogeneity that exists among the available sources and the various missing components, any undertaking on this subject will inevitably be rather crude. Given current data availability, the series are presented "as is." Any extensions or improvements made by other researchers are welcomed. This chapter has highlighted the problems encountered and provided alternative series so that other researchers can build on the data as they see fit. Despite their shortcomings, the data will prove valuable in a wide range of applications throughout the social sciences, enhancing both understanding of global migration and the policy debate about it.

Notes

1. This research was initiated and supported by the Development Research Centre on Migration, Globalisation and Poverty (at the University of Sussex), which is supported by the United Kingdom's Department for International Development (DFID). The World Bank's Development Prospects Group supported updating of some data. We are grateful to Yoko Niimi and Mirja Sjöblom for help beyond the call of duty in preparing this chapter.

2. For reasons of space, the matrixes cannot be reproduced in this chapter. The first two versions are available on the Web site of the Development Research Centre on Migration, Globalisation and Poverty at www.migrationdrc.org/research/typesofmigration/global_migrant_origin_database.html.

The other two versions are available to researchers by request to the center. Version 4c, aggregated to a 87 × 87 matrix, is available at www.gtap.agecon.purdue.edu/models/labor_migration.asp.

3. UN (1980) defines a person's citizenship as his or her legal nationality. Hence, no distinction is made here between citizenship and nationality, and thus no notion of belonging or of political or legal participation is employed.

4. The database has undergone several rounds of improvement and extension. The first public version was described in Parsons et al. (2005), and an intermediate version was used and briefly described in Ratha (2006).

5. The treatment in this chapter is far from comprehensive. See Bilsborrow et al. (1997).

6. Though distinguishing between shorter- and longer-term migrants is increasingly recognized to be useful for policy making, this chapter does not do so, because censuses generally fail to do so. Indeed, countries seldom accurately distinguish these alternative series.

7. The caveat is that country borders are sometimes moved, creating apparent migrants out of households that have not relocated.

8. This chapter omits detailed discussion of immigrant flows. Readers are referred to OECD (2002a, 2002b, and 2003).

9. According to the United Nations, those countries not taking part include Afghanistan, Angola, Bhutan, Bosnia and Herzegovina, Cameroon, Chad, Colombia, the Democratic People's Republic of Korea, Democratic Republic of Congo, Eritrea, Ethiopia, Gabon, Guinea-Bissau, Liberia, Madagascar, Moldova, Myanmar, Nigeria, Peru, Somalia, Sudan, Taiwan, Tajikistan, Togo, Uzbekistan, and Western Sahara (see http://unstats.un.org/unsd/demographic/sources/census).

10. It must be emphasized that, although most countries conducted censuses during this round, many have still to process and publish the data.

11. The United Nations notes, for example, that developed countries generally include but developing countries largely omit refugees in their censuses.

12. For example, the number of Puerto Ricans in the United States will not be recorded, because Puerto Ricans count as Americans.

13. 2000–01 was chosen, because the vast majority of censuses from the latest round refer to this period.

14. These sources include the Organisation for Economic Co-operation and Development (OECD), the Migration Policy Institute, the Economic Commission for Latin America and the Caribbean, the Department for International Development, the International Labour Organization, and the United Nations, together with various national statistics bureaux.

15. In addition to the 226 × 226 matrixes, data aggregated into the 87 Global Trade Analysis Project (GTAP) regions corresponding to the GTAP database version 6 may be obtained from the authors. This aggregation will likely smooth over some of the inaccuracies contained in later versions.

16. Both of these assumptions are open to challenge but the lack of data availability makes it difficult to think of better alternatives.

17. These origins were, by and large, small remainder categories that overlapped with larger "other" categories—those disaggregated in versions 4a–4c.

18. Jointly reported countries—those recorded by name (for example, "Botswana and Swaziland")—are omitted from table 1.4.

19. Namely, Japan, Korea, Macau, the Philippines, Thailand, and Myanmar.

20. These margins of error are calculated as the number of naturalizations divided by the total number of foreign nationals.

21. The 4c version of the database differs from an intermediate version described in Ratha (2006), which focuses on the South-South dimension. The intermediate version is scaled up to 2005, contains 14 fewer countries but 15 million more migrants than the 4c version, treats "other" and residual categories differently than the 4c version, and combines data on the foreign born and foreign nationality differently than the 4c version.

22. Although the GNI refers to 2001, rather than the (unknown) years in which migrants moved, the basic argument continues to hold.

References

Bilsborrow, R.E., G. Hugo, A. S. Oberai, and H. Zlotnik. 1997. *International Migration Statistics: Guidelines for Improving Data Collection Systems*. Geneva: International Labour Office.

Borjas, G. 2003. "The Labor Demand Curve Is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market." *Quarterly Journal of Economics* 118 (4): 1335–74.

CIA (Central Intelligence Agency of the United States). 2006. *The World Factbook 2006.* Washington, DC: CIA.

Commander, S., M. Kangasniemi, and L. A. Winters. 2004. "The Brain Drain: Curse or Boon? A Survey of the Literature." In *Challenges to Globalization: Analyzing the Economics*, ed. R. E. Baldwin and L. A. Winters, 235–78. Chicago: University of Chicago Press.

Docquier, F., and A. Marfouk. 2005. "International Migration by Education Attainment 1990–2000." In *International Migration, Remittances, and the Brain Drain*, ed. C. Ozden and M. Schiff, 151–99. Washington, DC: World Bank.

Harrison, A., T. Britton, and A. Swanson. 2003. *Working Abroad: The Benefits from Nationals Working in Other Economies.* Paris: Organisation for Economic Co-operation and Development.

Hatton, T., and J. Williamson. 2002. "What Fundamentals Drive World Migration?" Working Paper 9159, Cambridge, MA: National Bureau of Economic Research.

Heleniak, T. 2002. "Migration Dilemmas Haunt Post-Soviet Russia." Migration Policy Institute, Washington, DC. www.migrationinformation.org.

Lucas, R. E. B. 2005. *International Migration and Economic Development: Lessons from Low-Income Countries*. Cheltenham: Edward Elgar.

Mayda, A.M. 2006. "Who Is Against Immigration? A Cross-Country Investigation of Individual Attitudes Toward Immigrants," *The Review of Economic and Statistics*, 88 (3): 510–530.

McKenzie, D., and N. Hildebrandt. 2005. "The Effects of Migration on Child Health in Mexico." Policy Working Paper 3573, World Bank, Washington, DC.

McKenzie, D., and H. Rapoport. 2005. "Migration and Education Inequality in Rural Mexico." Working Paper 258, Stanford Center for International Development, Stanford University, Palo Alto, CA.

OECD (Organisation for Economic Co-operation and Development). 2002a. *Migration and the Labour Market in Asia*. Paris: OECD.

———. 2002b. *Trends in International Migration (SOPEMI 2002)*. Paris: OECD.

———. 2003. "Another Look at the International Comparability of Migration Statistics." Working Party on Migration, Directorate for Employment, Labour and Social Affairs, OECD, Paris.

Ozden, C., and M. Schiff. 2006. *International Migration, Remittances, and the Brain Drain.* Washington, DC: World Bank.

Parsons, C. R., R. Skeldon, T. L. Walmsley, and L. A. Winters. 2005. "Quantifying the International Bilateral Movements of Migrants." Working Paper 13, Development Research Centre on Globalisation, Migration and Poverty, University of Sussex, Brighton.

Passel, J.S. 2005. "Unauthorized Migrants: Numbers and Characteristics." Background briefing prepared for the Task Force on Immigration and America's Future, Pew Hispanic Center, Washington, DC.

Pritchett L. 2006. *Let Their People Come: Beating the Gridlock on Global Labor Mobility*. Washington, DC: Center for Global Development.

Ratha, D. 2006. "South-South Migration and Remittances." Mimeo. Washington, DC: World Bank.

Rauch J. 2001. "Business and Social Networks in International Trade." *Journal of Economic Literature* 139 (4): 1177–203.

Srivastava, R., and S. K. Sasikumar. 2005. "Migration and the Poor in India: An Overview of Recent Trends, Issues and Policies." In *Migration and Development: Pro-Poor Policy Choices,* ed. T. Siddiqui, 157–216. Dhaka: University Press.

Stark, O. 2003. "Rethinking the Brain Drain." *World Development* 32: 15–22.

United Nations. 1980. *National Migration Surveys: The Core Questionnaire*. New York: United Nations.

———. 1998. "Recommendations on Statistics of International Migration." Revision 1, United Nations, New York.
———. 2004. "Trends in Total Migrant Stock, 1960–2000." POP/DB/MIG/Rev.2003, Department of Economic and Social Affairs, United Nations, New York.
Walmsley, T. L., and R. McDougall. 2004. "Using Entropy to Compare IO Tables." GTAP Research Memorandum 9, Center for Global Trade Analysis, Purdue University.
Walmsley, T. L., and L. A. Winters. 2005. "Relaxing the Restrictions on the Temporary Movements of Natural Persons: A Simulation Analysis." *Journal of Economic Integration* 20 (4): 688–726.
World Bank. 2001. *World Development Indicators 2001*. Washington, DC: World Bank.
———. 2004. *World Bank Atlas.* 36th ed. Washington, DC: World Bank.

Annex 1.1: Summary of Data Sources

Country	Data type	Nationality or birth	Source	Year
Australia	B	B	C	2001
New Zealand	B	B	C	2001
Samoa	B	B	C	2000
Cook Islands	B	N	C	2001
Fiji	B	B	C	1986
French Polynesia	B/B	B/N	C/C	2002/2002
Guam	B	B	C	2000
Kiribati	B	E	C	2000
Marshall Islands	B	N	C	1999
Micronesia, Federated States of	B	B	C	2000
Nauru	UN	N	U	2000
New Caledonia	B	N	C	1996
Norfolk Island	B/B	B/N	C/C	2001/2001
Northern Mariana Islands	B	B	C	2000
Niue	B	N	C	2001
Palau	B	B	C	2000
Papua New Guinea	B	B	C	1971
Samoa	B	B	C	2001
Solomon Islands	B/B	N/B	C	1999
Tokelau	B	E	C	1996
Tonga	B	E	C	1996
Tuvalu	T	N	C	2002
Vanuatu	B	N	C	1999
Wallis and Fortuna	B	B	C	1996
China	UN	E	U	2000
Hong Kong (China)	B/B	B/N	C/C	2001/2001
Japan	B	N	C	2000
Korea, Republic of	B	N	C	2000
Taiwan (China)	B	N	S	2000
Macau	B/B	B/O	C/S	1991/2001
Mongolia	B	N	C	2000
Korea, Democratic People's Republic of	UN	E	U	2000
Indonesia	UN	N	U	2000
Malaysia	B	B	C	1991
Philippines	B	N	C	2000

Country	Data type	Nationality or birth	Source	Year
Singapore	B	B	C	2000
Thailand	B	N	S	2000
Vietnam	T	N	C	1999
Brunei Darussalam	B	B	C	1991
Cambodia	B	N	C	1998
Lao People's Democratic Republic	B	N	C	1995
Myanmar	B	N	S	2000
Timor-Leste	UN	E	U	2000
Bangladesh	B	B	C	1974
India	B	B	C	2001
Sri Lanka	B	N	C	1981
Afghanistan	UN	E	U	2000
Bhutan	UN	N	U	2000
Maldives	UN	N	U	2000
Nepal	B/B	B/N	C/C	2001/2001
Pakistan	T	B	C	1998
Canada	B	B	C	2001
United States of America	B	B	C	2000
Mexico	B	B	C	2000
Bermuda	B	B	C	2000
Greenland	UN	B	U	2000
Saint Pierre and Miquelon	B	B	C	1974
Colombia	B	B	C	1993
Peru	B	B	C	1993
Venezuela, R. B. de	B	B	C	2001
Bolivia	B	B	C	2002
Ecuador	B	B	C	2001
Argentina	B	B	C	2001
Brazil	B/B	B/B	C/C	1991/2000
Chile	B	B	C	2002
Uruguay	B	B	C	1996
Falkland Islands (Malvinas)	B/B	B/N	C/C	2001/2001
French Guiana	B	N	C	1990
Guyana	B	B	C	2002
Paraguay	B	B	C	2002
Suriname	UN	N	U	2000
Belize	B	B	C	2000
Costa Rica	B/B	B/N	C/C	2002/2002

Country	Data type	Nationality or birth	Source	Year
El Salvador	B	B	C	1990
Guatemala	B	B	C	2002
Honduras	B	B	C	2001
Nicaragua	B	B	C	1995
Panama	B	B	C	2000
Antigua and Barbuda	B	B	C	2001
Bahamas, The	B	N	C	2001
Barbados	B	B	C	1990
Dominica	B	B	C	1981
Dominican Republic	B	B	C	2002
Grenada	UN	B	U	2000
Haiti	B	B	C	1971
Jamaica	B	B	C	1960
Puerto Rico	T	B	C	2000
St. Kitts and Nevis	UN	B	U	2000
St. Lucia	B	B	C	2001
St. Vincent and the Grenadines	B	B	C	1991
Trinidad and Tobago	B	B	C	2000
Virgin Islands, U.S.	B	B	C	2000
Anguilla	B	N	C	2001
Aruba	B	N	C	2000
Cayman Islands	B	B	C	1989
Cuba	B	B	C	1970
Guadeloupe	B	N	C	1990
Martinique	B	N	C	1990
Montserrat	T	B	C	2001
Netherlands Antilles	B/B	B/N	C/C	2001/2001
Turks and Caicos	B/B	B/N	C/C	1990/2001
Virgin Islands, British	B	B	C	1991
Austria	B/B	B/N	C/C	2001/2001
Belgium	B/B	B/N	O/S	2001/2000
Denmark	B/B	B/N	P/S	2001/2001
Finland	B/B	B/N	P/P	2001/2002
France	B/B	B/N	C/C	1999/1999
Germany	B/B	B/N	C/S	2001/2001
United Kingdom	B	B	C	2001
Greece	B/B	B/N	C/C	2001/2001
Ireland	B/B	B/N	C/C	2002/2002
Italy	B	N	S	2000

Country	Data type	Nationality or birth	Source	Year
Luxembourg	B/B	B/N	C/C	2001/2001
Netherlands	B/B	B/N	P/P	2001/2001
Portugal	B/B	B/N	C/C	2001/2001
Spain	B/B	B/N	C/C	2001/2001
Sweden	B/B	B/N	P/P	2001/2001
Switzerland	B/B	B/N	C/P	2000/2000
Iceland	B/B	B/N	P/P	2001/2001
Liechtenstein	B	B	S	2000
Norway	B/B	B/N	P/P	2001/2001
Andorra	B	N	S	2002
Bosnia and Herzegovina	B	E	C	1991
Faeroe Islands	UN	B	U	2000
Gibraltar	B/B	B/N	C/C	2001/2001
Macedonia, FYR	B	N	C	1994
Monaco	B	N	C	2000
San Marino	UN	B	U	2000
Serbia and Montenegro	UN	B	U	2000
Albania	T/B	B/N	C/C	2001/1989
Bulgaria	B	N	C	2001
Croatia	B/B	B/E	C/S	2001/2001
Cyprus	B	B	C	2002
Czech Republic	B/B	B/N	C/R	2001/2000
Hungary	B/B	B/N	C/S	2001/2001
Malta	B/B	B/N	C/C	1995/1995
Poland	B	B	C	2001
Romania	B/B	B/E	C/C	2002/2002
Slovakia	B/B	B/E	C/S	2001/2001
Slovenia	B	N	C	2001
Estonia	B/B	B/N	C/C	2001/2001
Latvia	B	N	S	2001
Lithuania	B/B	B/N	C/C	2001/2001
Russian Federation	B/B	B/N	C/C	2002/2002
Armenia	B/T	B/N	C/S	2001/2001
Azerbaijan	B	N	S	2001
Belarus	B	E	S	1999
Georgia	B	B	C	2002
Kazakhstan	B	E	S	1999
Kyrgyzstan	B	E	S	1999
Moldova	B	E	S	2001

Country	Data type	Nationality or birth	Source	Year
Tajikistan	B	E	S	1989
Turkmenistan	B	E	C	1995
Ukraine	B/B	B/E	C/C	2001/2001
Uzbekistan	B	E	S	1989
Turkey	B/B	B/N	C/S	2001/1998
Bahrain	B	N	C	2001
Iran, Islamic Rep. of	B	N	C	1996
Iraq	UN	N	U	2000
Israel	B	B	S	2001
Jordan	T	N	C	1994
Kuwait	T	N	S	2001
Lebanon	UN	B	U	2000
West Bank and Gaza	B/B	B/N	C/C	1997/1997
Oman	B	N	C	1993
Qatar	UN	N	U	2000
Saudi Arabia	B	N	S	1995
Syrian Arab Republic	B	N	C	1981
United Arab Emirates	T	N	S	1993
Yemen	UN	N	U	2000
Morocco	UN	N	C	2000
Tunisia	B	N	C	1994
Algeria	UN	N	U	2000
Egypt, Arab Rep. of	B	N	C	1996
Libya	B/B	O/N	C/C	1964/1973
Botswana	B	N	C	2001
South Africa	B/B	B/N	C/C	2001/2001
Lesotho	B	N	C	1996
Namibia	B	N	C	1991
Swaziland	B	N	C	1997
Malawi	B	N	C	1998
Mozambique	B	N	C	1997
Tanzania	B	B	C	2002
Zambia	B	N	C	2000
Zimbabwe	UN	B	U	2000
Angola	UN	B	U	2000
Congo, the Democratic Republic of the	B	N	C	1984
Mauritius	B	N	C	2000
Seychelles	B	N	C	1997
Madagascar	B	B	C	1996

Country	Data type	Nationality or birth	Source	Year
Uganda	B	N	C	2002
Benin	B	N	C	1992
Burkina Faso	B	N	S	1996
Burundi	UN	B	U	2000
Cameroon	B	B	C	1976
Cape Verde	B	B	C	1990
Central African Republic	B	N	C	1988
Chad	B	N	C	1993
Comoros	B	N	C	1980
Congo, Rep. of	B	N	C	1984
Côte d'Ivoire	B	N	C	1992
Djibouti	UN	E	U	2000
Equatorial Guinea	B	N	C	1994
Eritrea	UN	E	U	2000
Ethiopia	B	N	C	1994
Gabon	B	N	C	1993
Gambia, The	B	N	C	1983
Ghana	B	N	C	2000
Guinea	UN	N	U	2000
Guinea-Bissau	B	N	C	1991
Kenya	T	N	C	1999
Liberia	B	B	C	1974
Mali	UN	N	U	2000
Mauritania	B	N	C	1988
Mayotte	—	—	—	—
Niger	B	B	C	1988
Nigeria	B	N	C	1991
Reunion	B	N	C	1999
Rwanda	B	N	C	2002
St. Helena	UN	B	U	2000
São Tomé and Principe	B/B	B/N	C/C	1991/1991
Senegal	B/B	B/N	C/C	1976/1976
Sierra Leone	B	N	C	1985
Somalia	UN	E	U	2000
Sudan	B/N	B/B	C/C	1953/1993
Togo	B	N	C	1981

Source: Authors.

Note: Where two letters are recorded and separated by a forward slash, the first letter refers to data collected by country of birth and the second to information regarding nationality.

T = Total or very limited bilateral entries only.

B = Bilateral (if not for all 226 countries at least for main partners).

B/B = Bilateral/Bilateral.

B/T = Bilateral/Total.

UN = UN total only.

N = Nationality.

B = Birth.

E = Ethnicity.

B/N = Birth and nationality.

O = Other but equivalent.

C = Census.

PR = Population register.

S = Source unclear or not stated but obtained from National Statistics Bureau, either directly or from published yearly handbooks.

U = Unknown; check with United Nations.

R = Register of foreigners.

O = Other, that is, survey/permit data.

Annex 2: Entropy Measure

The entropy measure used to compare the shares of the foreign born and nationality matrixes is based on the entropy measure (3) devised by Walmsley and McDougall (2004):

$$(3) \quad E_{r,s} = 0.5\left[S^{*A}_{r,s}\left(Log_e\left(S^{*A}_{r,s}/S^{*B}_{r,s}\right)\right)\right] + 0.5\left[S^{*B}_{r,s}\left(Log_e\left(S^{*B}_{r,s}/S^{*A}_{r,s}\right)\right)\right]$$

Where: $E_{r,s}$ = the entropy measure of the difference between $S^{*A}_{r,s}$ and $S^{*B}_{r,s}$

$S^{*A}_{r,s}$ = the adjusted share of migrants from country r in country s to use in foreign born matrix.

$S^{*B}_{r,s}$ = the adjusted share of migrants from country r in country s to use in nationality matrix.

The adjustment to the shares being:

$$S^{*A}_{r,s} = \left(S^{A}_{r,s}(1 - TINY)\right) + \left(S^{B}_{r,s}(TINY)\right)$$

$$S^{*B}_{r,s} = \left(S^{B}_{r,s}(1 - TINY)\right) + \left(S^{A}_{r,s}(TINY)\right)$$

Where: $S^{A}_{r,s}$ = The proportion of migrants from country r to the total in country s in the foreign born matrix.

$S^{B}_{r,s}$ = The proportion of migrants from country r to the total in country s in the nationality matrix.

$TINY$ = Small number

2

THE IMPACT OF REMITTANCES ON POVERTY AND HUMAN CAPITAL: EVIDENCE FROM LATIN AMERICAN HOUSEHOLD SURVEYS

Pablo Acosta, Pablo Fajnzylber, and J. Humberto Lopez

Workers' remittances to developing countries have dramatically increased over the past few years. According to the World Bank's *Global Economic Prospects 2006,* remittances to middle- and low-income countries amounted to about $30 billion in 1990. Fifteen years later, they are estimated to have reached almost $170 billion, implying annual growth rates that are well above 10 percent. Remittances now account for about 30 percent of total financial flows to the developing world and provide significant foreign exchange earnings. They are more than twice as large as official development assistance flows, and they are equivalent to 2.5 percent of the gross national income of the developing world. Some evidence indicates that remittances flows have positive macroeconomic effects in recipient countries. Large remittances flows improve a country's creditworthiness for external borrowing and, hence, enhance the country's access to international capital markets. Moreover, some financial institutions in developing countries have been able to tap into international capital markets under relatively favorable conditions through securitization of future flows.

Given the nature, magnitude, and evolution of remittances flows, development practitioners now view remittances as having a potentially important role to play in supporting the development efforts of recipient countries. Remittances can support these efforts through two main channels. First, remittances could flow to the neediest groups of the population and, therefore, directly contribute to poverty reduction. Even if these flows are fully consumed, a concern of many development practitioners, they could have significant positive welfare effects. Second, with imperfect insurance and financial markets, remittances could contribute to increased investment in human and physical capital. For example, they could remove some of the financial constraints to investment faced by households and small-scale entrepreneurs. Similarly, remittances can provide insurance and, therefore, allow households and entrepreneurs to pursue riskier asset accumulation strategies. In this regard, remittances could help raise the country's long-run growth potential through higher rates of capital accumulation.

In practice, however, other effects may counterbalance these potential positive impacts. For example, if important costs are associated with the act of migrating, migrants may not come from the lowest quintiles of the income distribution and, therefore, remittances may not flow to the poorest people. As discussed below in the Latin American context, the assertion that remittances are directed mainly to the poor is difficult to defend when both the location of recipient households in the income distribution and the magnitude of the corresponding flows are taken into account. In those cases, remittances would not be expected to have a large effect on poverty headcounts. Moreover, comparing observed poverty rates with poverty rates calculated on the basis of nonremittances income could exaggerate the estimated development impact of these flows. Indeed, before leaving their home countries, migrants are likely to have made a contribution to their households' income, and this contribution should be taken into account when counterfactual poverty rates are calculated in a scenario of neither migration nor remittances. Adams (2006), for example, argues that failure to correct for the reduction in income associated with the absence of migrants from their households can dramatically change the estimated poverty impact of remittances. With data from Guatemala, Adams (2004) illustrates how the incorporation or lack of incorporation of this correction can lead to either positive or negative effects of remittances on poverty.

Remittances can also negatively affect domestic competitiveness, lowering the expected returns on capital. For example, remittances can exert pressure on the exchange rate and lead to a real appreciation, which, all other factors being equal, would lower the profitability of the tradable sector (in a Latin American context, see Amuedo-Dorantes and Pozo [2004] for evidence in this regard). Similarly, remittances may raise reservation wages and negatively affect labor supply

(Rodriguez and Tiongson 2001). In both cases, remittances would affect the investment incentives of households and entrepreneurs and would lower the rate of capital accumulation.

In other words, given the potential counterbalancing effects associated with a surge in remittances, researchers may find it difficult to determine not only the magnitude but also the direction of the potential development impacts of remittances. Thus, empirical evidence is needed to ascertain the signs and orders of the magnitude of the different economic consequences of remittances flows. However, empirical evidence on the various development impacts of remittances remains limited. Many studies[1] have analyzed the poverty impact of remittances[2] by exploiting cross-national databases (see, for example, Adams and Page [2005] and Acosta et al. [forthcoming]) or by exploring the issue in specific country settings (see, for example, Adams [2004, 2006] on Guatemala and Ghana, Lopez-Cordova [2005] and Taylor et al. [2005] on Mexico, and Yang and Martinez [2006] on the Philippines) and have concluded that higher remittances inflows tend to be associated with lower poverty.

But many issues must be considered. First, cross-country studies tend to offer global results, but they do not fully exploit differences in country characteristics that may affect the development impact of remittances. In particular, the results can be misleading in specific country contexts if migration patterns differ significantly across countries and regions and if the analysis does not take those patterns into account. Moreover, cross-country studies usually take as counterfactual the hypothesis of no remittances without altering migration patterns rather than the more appealing counterfactual of no migration—that is, they underestimate the costs of migration and, hence, may overestimate the benefits of remittances. For example, some of the estimates obtained using cross-country analyses suggest that a 10 percent increase in per capita remittances may lead to a 3.5 percent decrease in poverty. Clearly, this estimate does not appear realistic, especially when its implications are considered: with this elasticity and the growth rates in per capita remittances observed during the past 15 years (more than 10 percent), the remittances effect alone should by now have nearly halved the poverty level that existed in 1990.

Country-specific studies allow for rich analyses but may offer a narrow view of the problem at hand if their existing stock is very limited. Moreover, the comparison of results may be problematic if the analyses of the various studies rely on diverse methodologies and assumptions. In that case, observed cross-country differences due to variation in country characteristics are difficult to distinguish from methodological differences across studies.

This chapter contributes to the debate by presenting an analysis of the development impact of remittances in 11 Latin American countries: Bolivia, the Dominican

Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Paraguay, and Peru. These are the countries for which the respective nationally representative household surveys contain information on the remittances received by households. In this regard, the present study contributes to the existing literature along several dimensions.

First, its results offer a comprehensive view of the poverty impact of workers' remittances in the Latin American region. The analysis focuses on the most commonly used poverty measure—headcount poverty—and explores how the results change with the use of different poverty lines and the movement from internationally to nationally defined poverty lines. In this regard, the analysis extends and completes that in Acosta et al. (forthcoming). Due to data limitations, the present study does not analyze all the countries in the region that according to Balance of payments (BOP) statistics receive nontrivial amounts of remittances flows, but its working sample covers more than two-thirds of the main remittances-receiving countries in Latin America, which, together with East Asia and the Pacific, is at the top of the ranking of remittances-receiving regions in the world.

Second, unlike other studies on the topic, which tend to focus either on the impact of remittances on poverty or on the impact of remittances on measures of household welfare that go beyond the pure income dimension (such as education or health levels), this analysis examines both issues. In the case of the impact of remittances on education, data limitations prevent inclusion of Bolivia in the analysis; Jamaica is included in its place. In the case of health, the sample is limited to two countries: Guatemala and Nicaragua.

Third, the present analysis is based on one methodology for all the countries; therefore, differences in outcomes emerge from differences in the pattern and volume of remittances, rather than from methodological biases. Thus, the results can be used to assess potential heterogeneity in responses to a surge in remittances. To the authors' knowledge, this exercise is the first of its type. In this respect, the chapter combines the virtues of cross-country analysis and country-specific analysis. It reflects country specificity in the sense that each country is analyzed in isolation, taking into account all the possible country characteristics. It reflects a cross-country perspective because of the relatively large number of countries analyzed with one methodology, thereby permitting examination of country heterogeneity.

Fourth, at a technical level, the chapter presents several exercises that are based on the same assumptions. In some cases, the counterfactual scenario is migration without remittances; in others, the counterfactual scenario has no migration, and the analysis corrects for the potential income that migrants might have had if they had not left their country. To this end, the study estimates an econometric model relating nonremittances income to a set of household and household head characteristics. In addition, in the preferred simulation, the

study takes into account the fact that households with migrants may not be randomly selected from the population and allows for the possibility of selection bias. Moreover, following Schiff (2006), the chapter presents the results of estimating the impact of remittances on the poverty rates prevailing only among the households receiving those flows. Finally, when estimating the effects of remittances on human capital formation, the study controls for the counterfactual income of recipient households estimated for the purpose of assessing the impact of remittances on poverty.

The study suggests that remittances tend to have an overall positive impact on recipient economies. Remittances appear to reduce poverty levels, increase educational attainment, and contribute to improvements in health indicators. Policy makers, understandably, are increasingly interested in seeing an increase in the amount of remittances flowing to their countries.

Yet, in general, the estimated impacts tend to be modest and to reveal significant country heterogeneity. In about half of the countries analyzed, remittances have no significant impact on poverty. One reason is that, in some of the countries, a large share of the remittances-receiving population belongs to the top quintiles of the income distribution, which naturally reduces the potential poverty-reducing effects of remittances flows. Another reason is that, correcting for the reduction in income that would be associated with the absence of migrants from their households has a significant impact. In fact, estimates that do not correct for this factor suggest significantly larger declines in poverty rates in all countries. In addition, the study suggests that children from households reporting remittances are more likely to stay in school and that, controlling for premigration income, children from remittances-receiving households tend to exhibit better health outcomes than those from nonrecipient households with similar demographic and socioeconomic characteristics (although in this case the evidence is based on data from only two countries). These impacts, however, tend to be restricted to households with relatively low levels of schooling and income.

This chapter reviews the data and econometric methodology used in the present study and presents the empirical results regarding the impact of remittances on headcount poverty. Moving beyond the income dimension of poverty, it explores how remittances affect human capital accumulation.

Data and Methodology

The following sections present the data and the methodology used in this chapter. Included are a discussion of the various household surveys on which the study is based and a presentation of how the study has dealt with econometrical issues.

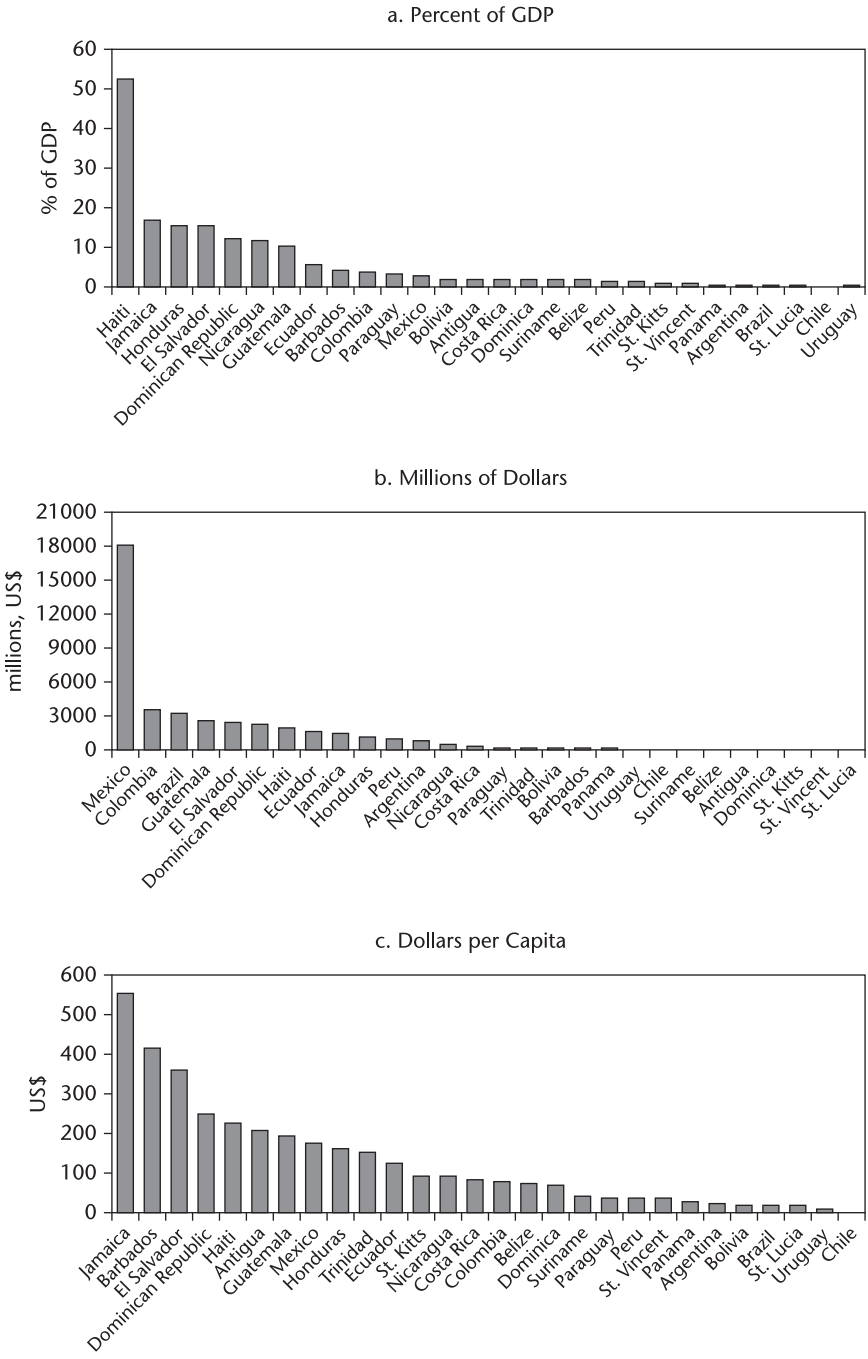
Data

The dramatic increase in remittances observed at the global level over the past few years has been mirrored in Latin America. In fact, officially recorded remittances flows to the region have increased more than twentyfold since 1980, when remittances amounted to about $1.9 billion, to nearly $50 billion in 2005. This trend has placed Latin America (together with East Asia and the Pacific) at the top of the ranking of regions by total amount of remittances and, more clearly, by per capita remittances received. Moreover, according to the World Bank (2006), remittances to the region could reach about $75 billion in 2007. Although this estimate is likely to be on the high side, it nevertheless highlights the fact that a collapse in remittances appears unlikely in the near future. In other words, the assumption that remittances are here to stay, at least in the short run, is realistic.

Within Latin America, remittances are particularly important in some countries. For example, they represent more than 50 percent of gross domestic product (GDP) in Haiti, the highest remittances ratio in the world, and 15–20 percent of GDP in Jamaica, Honduras, and El Salvador (see figure 2.1a). Similarly, in Guatemala, Nicaragua, and the Dominican Republic, remittances are 10–12 percent of GDP. The importance of those flows can also be illustrated by comparison with other private capital flows. Thus, in Guatemala, Honduras, El Salvador, and the Dominican Republic, remittances are equivalent, respectively, to 14, 4, 3, and 2 times foreign direct investment (FDI) flows. Even in Colombia and Ecuador, where in relative terms remittances are lower, remittances represent, respectively, 197 percent and 112 percent of FDI.

On a U.S. dollar basis, the Latin American country with the highest absolute remittances flows is Mexico, which received almost $22 billion in 2005 (about $18 billion in 2004, as reported in figure 2.1b). This flow would represent 45 percent of total flows to Latin America in that year ($48.3 billion) and would make Mexico the world's largest remittances recipient in 2005. Other countries with substantial flows are Colombia and Brazil with flows, respectively, of $3.8 billion and $3.5 billion in 2005, and Guatemala, El Salvador, the Dominican Republic, and Haiti with $2.5 billion on average. Also worthy of note are Ecuador, Honduras, Jamaica, and Peru, where remittances averaged about $1.5 billion in 2005. Finally, on a per capita basis, the country with the highest level of remittances would be Jamaica with approximately $550 per capita, followed by Barbados with about $400 per capita and El Salvador with flows of approximately $350 per capita (see figure 2.1c). The average for the 28 countries considered in figure 2.1 would be $128 per capita per year, but that amount increases to $270 among the 10 countries with the highest per capita remittances—a group that also includes the Dominican Republic, Haiti, Antigua and Barbuda, Guatemala, Mexico, Honduras, and Trinidad and Tobago.

Figure 2.1. Remittances to Latin America in 2004



Source: Balance of payments (macroeconomic) data.

Table 2.1. Household Surveys Used

Country	Year	Survey
Bolivia	2002	Encuesta de Hogares, MECOVI
Ecuador	2004	Sistema Integrado de Encuestas de Hogares, INEC
El Salvador	2000	Encuesta de Hogares de Propositos Multiples, MECOVI
Guatemala	2000	Encuesta Nacional sobre Condiciones de Vida (ENCOVI)
Haiti	2001	Les Conditions de Vie en Haiti, IHSI/Fafo/PNUD
Honduras	2002	Encuesta Permanente de Hogares de Propositos Multiples, MECOVI
Mexico	2002	Encuesta Nacional de Ingresos y Gastos de los Hogares, INEGI
Nicaragua	2001	Encuesta Nacional de Hogares sobre Medicion de Nivel de Vida, INEC
Paraguay	2003	Encuesta Permanente de Hogares, Direcion General de Estadistica
Peru	2002	Enciesta Nacional de Hogares, INEI
Dominican Rep.	2004	Encuesta Nacional sobre Condiciones de Vida (ENCOVI)

Source: Authors.

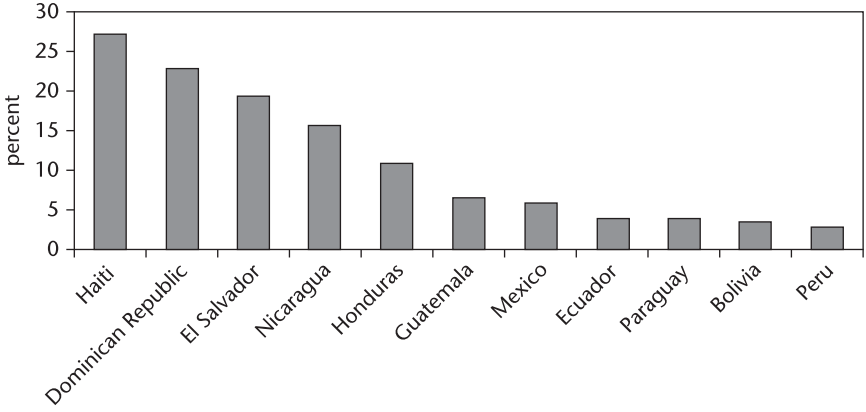
Data just described reveal the importance of remittances in the different Latin American countries. However, if interest centers on the characteristics of those receiving remittances, the BOP data described above are inadequate, and the researcher must resort to other sources. In this regard, the natural candidates are nationally representative household surveys. A problem with this alternative is that not all the Latin American countries have surveys containing relevant information on remittances. In fact, such data are available for only 11 countries. Table 2.1 reports the countries for which the household survey allows an analysis of the poverty impact of remittances. Overall, remittances to these countries in 2004 would have amounted to $33.5 billion, or about 70 percent of total remittances to the region.

One question that may arise at this stage regards the degree of consistency between the BOP-based data and the survey-based data. Significant and nonsystematic discrepancies between the two data sources would raise questions regarding the reliability of the remittances data and, therefore, of the results. Although differences between BOP and household survey estimates of remittances flows are significant, those differences are at least systematic—that is, the ordering of countries on the basis of remittances flows relative to GDP is very similar, regardless of the data source. Indeed, Acosta et al. (2006) find that the relationship between the two sources of data across countries is stable; BOP-based estimates surpass household survey data estimates by about 73 percent (an R^2 of 0.8 obtained for the

corresponding regression line linking the two series). That is, household survey-based estimates of remittances flows (as a percent of household income) are about 40 percent lower than BOP-based estimates (as a percent of GDP). Although, in principle, these differences may reflect the reasons for discrepancies between household survey-based and national accounts-based income estimates,[3] it may be that household surveys are not fully representative of the population of remittances recipients and, hence, that these surveys may underestimate the relevance of remittances flows. This important caveat should be kept in mind when analyzing the results presented here, because the poverty-reducing effects of remittances could be underestimated (although in a similar way across countries). The first question that the present study attempts to answer on the basis of household survey data has to do with the characteristics of those receiving remittances in the sample of Latin American countries under consideration.

Figure 2.2 reports the share of households receiving remittances in each of the 11 countries in the sample, suggesting that this share varies significantly. For example, in Haiti more than 25 percent of households reported having received remittances in 2001. At the other extreme, only 3 percent of the Peruvian households would benefit from these flows. Remittances reach 10–25 percent of the households in the Dominican Republic, El Salvador, Nicaragua, and Honduras; 5–10 percent in Mexico and Guatemala; and 3–5 percent in Bolivia, Ecuador, and Paraguay. Thus, other factors being equal, a given amount of remittances would be expected to have quite different effects on the welfare of the population of countries such as Haiti and Peru.

Figure 2.2. Share of Households Receiving Remittances



Source: Household surveys.

Cross-country differences in the welfare effects of remittances become even more likely, because not all the households receiving remittances are poor, and the share of remittances recipients living in poverty varies considerably from country to country. These differences are apparent in figure 2.3, which plots the percentage of households receiving remittances by quintile of the (nonremittances) income distribution. Remittances recipients in some, but not all, countries are predominantly poor (61 percent of Mexican and 42 percent of Paraguayan households receiving remittances fall in the first income quintile).

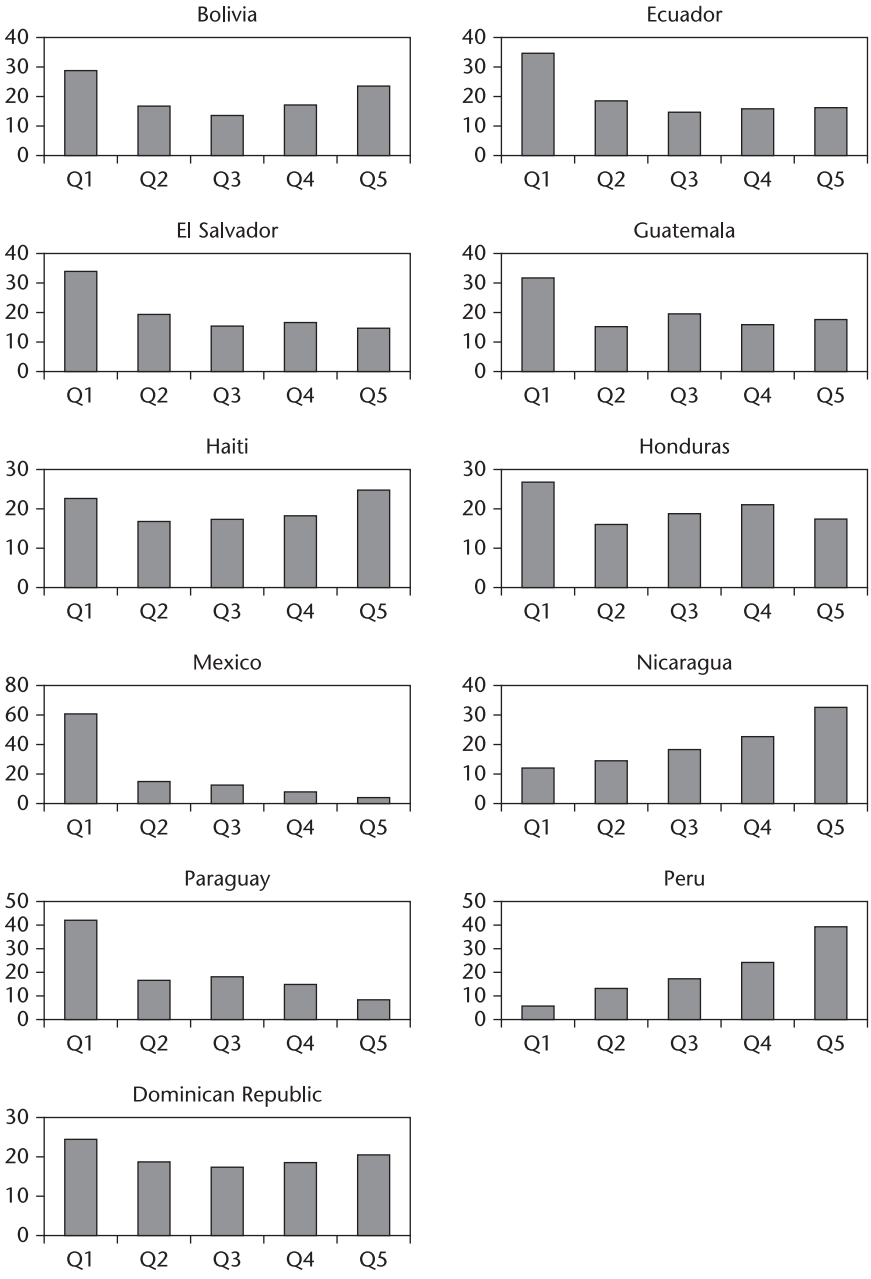
In Peru and Nicaragua, for example, the distribution of remittances recipients across households is completely different. In Peru less than 6 percent of the households that receive remittances belong to the lowest quintile, whereas 40 percent belong to the top quintile. Similarly, in Nicaragua only 12 percent of the recipients are in the first quintile, whereas 33 percent belong to the fifth quintile. Thus, in these two countries, remittances appear to be flowing to the richest families. Note that the interaction of these figures with the share of total households receiving remittances in the country would imply that less than 0.2 percent of the Peruvian population is made up of relatively poor households—that is, households in the first quintile of the income distribution—that receive remittances, and less than 2 percent of Nicaraguan households are remittances recipients belonging to the lowest quintile. Thus, in these two countries, the poverty-reducing potential of remittances, even if assumed to be sufficient to raise each household above the poverty line, will be limited. Even in Mexico, where the majority of the households receiving remittances belong to the lowest quintile, households receiving remittances and belonging to the lowest quintile represent only 3 percent of the national population. This finding suggests the orders of magnitude revealed in the exercises below.

Three countries (Ecuador, El Salvador, and Guatemala) have recipients who tend to be in lower quintiles (although in a less dramatic way than recipients in Mexico and Paraguay). In four countries (Bolivia, Honduras, the Dominican Republic, and Haiti), remittances appear to be homogeneously distributed across the distribution of income, or exhibit a U-shaped distribution (that is, remittances flow more to the lowest and the highest quintiles than to middle quintiles). In two countries—El Salvador and Haiti—more than 5 percent of households are remittances recipients and belong to the lowest quintile.

Econometric Methodology

The data described above provide a firm basis for assessing the impact of remittances on poverty. First, these data allow mechanical comparisons of poverty rates calculated with remittances either excluded or included in total reported household

Figure 2.3. Households Receiving Remittances by Quintile of the Distribution of Nonremittances Income



Source: Authors' calculations using the last available household survey.

Note: The figure reports the percentage of households receiving remittances that fall in each of the five quintiles of the income distribution.

income. These basic comparisons, however, suffer from one important shortcoming, namely, that remittances are unlikely to be an exogenous transfer but rather a substitute for the home earnings that migrants would have had if they had not left their countries to work abroad. In fact, the nonremittances income reported by households with migrants cannot be considered a good representation of the situation of the family before migration. If the migrant had positive earnings before leaving the household, the household's total nonremittances income is likely to be lower after migration. Thus, estimating the effect of migration and remittances on poverty would require consideration of the counterfactual per capita income that the household would have had if the migrant had stayed at home; otherwise, the true impact of migration and remittances on poverty reduction would be overstated.

To address this issue, Acosta et al. (forthcoming) calculate per capita household income for migrant households in the counterfactual scenario of no remittances and no migration. Clearly, this approach requires information about the income of the household before the migrant left, and this information is in general not available directly from household surveys. As an alternative, Acosta et al. (forthcoming) infer the counterfactual per capita income levels for those households with remittances on the basis of a reduced-form specification for the determinants of income among households without remittances. More formally, this approach involves estimating a model like

$$\log Y_i = \alpha + \beta X_i + \gamma H_i + \mu_i, \tag{1}$$

where Y_i represents per capita nonremittances income, X_i is a vector of household characteristics (demographic and location covariates), H_i is a set of characteristics of the household head, and μ_i represents random shocks and possible unobserved heterogeneity in income generation. Equation (1) can be estimated using the subsample of households that receive no remittances. The estimated coefficients then allow prediction of the counterfactual nonmigration income for remittances-receiving households. Given the absence of information on migrant characteristics for all but two countries (Haiti and Nicaragua) considered here, some basic assumptions about the number and the demographics of migrants are necessary. Following Rodriguez (1998) and Acosta et al. (forthcoming), this study assumes that, on average, a single adult male family member sends remittances. The study also assumes that this member's education is equal to the average years of education of other adults in the household.

Ordinary least squares (OLS) estimates of equation (1) will be inconsistent if μ_i is not independently identically distributed. In other words, if migrants are not randomly selected from the pool of households, estimates of equation (1)

based on the sample of households without migrants could suffer from selection bias. To control for this possibility, a variable that represents the household's "propensity to neither migrate nor receive remittances" (M_i^*) is added to equation (1). This new term is calculated in the context of the two-step estimation framework proposed by Heckman (1979). The study adopts the following model specification:

$$M_i^* = \alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i + \nu_i \tag{2}$$

(no remittances selection rule)

$$\log Y_i = \alpha_2 + \beta_2 X_i + \gamma_2 H_i + \theta \lambda_i + \varepsilon_i \tag{3}$$

(earnings equation for nonrecipient households).

In practice, only the sign of the variable M_i^*, which represents the selection rule for whether or not the household receives remittances (which in turn is equivalent to a negative or positive value for M_i^*), is observable. Identification of this model requires an exclusion restriction: a set of variables Z_i that are related to the migration and remittances choice but that do not directly affect earnings for households with nonmigrants. The term λ_i is the selection inverse Mill's ratio, defined as

$$\lambda_i = \frac{\phi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)}{1 - \Phi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)},$$

with

$$\theta \lambda_i = E(\nu_i / \mu_i > -\beta_1 X_i - \gamma_1 H_i - \omega Z_i),$$

where μ_i is the error component in the earning equations, and $\theta = \text{cov}(\nu_i, \mu_i)/\sqrt{\text{var}(\mu_i)}$. Controlling for λ_i allows the remaining unexplained component ε_i to have the usual desirable independently identically distributed properties. If λ_i is a significant predictor of earnings, selection into the nonmigration status is indeed correlated with factors that affect household earnings, and OLS estimates of equation (1) would be inconsistent.

The exclusion restrictions on the nonremittances selection equation are an index of household assets, the percentage of households that receive remittances in the respective county of residence (a proxy for the presence of migrant networks), and their interaction. When county-level indicators cannot be calculated (as for Guatemala and Haiti), the variable that represents the percentage of households with migrants is measured at the department/province level. In this case, only the interaction of that variable with the household assets index is included. Finally, when information on household assets is missing (as for Bolivia, Ecuador,

and Honduras), the network variable is interacted with the number of adult males, which ensures variability at the household level.[4]

With the above-noted assumption concerning migrant characteristics, these coefficients are used to impute the counterfactual nonremittances per capita household income for recipient households. With this variable, the levels of poverty and inequality that would have prevailed had migration and remittances not occurred can be calculated. It must be noted, however, that, as Rodriguez (1998) mentions, the variance of the counterfactual income predicted on the basis of observable household characteristics is artificially small, because it ignores unobserved determinants of income.

A potential solution proposed by Barham and Boucher (1998) is to add to the predicted household income a random error component drawn from a distribution with the same properties (mean, variance) as the actual estimated errors. This approach yields 1,000 estimates of the imputed counterfactual nonremittances income for households with migrants, and the same number of estimates for the poverty and inequality levels that would have prevailed in the above-noted counterfactual scenario. Thus this chapter can report not only point estimates for those variables, but also 95 percent confidence intervals based on the 25th and 975th estimates of the variables sorted in ascending order.

Results

This section begins with a review of the estimates corresponding to the two-step model described in equations (2) and (3), which are reported in tables 2.2 and 2.3. Unlike the studies in Barham and Boucher (1998) and Adams (2006), this study finds λ_i to be positive and significant at the 1 percent level in all cases except that of Ecuador, an indication that recipients of remittances are not randomly selected from the complete pool of households. Moreover, this result suggests that households with a lower propensity to migrate are also more likely to have higher per capita income levels, which is consistent with the standard migration argument that potential migrants compare the returns at home and in their potential destination when deciding whether to work abroad.

The remaining coefficients have the expected signs. In the selection equation, larger households (particularly those with a higher number of adult males) are more likely to receive remittances (or migrate). On the other hand, the number of children and adult females is negatively related to the likelihood of migration and remittances receipts. Higher educational levels are negatively related to remittances, except in Haiti and Honduras (where education has the opposite sign). The presence of migrant networks, proxied by the percentage of households with remittances in the area of residence, and a household wealth index

Table 2.2. Two-Step Estimates of Nonrecipient Households' Income

Variables	Mexico	Guatemala	El Salvador	Paraguay	Honduras	Dom. Rep.	Bolivia	Ecuador	Haiti	Peru	Nicaragua
Household size	−0.102***	−0.113***	−0.214***	−0.087***	−0.125***	−0.166***	−0.088**	−0.134***	−0.296***	−0.141***	−0.205***
	(0.015)	(0.039)	(0.021)	(0.026)	(0.020)	(0.035)	(0.042)	(0.017)	(0.043)	(0.013)	(0.045)
Number of children 0–5 years old	−0.146***	−0.055	0.024	−0.175***	−0.089***	−0.070*	−0.129**	−0.102***	0.032	−0.076***	0.007
	(0.017)	(0.042)	(0.023)	(0.029)	(0.021)	(0.038)	(0.046)	(0.019)	(0.048)	(0.015)	(0.049)
Number of boys 6–15 years old	−0.100***	−0.031	0.033	−0.121***	−0.045**	−0.043	−0.121**	−0.068***	0.161***	−0.049***	0.062
	(0.017)	(0.042)	(0.023)	(0.028)	(0.021)	(0.038)	(0.046)	(0.019)	(0.047)	(0.014)	(0.048)
Number of girls 6–15 years old	−0.103***	−0.043	0.038	−0.097***	−0.053**	−0.050	−0.093**	−0.066***	0.128***	−0.046***	0.028
	(0.017)	(0.042)	(0.023)	(0.028)	(0.021)	(0.038)	(0.046)	(0.019)	(0.047)	(0.014)	(0.048)
Number of males 16–65 years old	0.041***	0.006	0.048**	0.061**	0.135***	0.103***	−0.034	0.183***	−0.161***	0.073***	0.147***
	(0.016)	(0.043)	(0.022)	(0.026)	(0.020)	(0.037)	(0.043)	(0.018)	(0.047)	(0.013)	(0.048)
Number of females 16–65 years old	0.040**	0.154***	0.228***	0.039	0.087***	−0.010	0.009	0.065***	0.192***	0.082***	0.181***
	(0.016)	(0.041)	(0.022)	(0.027)	(0.020)	(0.036)	(0.043)	(0.018)	(0.045)	(0.013)	(0.047)
Rural area		−0.377***	−0.419***	−0.203***	−0.395***	−0.022	−0.687***	−0.332***	0.134***		−0.292***
		(0.031)	(0.018)	(0.020)	(0.015)	(0.023)	(0.030)	(0.015)	(0.049)		(0.037)
Avg. Adult Education (16–65 years old)	0.074***	0.102***	0.071***	0.055***	0.073***	0.072***	0.056***	0.045***	0.046***	0.068***	0.066***
	(0.002)	(0.006)	(0.003)	(0.004)	(0.003)	(0.005)	(0.005)	(0.003)	(0.009)	(0.002)	(0.007)
Age (household head)	0.032***	0.043***	0.023***	0.000	0.011***	0.042***	0.018***	0.011***	0.019***	0.011***	0.017***
	(0.002)	(0.006)	(0.003)	(0.004)	(0.003)	(0.004)	(0.005)	(0.003)	(0.006)	(0.002)	(0.006)
Age squared x 100 (household head)	−0.026***	−0.045***	−0.024***	0.005	−0.009***	−0.044***	−0.008	−0.007***	−0.024***	−0.003	−0.015**
	(0.002)	(0.007)	(0.003)	(0.004)	(0.003)	(0.005)	(0.006)	(0.003)	(0.006)	(0.002)	(0.006)
Years of education (household head)	0.042***	0.038***	0.030***	0.051***	0.036***	0.014***	0.047***	0.045***	0.029***	0.027***	0.020***
	(0.002)	(0.005)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.002)	(0.007)	(0.002)	(0.006)

(*Table continues on the following page.*)

Table 2.2. (Continued)

Variables	Mexico	Guatemala	El Salvador	Paraguay	Honduras	Dom. Rep.	Bolivia	Ecuador	Haiti	Peru	Nicaragua
Lambda	0.379***	2.245***	0.915***	0.457***	0.300***	0.600***	0.382**	0.128	1.575***	1.333***	0.718***
	(0.045)	(0.184)	(0.049)	(0.132)	(0.060)	(0.068)	(0.152)	(0.090)	(0.140)	(0.076)	(0.114)
Department/ province indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15130	6529	12201	9031	19052	7507	5289	17446	5267	17897	3445
R^2	0.5499	0.4327	0.454	0.416	0.5095	0.3265	0.443	0.393	0.3286	0.535	0.404

Source: Authors.

Note: The table reports results from auxiliary regressions using Heckman's two-step procedure. The dependent variable is the log of per capita household income.

*Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

Table 2.3. Two-Step Estimates of Nonrecipient Households' Income: First-Step Results of Auxiliary Regressions

Variables	Mexico	Guatemala	El Salvador	Paraguay	Honduras	Dom. Rep.	Bolivia	Ecuador	Haiti	Peru	Nicaragua
Household size (HH)	−0.145***	−0.002	−0.280***	−0.254***	−0.248***	−0.194***	−0.423***	−0.065	−0.235***	−0.106	−0.095
	(0.053)	(0.072)	(0.031)	(0.062)	(0.035)	(0.051)	(0.095)	(0.049)	(0.047)	(0.066)	(0.076)
Number of children 0–5 years old	0.105*	0.093	0.288***	0.257***	0.277***	0.226***	0.552***	0.096*	0.281***	0.172***	0.137
	(0.060)	(0.079)	(0.035)	(0.072)	(0.038)	(0.057)	(0.112)	(0.056)	(0.053)	(0.081)	(0.085)
Number of boys 6–15 years old	0.150**	−0.027	0.258***	0.228***	0.216***	0.181***	0.484***	0.019	0.247***	0.057	0.089
	(0.060)	(0.078)	(0.036)	(0.071)	(0.038)	(0.057)	(0.108)	(0.055)	(0.052)	(0.078)	(0.082)
Number of girls 6–15 years old	0.159***	−0.052	0.235***	0.236***	0.184***	0.190***	0.434***	−0.020	0.235***	0.066	0.109
	(0.060)	(0.079)	(0.035)	(0.070)	(0.038)	(0.057)	(0.107)	(0.055)	(0.052)	(0.077)	(0.083)
Number of males 16–65 years old	−0.379***	−0.412***	−0.306***	−0.123*	−0.080*	−0.509***	−0.059	−0.194***	−0.330***	−0.265***	−0.369***
	(0.055)	(0.074)	(0.033)	(0.064)	(0.042)	(0.053)	(0.105)	(0.054)	(0.048)	(0.068)	(0.080)
Number of females 16–65 years old	0.190***	0.045	0.299***	0.302***	0.196***	0.188***	0.361***	0.166***	0.237***	0.188***	0.176**
	(0.056)	(0.076)	(0.033)	(0.067)	(0.037)	(0.054)	(0.098)	(0.052)	(0.049)	(0.068)	(0.078)
Rural Area		−0.114*	−0.164***	0.174***	0.168***	0.061	0.307***	0.178***	−0.184***		0.097
		(0.066)	(0.034)	(0.066)	(0.031)	(0.040)	(0.097)	(0.045)	(0.055)		(0.076)
Avg. Education of adults (16–65 years old)	0.071***	0.047***	0.042***	0.028***	−0.025***	0.030***	0.054***	0.018**	−0.026***	0.015	−0.001
	(0.009)	(0.013)	(0.005)	(0.010)	(0.006)	(0.007)	(0.014)	(0.007)	(0.009)	(0.010)	(0.013)
Age (household head)	0.035***	0.080***	0.059***	0.031***	0.039***	0.077***	0.048***	0.034***	0.030***	0.045***	0.017
	(0.009)	(0.010)	(0.005)	(0.010)	(0.005)	(0.007)	(0.014)	(0.007)	(0.006)	(0.012)	(0.012)
Age squared × 100 (household head)	−0.031***	−0.082***	−0.063***	−0.034***	−0.043***	−0.078***	−0.052***	−0.037***	−0.032***	−0.049***	−0.026**
	(0.008)	(0.011)	(0.005)	(0.010)	(0.005)	(0.007)	(0.014)	(0.007)	(0.006)	(0.011)	(0.011)

(*Table continues on the following page.*)

Table 2.3. (Continued)

Variables	Mexico	Guatemala	El Salvador	Paraguay	Honduras	Dom. Rep.	Bolivia	Ecuador	Haiti	Peru	Nicaragua
Years of Education (household head)	0.040*** (0.007)	0.036*** (0.011)	0.015*** (0.005)	0.013 (0.010)	−0.003 (0.005)	−0.031*** (0.006)	−0.046*** (0.011)	−0.013* (0.007)	−0.008 (0.007)	−0.019** (0.008)	−0.028*** (0.010)
Household Asset Index	−0.154*** (0.018)	−0.264*** (0.043)	−0.236*** (0.017)	−0.048* (0.027)		−0.200*** (0.025)			−0.221*** (0.043)	−0.192*** (0.023)	−0.169*** (0.034)
% Remittances Recipient households in County or Province	−3.790*** (0.151)		−3.568*** (0.199)	−6.072*** (0.540)	−3.071*** (0.331)	−2.960*** (0.220)	−3.455*** (1.258)	−5.898*** (1.006)		−8.845*** (0.659)	−3.663*** (0.351)
% Remittances Recipient HHs * HH Asset Index	−0.104 (0.083)	1.801 (1.385)	0.037 (0.064)	−0.283 (0.280)		0.046 (0.098)			0.282** (0.125)	0.765*** (0.221)	0.240* (0.138)
% Remittances Recipient Households * Number 16–65 males					−0.915*** (0.163)		−2.668*** (0.732)	−4.395*** (0.615)			
Department/ province indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16134	7009	15285	9400	21412	9565	5492	18188	7043	18226	4041
Pseudo R-squared	0.353	0.1691	0.2485	0.211	0.1939	0.2782	0.2837	0.1935	0.2363	0.3081	0.2661

Source: Authors.

Note: The dependent variable is the indicator of households not receiving remittances.

*Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

also appear to be positively and significantly correlated with the likelihood of receipt of remittances. In the earnings equation, as expected, education and demographic characteristics are strongly significant predictors of income in nonrecipient households; they explain between 33 and 55 percent of income variability, depending on the case.

The results of the study's poverty simulations are reported in tables 2.4–2.7. As noted above, the analysis is based on headcount poverty indexes, and it employs four poverty lines. Tables 2.4 and 2.5 reflect internationally comparable poverty lines of $1 and $2 per person per day, measured at PPP (purchasing power parity) values, which correspond respectively to "extreme" and "moderate" poverty rates. Tables 2.6 and 2.7 reflect analysis based on nationally defined "extreme" and "moderate" poverty lines. Readers interested in country comparisons should probably be more concerned with the results of tables 2.4 and 2.5, whereas readers interested in a specific country should focus on tables 2.6 and 2.7.

Before proceeding, it must be noted that Schiff (2006) has proposed to complement the analysis of the effect of remittances on national poverty rates with estimates of remittances' impact on the poverty rate prevailing among the subset of households that receive remittances. The point is that although the impact of remittances on national poverty levels may be limited, the impact on the poverty status of the households with migrants could be much larger; therefore, this restricted analysis can highlight interesting facts for the corresponding subgroup of the population. Thus, the tables below also report poverty effects using Schiff's approach.

Each table has two panels. Panel A reports (1) the national headcount poverty rate according to the relevant poverty line and (2) the poverty rate prevailing among households receiving remittances. Panel B reports (1) the difference between the national poverty rate calculated using nonremittance household income and the observed poverty rate; (2) the same calculation as in (1) for the specific sample of remittances recipient households; (3) the difference between the national poverty rate calculated using counterfactual household income scenario—with no migration and no remittances—corrected for selectivity and changes in household size; (4) the same calculation as in (3) for the specific sample of remittance recipient households.[5]

The first element to note in this analysis is that nationally defined poverty lines tend to yield higher poverty rates than those based on the PPP-adjusted $1 and $2 lines. This finding reflects the fact that countries tend to use more inclusive definitions of poverty (in the sense that more people qualify). These differences between nationally and internationally defined poverty lines are such that *extreme* poverty rates calculated on the basis of local poverty lines tend to be higher than the corresponding internationally defined *moderate* poverty rates (that is, $2 per day).

Table 2.4. Impact of Remittances on Headcount Poverty ($1 PPP)

Panel A: Observed poverty rates			Panel B: Estimated poverty effects of remittances with and without adjustment for lost income				
Country	All households (1)	Recipient HHs (2)	Country	Without adjustment (all HHs) (1)	Without adjustment (recipient HHs) (2)	With adjustment (all HHs) (3)	With adjustment (recipient HHs) (4)
Bolivia	17.8	8.6	Bolivia	−0.6	−18.5	−0.2 (−0.4; −0.1)	−6.7 (−11.6; −1.8)
Dominican Republic	4.7	3.3	Dominican Republic	−2.5	−11.1	0.4 (0.2; 0.5)	1.6 (1.0; 2.1)
Ecuador	11.2	3.0	Ecuador	−1.3	−20.0	−0.3 (−0.4; −0.2)	−4.4 (−5.8; −3.0)
El Salvador	7.7	2.8	El Salvador	−4.4	−23.0	−0.5 (−0.6; −0.3)	−2.4 (−3.2; −1.7)
Guatemala	21.6	10.3	Guatemala	−2.2	−23.5	−1.0 (−1.3; −0.7)	−10.7 (−14.0; −7.4)
Haiti	53.4	32.2	Haiti	−6.8	−24.9	−4.1 (−4.7; −3.5)	−15.0 (−17.4; −12.6)
Honduras	16.2	2.8	Honduras	−2.5	−23.2	−0.6 (−0.7; −0.5)	−5.5 (−6.5; −4.5)
Mexico	3.2	3.6	Mexico	−2.1	−36.1	0.1 (0.0; 0.2)	1.8 (0.8; 2.8)
Nicaragua	8.3	4.7	Nicaragua	−0.5	−2.9	0.0 (−0.1; 0.1)	0.1 (−0.7; 0.9)
Paraguay	6.1	4.0	Paraguay	−0.8	−20.4	0.0 (−0.1; 0.1)	−0.2 (−2.1; 1.8)
Peru	4.2	0.0	Peru	0.0	−0.7	0.0 (0.0; 0.0)	−0.4 (−0.7; 0.0)

Source: Authors.

Notes: PPP = purchasing power parity. HH = households.

Table 2.5. Impact of Remittances on Headcount Poverty ($2 PPP)

Panel A: Observed poverty rates		
Country	All households (1)	Recipient HHs (2)
Bolivia	34.7	22.2
Dominican Republic	12.8	7.4
Ecuador	27.2	10.9
El Salvador	18.6	10.8
Guatemala	39.1	21.3
Haiti	71.4	53.0
Honduras	31.7	10.1
Mexico	12.7	15.9
Nicaragua	22.6	13.4
Paraguay	15.3	14.1
Peru	15.5	0.8

Panel B: Estimated poverty effects of remittances with and without adjustment for lost income				
Country	Without adjustment (all HHs) (1)	Without adjustment (recipient HHs) (2)	With adjustment (all HHs) (3)	With adjustment (recipient HHs) (4)
Bolivia	−0.6	−17.1	−0.4 (−0.6; −0.1)	−10.6 (−17.0; −4.2)
Dominican Republic	−3.2	−14.2	−0.2 (−0.3; −0.1)	−0.4 (−1.5; 0.6)
Ecuador	−1.7	−25.7	−0.8 (−0.9; −0.6)	−12.0 (−14.5; −9.6)
El Salvador	−5.1	−26.6	−1.4 (−1.6; −1.1)	−7.2 (−8.5; −5.9)
Guatemala	−2.2	−23.4	−1.6 (−2.0; −1.3)	−17.0 (−20.9; −13.2)
Haiti	−4.9	−18.0	−3.0 (−3.6; −2.4)	−10.9 (−13.1; −8.7)
Honduras	−3.0	−27.9	−1.5 (−1.7; −1.4)	−13.8 (−15.3; −12.3)
Mexico	−2.3	−40.1	0.1 (−0.1; 0.3)	3.0 (0.9; 5.1)
Nicaragua	−0.9	−5.7	−0.3 (−0.5; −0.1)	−2.0 (−3.4; −0.6)
Paraguay	−0.9	−22.3	0.0 (−0.2; 0.1)	−0.7 (−4.2; 2.8)
Peru	−0.1	−5.2	0.0 (−0.1; 0.0)	−0.6 (−1.7; 0.5)

Source: Authors.

Notes: PPP = purchasing power parity. HH = households.

Table 2.6. Impact of Remittances on Headcount Poverty (Nationally Defined Extreme Poverty Line)

Panel A: Observed poverty rates			Panel B: Estimated poverty effects of remittances with and without adjustment for lost income				
Country	All households (1)	Recipient HHs (2)	Country	Without adjustment (all HHs) (1)	Without adjustment (recipient HHs) (2)	With adjustment (all HHs) (3)	With adjustment (recipient HHs) (4)
Bolivia	37.5	26.4	Bolivia	−0.6	−17.5	−0.3 (−0.5; −0.1)	−9.2 (−15.8; −2.6)
Dominican Republic	21.7	12.8	Dominican Republic	−3.8	−16.6	−0.5 (−0.9; −0.2)	−2.4 (−3.8; −1.0)
Ecuador	25.8	10.4	Ecuador	−1.7	−25.8	−0.7 (−0.9; −0.6)	−11.1 (−13.4; −8.8)
El Salvador	17.7	10.3	El Salvador	−5.0	−26.1	−1.3 (−1.5; −1.0)	−6.5 (−7.8; −5.2)
Guatemala	32.1	18.8	Guatemala	−2.0	−21.3	−1.3 (−1.6; −0.9)	−13.3 (−17.1; −9.5)
Haiti	85.4	70.3	Haiti	−4.2	−15.5	−2.6 (−3.1; −2.0)	−9.4 (−11.5; −7.3)
Honduras	36.0	13.5	Honduras	−3.1	−28.3	−1.7 (−1.8; −1.5)	−15.1 (−16.6; −13.6)
Mexico	22.2	28.7	Mexico	−2.1	−36.4	0.1 (0.0; 0.3)	2.4 (−0.3; 5.2)
Nicaragua	34.3	18.3	Nicaragua	−0.8	−5.2	−0.2 (−0.5; 0.0)	−1.6 (−3.2; 0.0)
Paraguay	23.1	21.6	Paraguay	−0.9	−24.2	−0.1 (−0.3; 0.0)	−3.1 (−7.4; 1.1)
Peru	22.9	1.8	Peru	−0.2	−6.7	0.0 (−0.1; 0.0)	−1.1 (−2.6; −0.5)

Source: Authors.

Note: HH = households.

Table 2.7. Impact of Remittances on Headcount Poverty (Nationally Defined Moderate Poverty Line)

Panel A: Observed poverty rates			Panel B: Estimated poverty effects of remittances with and without adjustment for lost income				
Country	All households (1)	Recipient HHs (2)	Country	Without adjustment (all HHs) (1)	Without adjustment (recipient HHs) (2)	With adjustment (all HHs) (3)	With adjustment (recipient HHs) (4)
Bolivia	61.3	44.9	Bolivia	−0.5	−15.2	−0.4 (−0.7; −0.2)	−7.2 (−11.7; −2.8)
Dominican Republic	50.0	37.7	Dominican Republic	−4.0	−17.4	−0.8 (−1.2; −0.3)	−3.3 (−5.3; −1.3)
Ecuador	52.6	32.0	Ecuador	−1.8	−27.8	−1.0 (−1.2; −0.8)	−15.4 (−18.5; −12.3)
El Salvador	38.7	32.8	El Salvador	−4.3	−22.3	−1.3 (−1.6; −1.0)	−6.7 (−8.3; −5.0)
Guatemala	58.8	44.6	Guatemala	−1.8	−18.3	−0.9 (−1.3; −0.5)	−9.2 (−13.1; −5.3)
Haiti	94.5	88.1	Haiti	−2.0	−7.3	−0.4 (−0.8; 0.1)	−1.4 (−3.1; 0.3)
Honduras	57.0	34.2	Honduras	−3.0	−27.2	−2.1 (−2.3; −1.9)	−19.1 (−20.7; −17.5)
Mexico	28.0	35.7	Mexico	−2.0	−33.7	0.1 (−0.1; 0.3)	1.4 (−1.5; 4.3)
Nicaragua	58.9	37.2	Nicaragua	−0.8	−5.4	−0.7 (−1.0; −0.4)	−4.3 (−6.2; −2.4)
Paraguay	47.0	48.2	Paraguay	−0.7	−17.9	−0.2 (−0.4; 0.1)	−4.0 (−9.6; 1.5)
Peru	43.7	9.2	Peru	−0.4	−13.5	−0.1 (−0.2; 0.0)	−3.0 (−5.9; −0.1)

Source: Authors.

Note: HH = households.

Unsurprisingly, use of one or another set of poverty lines produces results that from a numerical point of view can vary significantly for each country.

Also noteworthy is the fact that poverty rates observed among households with migrants tend to be lower than poverty rates found in the general population. In Peru and Nicaragua, for instance, national poverty levels based on the $2 poverty line had been estimated at nearly 16 and 27 percent, respectively, but they are close to 1 and 13 percent, respectively, among recipients of remittances. Other countries where households with migrants are considerably less likely to be poor than the average household in the country include Bolivia, Ecuador, Guatemala, Haiti, and Honduras. The exception to this rule is Mexico, where regardless of the poverty line being considered, poverty rates are higher among households receiving remittances than in the general population.

As for the impact of remittances on poverty, column (1) in panel B of tables 2.4–2.7 reports the absolute change in poverty rates, measured in percentage points, when remittances are added to the other components of household income, without taking into consideration possible reductions in household income following the migration of family members. This column allows comparison of observed poverty rates with rates prevailing in a counterfactual scenario in which migration occurred but no money was remitted to family members left behind. With this approach, the results suggest that remittances cause reductions in moderate and extreme poverty headcounts (using national and international poverty lines). These reductions range from 2 to 7 percentage points in the Dominican Republic, Guatemala, Honduras, Haiti, El Salvador, and Mexico. This finding does not come as a surprise in the last two countries, where households with migrants tend to come from the lowest quintiles of the income distribution.

In contrast to the above results, the estimated reductions in poverty due to remittances receipts become much lower when observed poverty rates are compared with poverty rates prevailing in a less simplistic scenario in which neither remittances nor migration are present. Thus, the results in column (3) of panel B in the tables suggest that, given the demographic characteristics of recipient households, the income of households in the event of no migration would have been higher than observed nonremittances income. As a result, the poverty-reducing effects of remittances become much smaller. For El Salvador, Guatemala, and Honduras, reductions in poverty headcounts are estimated at between 1 and 2 percentage points, and in Haiti the reductions are between 3 and 4 percentage points in three of four cases. The effects are even smaller for other countries. Moreover, in the case of Mexico, remittances either have no significant poverty-reducing effect or are tied to a small increase of 0.1 percentage points in poverty rates.[6]

Establishing a common pattern to describe the countries where the largest poverty reductions are obtained is no trivial task. The position of migrants' households in the income distribution appears to play a role, as is illustrated by the fact that neither Peru nor Nicaragua—where remittances tend to flow to households in the highest income quintiles—are in the group of countries where the highest reductions in poverty rates are obtained. However, the countries where the largest shares of recipients are found to be in the bottom quintiles—Mexico and Paraguay—do not belong to that group either. One possible explanation is that, in these two countries, the share of remittances-receiving households is relatively low—5.8 and 3.8 percent of the population, respectively—and so is the dollar amount of remittances received by households, as measured by the share of those flows in GDP—1.6 and 3.5 percent, respectively. Moreover, remittances per household as a proportion of the country's per capita income are among the lowest in Mexico: 47 percent, compared with 140 percent on average among the five above-mentioned countries where the highest reductions in poverty are obtained.

As the last column of tables 2.4–2.7 illustrates, the poverty-reducing effects of remittances on the prevalence of poverty are larger in the subset of the population made up of recipient households. In Bolivia, Ecuador, Guatemala, Haiti, and Honduras, moderate poverty rates in that specific subgroup of the population are found to fall by between 10 and 17 percentage points, when using international poverty lines. Thus, even if the impact of remittances on national poverty rates is found to be relatively modest in most countries, remittances appear to have an important poverty-reducing effect on the pool of poor households with migrants.

Remittances and Human Capital

The previous section explored the effects of remittances on household income and poverty. Remittances can also affect the long-term welfare of recipients by influencing human capital formation. Exploring the latter phenomenon is important for at least two reasons. First, analysis of the effects of remittances on recipient households' health and educational outcomes could complement analysis of the monetary dimensions of poverty. Second, through effects on human capital, remittances could have lagged effects on household income and, consequently, on monetarily defined poverty indexes. For example, if children in recipient households accumulate more (or better) human capital than otherwise similar children, remittances could also be expected to positively affect long-run economic growth and, hence, long-run poverty levels. This section explores these issues.

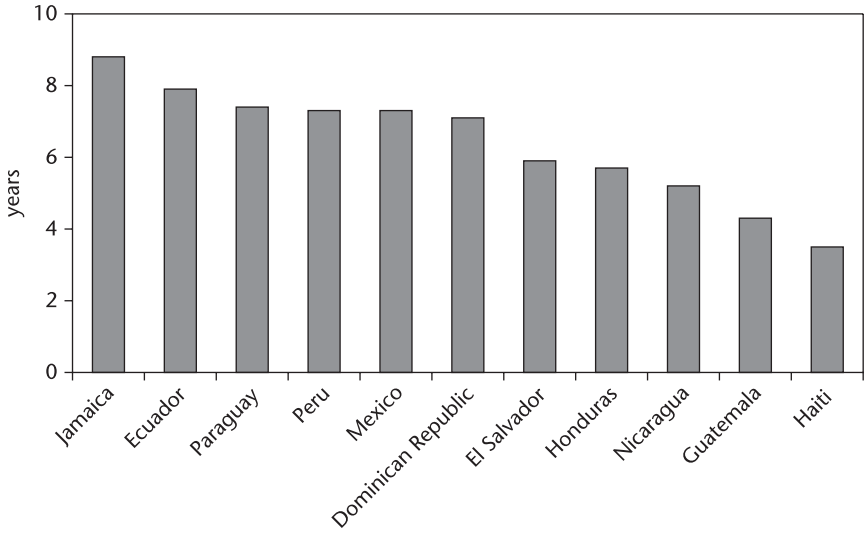
Educational Attainment

The net impact of migration and remittances on human capital accumulation is a priori unclear. On the one hand, migrant remittances can help overcome borrowing constraints that limit poor households' physical and human capital investments. On the other hand, migration of household members that precedes the receipt of remittances can have disruptive effects on family life, with potentially negative consequences for children's educational attainment. Moreover, to the extent that in destination countries most migrants tend to work in occupations requiring limited schooling, the returns from investments in education may be lower for those envisaging international migration than for those not envisioning migration, and these lower returns could tend to reduce the schooling of children in migrants' households. Similarly, migration can put pressure on wages in the home country, raising the opportunity cost of not working for older children. In any case, the direction of the relationship between remittances and child education depends on the idiosyncratic characteristics of each country.

Evidence on the impact of remittances on education in Latin America and the Caribbean is restricted to Mexico and El Salvador. Hanson and Woodruff (2003) find that remittances are associated with higher educational attainment in rural Mexico, in particular among 10- to 15-year-old girls whose mothers have low educational levels. Lopez-Cordova (2005) shows that higher remittance flows are associated with lower illiteracy rates in Mexican municipalities, but the evidence on the impact on school attendance is mixed: the effect is positive for 5 year olds, becomes insignificant among 6 to 14 year olds, and is negative for 15 to 17 year olds. Again with reference to Mexico, McKenzie and Rapoport (2006) show that children age 16 to 18 from households with migrants exhibit lower educational attainment levels; they also show that this negative effect is larger for children whose mothers have higher levels of schooling. In the case of El Salvador, Cox-Edwards and Ureta (2003) show that children from remittances-receiving households are less likely to drop out of school, a finding that they attribute to the relaxation of budget constraints affecting poor recipient households. Acosta (2006) shows that this result is stronger for girls and younger boys than for other children in this country.

Can previous literature findings apply to other countries in the region with significant remittances flows and available micro data (the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, and Peru)?[7] Disparities in secondary enrollment rates in Latin America and the Caribbean range from about 80 percent in countries such as Chile and Argentina to less than 50 percent in countries like Mexico, El Salvador, the Dominican Republic, Nicaragua, Honduras, Guatemala, and Haiti (figure 2.4), which are also among the region's top receivers of international remittances.

Figure 2.4. Average Years of Education for Adults Age 22 to 65

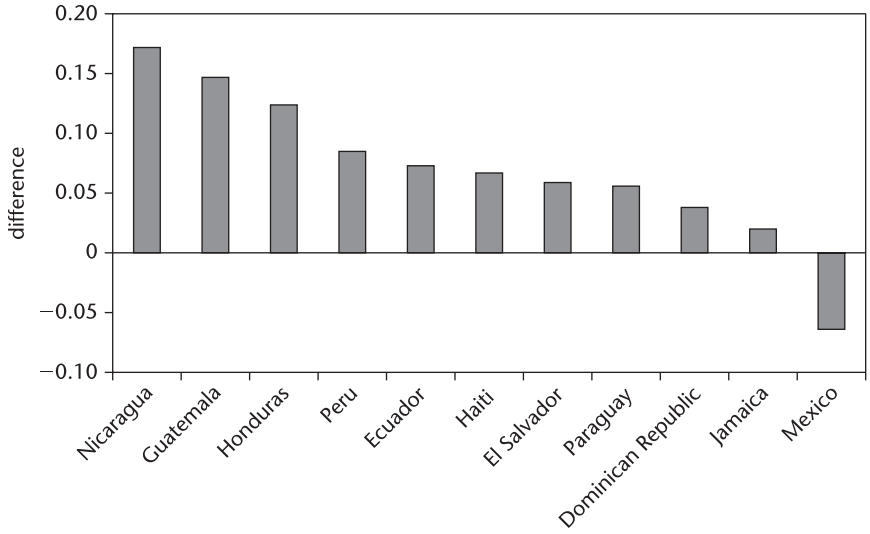


Source: Authors' calculations based on household surveys.

The claim that remittances could potentially have an important effect on education, by overcoming borrowing constraints and allowing increased investment in children's education, is illustrated by the comparison of enrollment rates among children age 12 to 17 across recipient and nonrecipient households (figure 2.5). With the one exception of Mexico, children from households reporting remittances are more likely to stay in school. The largest differences are obtained for Nicaragua, Guatemala, and Honduras, where enrollment rates are between 12 and 17 percent higher for recipient households than for nonrecipient households.

Of course, some of these differences could be attributed to the fact that households receiving remittances can be systematically different from their nonrecipient counterparts. Thus, it is necessary to control for observable demographic differences to test the robustness of the estimated effects of remittances on human capital. In addition, to assess the effect of remittances *and migration,* the human capital of recipients ideally should be compared to that of households that had similar levels of income before migration. In this respect, the study can use the above-noted estimates of the income of recipient households in that counterfactual scenario to compare the educational attainment of the children in those households with that of children of other households with similar social and economic conditions—alongside observed demographics—before migration. In particular, following a

Figure 2.5. Differences in School Enrollment Rates for 12–17 Year Olds by Remittances Recipient Status



Source: Authors' calculation based on household surveys.

specification close to that in Hanson and Woodruff (2003), equation (4) is estimated for children age 10 to 15 years old. Different estimations vary by gender and area of residence (urban and rural).

$$E_i = \alpha + \beta X_i + \gamma M_i + \lambda C_i + \delta R_i + \varepsilon_i, \tag{4}$$

where E_i represents the number of school grades completed by child i, and X_i is a vector of child and household characteristics (age of the child, a dummy for the child being the oldest child in the household, indicators for the number of children of different ages in the household, the presence of a zero- to five-year-old child, and family home ownership), including quintile indicators for the counterfactual income that migrant households would have had in the absence of migration. These quintiles are constructed by ranking households according to per capita income levels, after inputting counterfactual incomes for households reporting positive remittances according to the procedure described in previous chapter sections.[8] Equation (4) also includes a set, M_i, of characteristics of the child's mother (indicators for mother's education, marital status, and head-of-household status and a quartic in mother's age). C_i represents community characteristics (the proportion of households with sanitary services in the county of

residence, the proportion of household heads working in agricultural activities in the county of residence, and state/province indicators). R_i is a dummy variable for households that receive remittances (the sample also includes nonrecipients), and ε_i is a random error. Table 2.8 presents regression estimates for the δ coefficient on the main variable of interest, R_i.

Table 2.8. Access to Remittances and Children's Education: OLS

Age group	10–15 years old			
Dependent variable	Accumulated schooling			
	Rural		Urban	
Country	Boys	Girls	Boys	Girls
Mexico	−0.149 (0.129)	0.113 (0.095)	−0.023 (0.177)	−0.235 (0.192)
El Salvador	0.482*** (0.110)	0.312*** (0.097)	0.245** (0.098)	−0.010 (0.097)
Guatemala	0.448** (0.177)	0.313* (0.164)	0.291 (0.230)	0.454** (0.177)
Honduras	0.427*** (0.100)	0.495*** (0.098)	0.298*** (0.078)	0.360*** (0.080)
Ecuador	0.187 (0.149)	0.112 (0.151)	0.289** (0.125)	0.314** (0.134)
Paraguay	−0.012 (0.195)	0.208 (0.182)		
Haiti			0.098 (0.107)	0.244** (0.098)
Peru			−0.070 (0.146)	0.157 (0.120)
Nicaragua[1]	0.437*** (0.153)	0.375*** (0.133)		
Jamaica[1]	−0.114 (0.150)	−0.005 (0.113)		
Dominican Republic[1]	0.077 (0.107)	0.118 (0.094)		

Source: Authors' calculations based on household surveys.

Note: The set of controls includes the age of the child; a dummy for the child being the oldest in the household; indicators for mother's education, marital status, and head-of-household status, and a quartic in mother's age; indicators for the number of children of different ages in the household and the presence of a child zero to five years old; family home ownership; counterfactual income quintiles; the proportion of households with sanitary services in the county of residence; the proportion of household heads working in agricultural activities in the county of residence; and state/province indicators.

1. Rural and urban areas together.

***Significant at 1% level. **Significant at 5% level. *Significant at 10% level.

The results suggest that "access to remittances" is positively and significantly associated with higher educational attainment in 6 of 11 countries, the exceptions being Mexico, Paraguay, Peru, Jamaica, and the Dominican Republic. The estimated positive impact of remittances varies by gender and across rural and urban areas—for example, in Ecuador an impact is found only for urban areas. Because the actual amount remitted is likely to have a differential impact, depending on the magnitude of the transfer, the analysis is replicated to examine the impact of the per capita value of remittances received by the household. Given this alternative measure for remittances, the results suggest that higher flows increase schooling in the Dominican Republic and among boys in urban Mexico.

A potential methodological concern associated with the above results is that unobserved household characteristics that affect households' propensity to have migrants and receive remittances could drive decisions to keep children in school. The present study attempted to use instruments to address this simultaneity bias but failed to find ones that are sufficiently correlated with the migration status of households and yet do not otherwise affect the educational attainment of children. Some variables—such as the fraction of households that receive remittances in the county and that fraction's interaction with household characteristics—have passed standard specification tests for instrumental variables, but because the size of the sample of children age 10 to 15 is relatively small, coefficients and standard errors increased considerably in comparison with ordinary least squares. This finding led the study to focus on the latter and to rely on the assumption that controlling for parental schooling reduces the effect of unobservable household characteristics linked to human capital investments and migration—for example, how much households value human capital.

As noted above, previous evidence on Mexico has suggested that the positive effects of remittances on schooling vary with the educational attainment of parents (Hanson and Woodruff 2003; McKenzie and Rapoport 2006); these effects are generally larger when parents' educational attainment is low. Differential effects of this sort could be due to the fact that among poorer households—with lower levels of adult schooling—remittances could have a more sizable effect in terms of relaxing budget constraints that keep children out of school. But remittances could have a smaller impact on education when the schooling of parents is low if less educated parents prefer noneducational expenditures to educational expenditures. To find out which effect dominates, the study re-estimates equation (4) by adding an interaction term between remittances (R_i) and a variable that indicates whether the mother has four or more years of education. Table 2.9 reports the corresponding results.

The findings confirm those of previous papers on Mexico, suggesting that the positive effect of remittances on education tends to be larger when parents'

Table 2.9. Remittances and Children's Education by Mother's Education

Age group		10–15 years old			
Dependent variable		Accumulated schooling			
		Rural		Urban	
Country	Variable	Boys	Girls	Boys	Girls
Mexico	Receive remittances	−0.082	0.329**	−0.041	−0.573
		(0.192)	(0.141)	(0.329)	(0.553)
	Receive remittances*	−0.144	−0.417**	0.024	0.461
	Mother educ. 4 years or more	(0.240)	(0.186)	(0.378)	(0.577)
El Salvador	Receive remittances	0.511***	0.251**	0.365**	−0.191
		(0.129)	(0.115)	(0.170)	(0.186)
	Receive remittances*	−0.116	0.229	−0.203	0.297
	Mother educ. 4 years or more	(0.212)	(0.176)	(0.197)	(0.206)
Guatemala	Receive remittances	0.482**	0.223	0.412	1.109***
		(0.200)	(0.186)	(0.337)	(0.231)
	Receive remittances*	−0.179	0.450	−0.323	−1.336***
	Mother educ. 4 years or more	(0.389)	(0.318)	(0.408)	(0.315)
Honduras	Receive remittances	0.581***	0.662***	0.731***	0.554***
		(0.142)	(0.155)	(0.178)	(0.209)
	Receive remittances*	−0.317*	−0.328*	−0.564***	−0.247
	Mother educ. 4 years or more	(0.193)	(0.184)	(0.193)	(0.220)
Ecuador	Receive remittances	0.278	−0.106	0.502	0.805*
		(0.233)	(0.237)	(0.331)	(0.463)
	Receive remittances*	−0.138	0.386	−0.239	−0.547
	Mother educ. 4 years or more	(0.277)	(0.287)	(0.344)	(0.475)
Paraguay	Receive remittances	0.056	0.433*		
		(0.271)	(0.235)		
	Receive remittances*	−0.133	−0.476		
	Mother educ. 4 years or more	(0.374)	(0.345)		

(*Table continues on the following page.*)

Table 2.9. (Continued)

Age group		10–15 years old			
Dependent variable		Accumulated schooling			
		Rural		Urban	
Country	Variable	Boys	Girls	Boys	Girls
Haiti	Receive remittances			0.043	0.273**
				(0.120)	(0.111)
	Receive remittances*			0.229	−0.111
	Mother educ. 4 years or more			(0.237)	(0.220)
Peru	Receive remittances			0.187	0.393***
				(0.296)	(0.144)
	Receive remittances*			−0.362	−0.343*
	Mother educ. 4 years or more			(0.338)	(0.207)
Nicaragua[1]	Receive remittances	0.577**	0.554**		
		(0.260)	(0.221)		
	Receive remittances*	−0.208	−0.296		
	Mother educ. 4 years or more	(0.310)	(0.258)		
Jamaica[1]	Receive remittances	0.510	−0.236		
		(0.465)	(0.435)		
	Receive remittances*	−0.668	0.253		
	Mother educ. 4 years or more	(0.484)	(0.443)		
Dom. Rep.[1]	Receive remittances	−0.148	0.301		
		(0.242)	(0.208)		
	Receive remittances*	0.282	−0.242		
	Mother educ. 4 years or more	(0.263)	(0.230)		

Source: Authors' calculations based on household surveys.

Note: Regressions include the same set of controls as in table 2.8.

1. Rural and urban areas together.

***Significant at 1% level. **Significant at 5% level. *Significant at 10% level.

schooling is low. For instance, among rural girls in Mexico, Paraguay, and Peru,[9] the present study's previous results suggested no effect of remittances on educational attainment, but now the study identifies a positive and significant effect for children whose mothers have at most three years of educational attainment; for the remaining children, the study estimates the effect to be close to zero, although slightly negative in Mexico and Paraguay. Similarly, in Guatemala and Honduras, some of the previously estimated positive effects of remittances are now found to be larger in magnitude for children with uneducated mothers and considerably smaller for those whose mothers have at least four years of schooling.

Overall, with the addition of Paraguay and Peru to the list of countries where remittances affect educational attainment, only two countries (Jamaica and the Dominican Republic) are left in which the effects of remittances on educational attainment always insignificant. As for the differences by gender and urban status, the study's estimation results allow no easy generalizations and suggest that the various potential effects of migration and remittances—relaxation of budget constraints, social disruption, and changes in the returns of schooling—carry different relative weights, depending on the country and socioeconomic group involved. In any case, it appears that remittances tend to relax budget constraints that otherwise would have forced children to leave school and reduce their educational attainment, but this effect is sometimes restricted to children with less educated mothers.

Health Outcomes

Few papers have addressed the impact of migration and remittances on child health, and the exceptions are mostly focused on infant mortality. For instance, Brockerhoff (1990) and Ssengonzi, De Jong, and Stokes (2002) investigate the effects of female migration on child survival chances in Senegal and Uganda, respectively. They find that rural-to-urban migration significantly increases child survival chances. Kanaiaupuni and Donato (1999) analyze the effects of village migration and remittances on infant survival outcomes in Mexico and conclude that remittances reduce infant mortality. However, the authors reach the opposite conclusion for the effect of migration: communities experiencing intense migration have higher rates of infant mortality than communities with less intense migration. Finally, using data on Mexican municipalities, Lopez-Cordova (2005) concludes that larger proportions of remittances and migrant households at the community level are associated with lower infant mortality rates.

In the case of Mexico, Hildebrandt and McKenzie (2005) provide evidence on migration's impact on other child health outcomes. Their results show that migrant households have lower rates of infant mortality and higher birth weights

than nonmigrant households. Moreover, they find evidence that migration also raises maternal health knowledge and the likelihood that children are delivered by a doctor. On the other hand, children from migrant households appear to be less likely to receive preventive health care (breastfeeding, visits to doctors, and vaccinations).

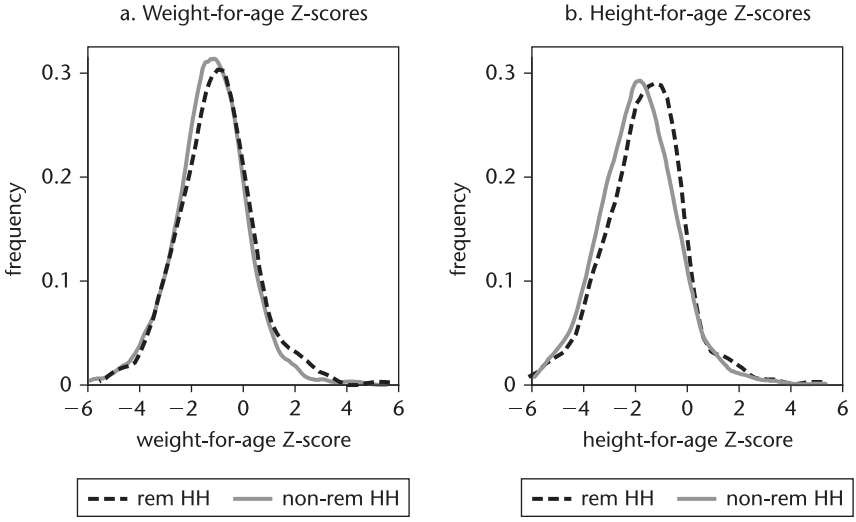
No previous study has investigated the impact of remittances and migration on young children's anthropometric indicators (weight for age and height for age), which are considered to be important measures of the health dimension of human capital accumulation and which are extensively cited in the literature of health economics. For instance, Hoddinott and Kinsey (2001) show that external shocks drastically affect child growth in developing countries. In medicine, the consensus is that weight and height are good indicators of health status and that each has different consequences in the short and long run. For instance, lower weight is usually associated with malnutrition and higher mortality risk, and lower stature in childhood is strongly correlated with lower body size in adulthood, which has negative consequences for earnings and productivity (Thomas and Strauss 1997), and with increased risk of cardiovascular and lung diseases.

This section assesses the effect of international migrant remittances on anthropometric health indicators that are typically used in the health literature and that are known to be linked with child growth. In addition, it estimates the impact of remittances on other health measures, such as those addressed in Hildebrandt and McKenzie (2005), including the probability that the delivery of children born in the year preceding the survey was assisted by a doctor and the probability that children age two to five received the complete set of required vaccinations. The anthropometric measures on which the present study focuses are the weight-for-age and height-for-age Z-scores (WAZ and HAZ) for children age one to five. These standardized measures of performance in weight and height consist of a comparison of each child of a given age to a reference group. The reference tables for WAZ and HAZ are taken from the U.S. Centers for Disease Control (CDC) growth charts for the United States (Kuczmarski et al. 2000).[10] The following formula is used for calculating the Z-scores:

$$Z = \frac{\left[\left(\frac{X}{M}\right)^{L} - 1\right]}{LS}, \tag{5}$$

where X is the measure of interest (weight, height) for the child, M is the median of the corresponding variable, S is the generalized coefficient of variation, and L is the power in the Box-Cox transformation taken from the CDC reference tables for a given age group. To avoid extreme values and outliers due to misreporting, the

Figure 2.6. Anthropometric Measures for Children Age one to five, by Remittances Recipient Status: Guatemala



Source: Authors' calculations based on household surveys.

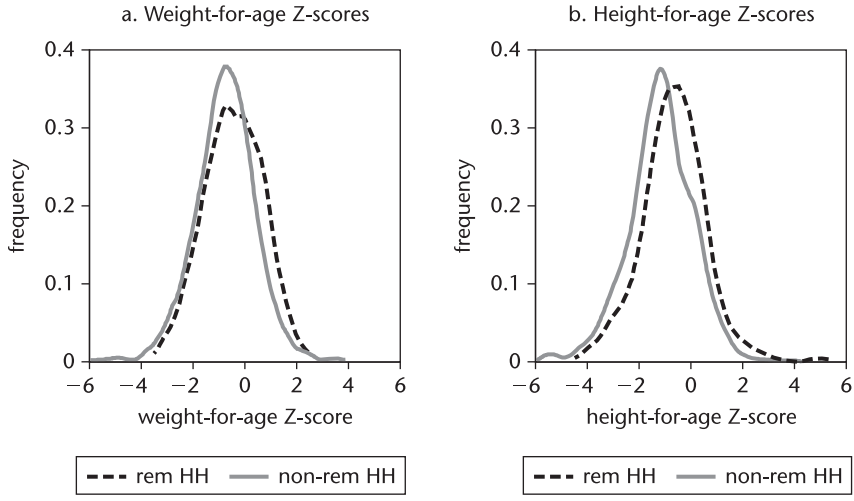
Notes: rem = ? non-rem = ? HH = households.

study follows Hoddinott and Kinsey's (2001) recommendation to drop children with Z-scores greater than 6 or lower than −6. The original reference tables account for children of 1.5, 2.5, 3.5 months, and so on; to match the present study's data, the reference months are rounded up (that is, 1.5 months in the reference table are equal to 2 months).[11]

Figures 2.6 and 2.7 show the distribution of weight-for-age and height-for-age anthropometric Z-scores for Guatemala and Nicaragua, the only two Latin American countries for which the available household surveys provide the information needed to calculate the health indicators (weight and height of young children) employed in this section. The study used kernel densities to estimate plot densities of the above-described anthropometric indicators for children age one to five years old from remittance recipient and nonrecipient households. The figures show that children from recipient households have both higher WAZ and HAZ. Kolmogorov-Smirnov tests reject the equality of distributions for recipient and nonrecipient households and suggest that remittances are in fact associated with higher anthropometric scores for children.

To test whether these results are driven by the differential characteristics of households with and without migrants, the study estimates a regression model similar to the one used for educational attainment—equation (4)—changing only

Figure 2.7. Anthropometric Measures for Children Age one to five, by Remittances Recipient Status: Nicaragua



Source: Authors' calculations based on household surveys.

the dependent variable, from years of schooling to the four health indicators measured above. In addition to this basic specification, the study estimates a modified version of equation (4) in which the indicator for remittances recipients is interacted with a dummy variable for the second quintile of the income distribution—using the counterfactual income before migration—and a dummy for households located in the third, fourth, and fifth quintiles.[12]

Table 2.10 reports the corresponding results, including the coefficients on free-standing dummy variables for the second, third, fourth, and fifth income quintiles. As confirmed by the study's estimates, both weight-for-age and height-for-age indexes tend to increase monotonically and significantly with household income, as does the likelihood of doctor-assisted deliveries in the case of Nicaragua. Moreover, controlling for premigration income, children from households receiving remittances tend to exhibit better health outcomes than children from nonrecipient households with similar demographic and socioeconomic characteristics. The relatively small sample sizes make most of the estimated interactives between remittances and income quintiles insignificant from a statistical point of view, but in most cases the results clearly indicate that the impact of remittances on children's health is concentrated in low-income households in the first quintile of the income distribution.

Table 2.10. Remittances and Health Outcomes

Country	Guatemala				Nicaragua			
Dependent variable	Weight-for-age Z-score	Height-for-age Z-score	Received all vaccines	Child delivered by doctor	Weight-for-age Z-score	Height-for-age Z-score	Received all vaccines	Child delivered by doctor
Remittances	0.211** (0.089)	0.213 (0.228)	0.065** (0.021)	0.255*** (0.160)	0.306 (0.394)	0.289 (0.347)	0.119 (0.225)	0.297** (0.090)
Remittances Q2*	−0.327 (0.283)	0.084 (0.264)	−0.082 (0.079)	−0.034* (0.007)	−0.370 (0.457)	−0.079 (0.421)	0.034 (0.275)	−0.463* (0.225)
Remittances Q3-Q4-Q5*	−0.423 (0.272)	0.004 (0.253)	−0.041 (0.071)	−0.036*** (0.006)	−0.252 (0.418)	−0.148 (0.385)	0.071 (0.252)	−0.623*** (0.114)
Q2	0.117** (0.058)	0.141** (0.060)	0.011 (0.011)	0.006 (0.015)	0.154* (0.085)	0.230** (0.091)	−0.028 (0.047)	0.104* (0.060)
Q3	0.233*** (0.060)	0.385** (0.067)	0.016 (0.013)	0.054*** (0.025)	0.077 (0.099)	0.327*** (0.109)	−0.011 (0.054)	0.085 (0.070)
Q4	0.325*** (0.073)	0.479** (0.076)	0.010 (0.016)	0.023 (0.023)	0.263** (0.117)	0.594*** (0.113)	−0.126 (0.062)	0.168* (0.079)
Q5	0.594*** (0.091)	0.686** (0.098)	0.026 (0.018)	0.013 (0.025)	0.352** (0.138)	0.594*** (0.136)	−0.102 (0.078)	0.263** (0.082)

Source: Authors' calculations based on household surveys.

Note: Regressions include the controls reflected in table 2.5.

***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

Conclusion

This chapter explores the development impact of remittances in 11 Latin American countries and yields four major findings. First, in general, remittances appear to lower poverty levels in recipient countries. This result is robust to the use of counterfactual scenarios that input the potential contribution that the migrant may have made at home. Second, the estimated impact of remittances on poverty nevertheless tends to be modest in all the experiments performed. Clearly, when the counterfactual scenario is one of no migration, the result is even more modest than when the counterfactual is one of no remittances. Third, country heterogeneity in the results is significant. Factors that may lead to a particular outcome in a given country include the percentage of households receiving remittances, the share of those with remittances belonging to the lowest quintiles of the income distribution, and the dollar amount of remittances with respect to GDP. Fourth, although remittances appear to increase the educational attainment of children in some specific groups—defined by country, gender, and urban status—the impact is often restricted to children with low levels of parental schooling. Thus, once again, the positive development impact of remittances must be qualified. In the case of health outcomes, the results are restricted to two countries—Nicaragua and Guatemala—in both of which remittances appear to improve children's health, particularly in low-income households.

Notes

1. For comprehensive reviews, see IMF (2005), World Bank (2006), and IDB (2005), all of which examine the economic and development implications of remittances and migration.

2. The literature has also focused on the impact of remittances on other economic variables and measures of development. See, for example, Yang (2006) for the impact of remittances on intertemporal consumption smoothing, Ruiz-Arranz and Giuliano (2005) on growth, Amuedo-Dorantes and Pozo (2004) on risk management, Cox-Edwards and Ureta (2003) and Hanson and Woodruff (2003) on education, Rodriguez and Tiongson (2001) on labor supply, Woodruff and Zenteno (2007) on entrepreneurship, and Amuedo-Dorantes and Pozo (2004) and Rajan and Subramanian (2005) on external competitiveness.

3. For example, Deaton (2005) estimates that, on average, survey income is less than 60 percent of GDP and discusses the reasons for discrepancies between survey- and national accounts-based estimates.

4. The percentage of households receiving remittances in the same county (or province) is a proxy for migration networks at the county (province) levels. Previous literature has used migration networks as instruments for migration and remittances to assess their impact on development outcomes (Hanson and Woodruff 2003; Lopez-Cordova 2005; Acosta 2006; Acosta et al. 2006; Woodruff and Zenteno 2007). In the countries under analysis, the correlation between the fraction of recipient households in each county or province and the per capita income of nonrecipient households in the same area is not significantly different from 0 in 9 of 11 cases (where it varies from −0.038 to 0.043) and is still very low in the other two cases (0.14 in Haiti and 0.16 in Peru).

5. The results presented in the last two columns of panel B in tables 2.4–2.7 are preferred estimates. However, estimated poverty effects of remittances calculated without correcting for selectivity or

changes in household size are available from the authors on request. Those results may be relevant for readers interested in assessing the separate impact on those results based on counterfactual income estimates of correcting first for selectivity and second for changes in household size.

6. The (very small) poverty-increasing remittances effects obtained for Mexico suggest that remittances do not compensate for the fall in income associated with migration. This result is to some extent counterintuitive and could be due to the presence of unobserved characteristics that reduce households' income-generation capacity and increase their willingness to migrate—for example, persistent unemployment and failing crops. If this negative selection into migration driven by unobservable household characteristics prevails over positive selection effects, households' counterfactual income before migration could be overestimated. An alternative explanation could be linked to the possible underreporting of remittances income.

7. Bolivia is excluded due to limited observations of children from remittances-receiving households. Jamaica, which was not included in the previous section due to the lack of nonremittances income data in the corresponding survey, is included in the analysis of educational attainment.

8. Because nonremittances income information is lacking in the survey, the regressions for Jamaica control for quintiles in counterfactual expenditure per capita rather than for income per capita.

9. In the case of Peru, the sample includes both urban and rural children to achieve sufficient variation.

10. Reference tables can be found at www.cdc.gov/nchs/about/major/nhanes/growthcharts/datafiles.htm.

11. For WAZ, the original tables used are the "Weight-for-age charts, birth to 36 months" for children from 0 to 36 months. For older children, values were extrapolated using the "Weight-for-age charts, 2 to 20 years." Similarly, for HAZ the reference tables used are "Length-for-age charts, birth to 36 months" for children from 0 to 36 months and "Stature-for-age charts, 2 to 20 years" for older children.

12. The third, fourth, and fifth quintiles are grouped due to the relatively small sample size for some of the estimations.

References

Acosta, P. 2006. "Labor Supply, School Attendance, and Remittances from International Migration: The Case of El Salvador." Policy Research Working Paper 3903, World Bank, Washington, DC.

Acosta, P., C. Calderon, P. Fajnzylber, and H. Lopez. 2006. "Remittances and Development in Latin America." *World Economy* 29: 957–87.

———. Forthcoming. "What Is the Impact of International Remittances on Poverty and Inequality in Latin America?" *World Development*.

Adams, R. 2004. "Remittances and Poverty in Guatemala." Policy Research Working Paper 3418, World Bank, Washington, DC.

———. 2006. "Remittances and Poverty in Ghana." Policy Research Working Paper 3838, World Bank, Washington, DC.

Adams, R., and J. Page. 2005. "Do International Migration and Remittances Reduce Poverty in Developing Countries?" *World Development* 33: 1645–69.

Amuedo-Dorantes, C., and S. Pozo. 2004. "Workers' Remittances and the Real Exchange Rate: A Paradox of Gifts." *World Development* 32: 1407–17.

Barham, B., and S. Boucher. 1998. "Migration, Remittances, and Inequality: Estimating the Net Effects of Migration on Income Distribution." *Journal of Development Economics* 55: 307–31.

Brockerhoff, M. 1990. "Rural-to-Urban Migration and Child Survival in Senegal." *Demography* 27: 601–16.

Cox-Edwards, A., and M. Ureta. 2003. "International Migration, Remittances, and Schooling: Evidence from El Salvador." *Journal of Development Economics* 72: 429–61.

Deaton, A. 2005. "Measuring Poverty in a Growing World (or Measuring Growth in a Poor World)." *The Review of Economics and Statistics* 87 (1): 1–19.
Hanson, G. H., and C. Woodruff. 2003. "Emigration and Educational Attainment in Mexico." Mimeo, University of California, San Diego, CA.
Heckman, J. J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica* 47: 153–61.
Hildebrandt, N., and D. McKenzie. 2005. "The Effects of Migration on Child Health in Mexico." *Economia: Journal of the Latin American and Caribbean Economic Association* 6: 257–89.
Hoddinott, J., and B. Kinsey. 2001. "Child Growth in the Time of Drought." *Oxford Bulletin of Economics and Statistics* 63: 409–36.
IMF (International Monetary Fund). 2005. *World Economic Outlook 2005*. Washington, DC: IMF.
IDB (Inter-American Development Bank). 2005. *Beyond Small Changes: Making Migrants Remittances Count.* Washington, DC: IDB.
Kanaiaupuni, S., and K. Donato. 1999. "Migradollars and Mortality: The Effects of Migration on Infant Survival in Mexico." *Demography* 36: 339–53.
Kuczmarski, R., C. Ogden, L. Grummer-Strawn, K. Flegal, S. Guo, R. Wei, Z. Mei, L. Curtin, A. Roche, and C. Johnson. 2000. "CDC Growth Charts: United States." Advance Data from Vital and Health Statistics 314, National Center for Health Statistics, Hyattsville, MD.
Lopez-Cordova, E. 2005. "Globalization, Migration and Development: The Role of Mexican Migrant Remittances." *Economia: Journal of the Latin American and Caribbean Economic Association* 6: 217–56.
McKenzie, D., and H. Rapoport. 2006. "Can Migration Reduce Educational Attainment? Evidence from Mexico." Policy Research Working Paper 3952, World Bank, Washington, DC.
Rajan, R., and A. Subramanian. 2005. "What Undermines Aid's Impact on Growth?" Mimeo, International Monetary Fund, Washington, DC.
Rodriguez, E. R. 1998. "International Migration and Income Distribution in the Philippines." *Economic Development and Cultural Change* 46 (2): 329–50.
Rodriguez, E., and E. Tiongson. 2001. "Temporary Migration Overseas and Household Labor Supply: Evidence from Urban Philippines." *International Migration Review* 35: 1185–204.
Ruiz-Arranz, M., and P. Giuliano. 2005. "Remittances, Financial Development, and Growth." Working Paper 05/234, International Monetary Fund, Washington, DC.
Schiff, M. 2006. "Migration's Income and Poverty Impact Has Been Underestimated." Discussion Paper 2088, Institute for the Study of Labor, Bonn.
Ssengonzi, R., G. de Jong, and C. Stokes. 2002. "The Effect of Female Migration on Infant and Child Survival in Uganda." *Population Research and Policy Review* 21: 403–31.
Taylor, J. E., J. Mora, R. Adams, and A. Lopez-Feldman. 2005. "Remittances, Inequality, and Poverty: Evidence from Rural Mexico." Mimeo, University of California, Davis.
Thomas, D., and J. Strauss. 1997. "Health and Wages: Evidence on Men and Women in Urban Brazil." *Journal of Econometrics* 77: 159–85.
Woodruff, C., and R. Zenteno. 2007. "Migration Networks and Microenterprises in Mexico." *Journal of Development Economics* 82: 509–28.
World Bank. 2006. *Global Economic Prospects 2006*: *Economic Implications of Remittances and Migration*. Washington, DC: World Bank.
Yang, D. 2006. "Coping with Disaster: The Impact of Hurricanes on International Financial Flows, 1970–2001." Mimeo, University of Michigan, Ann Arbor.
Yang, D., and C. Martinez. 2006. "Remittances and Poverty in Migrants' Home Areas: Evidence from the Philippines." In *International Migration, Remittances, and the Brain Drain,* ed. C. Ozden and M. Schiff, 81–121. Washington, DC: World Bank.

3

DOES WORK MIGRATION SPUR INVESTMENT IN ORIGIN COMMUNITIES? ENTREPRENEURSHIP, SCHOOLING, AND CHILD HEALTH IN RURAL PAKISTAN

Ghazala Mansuri

Recent debates on "feasible globalization" have focused on the importance of opening international labor markets to low-skilled guest workers from developing countries. Some researchers argue that income gains from such a liberalization of labor markets would be large and could contribute significantly to a reduction in inequalities of wealth and opportunity, both within and across countries. Key to this view is the expectation that migrant remittances will fuel private investments in both physical and human capital in origin communities.

This chapter examines whether the investment choices of migrant households are indeed different from those of comparable nonmigrant households. The data come from rural Pakistan, where temporary work migration is substantial; more than one in four rural households report at least one migrant. Several aspects of work migration in rural Pakistan make it a particularly useful context for examining outcomes in a sending community. First, work migration is undertaken almost entirely by relatively young men who typically remain closely attached to their origin households and communities, returning frequently and sending substantial and regular remittances to their homes.[1] Second, migrants come largely

from relatively poor and low-skilled households that are likely to be otherwise credit constrained and to have high exposure to uninsured income risk. Third, rural poverty is significant, land ownership is highly unequal, and most human development indicators point to low investments in children. Almost one-third of rural children suffer from severe stunting, school enrollment and retention rates are low, and one-third of children are active in the labor market. Gender gaps in most outcomes are large. Migration-induced resource flows could, therefore, have a substantial impact on rural development and household welfare. In addition, they could reduce important inequalities of gender.[2]

Migration can, however, also create new constraints and change preferences in a direction that could dampen or even reverse potential investments. Migration-induced changes in family structure are of particular interest in this regard. In a primarily rural economy, male migration reduces available family labor, which can constrain agricultural and nonagricultural self-employment activity and, thus, incentives to invest in such activities. In rural Pakistan, this aspect of male absence is likely to create more stringent constraints, because female seclusion practices are common and female mobility is generally low, making it difficult for women to effectively undertake male labor in production.

At the same time, a substantial literature has identified important gender differences in preferences over the welfare of children and has shown, in particular, that investments in girls tend to increase significantly in contexts in which mothers exercise greater control over the use of household resources.[3] For human capital investments, therefore, male absence could be a boon, because it would tend to augment any direct resource effect of migration by changing the balance of household preferences over child schooling and health. Female headship is relatively uncommon in rural Pakistan, but not in migrant households. Almost one in five such households has no resident adult male and, given the relative youth of most migrants, migration occurs most often at a time in the family life cycle when crucial investments in child health and schooling need to be made. Furthermore, in a context in which ideals of female seclusion are important, male absence could increase households' social vulnerability, triggering additional restrictions on the mobility of young girls.

Finally, migration-induced disruption in family life could increase children's work burdens and responsibilities. Where mothers spend more time on household production, for example, the child care and housework responsibilities of girls tend to increase. Conversely, the absence of male labor could increase the work burden of older boys, particularly if their mothers are less mobile.

In summary, the direct resource effect of migration is likely to be mediated through the changes it induces in the structure of migrant households and their communities. Because these changes can either augment or dampen household

incentives to invest, the net effect of migration is likely to depend on the relative strength of these competing forces. Therefore, examining the specific channels through which particular effects emerge in a given context is important.

This chapter suggests that migration does indeed induce increased investments in both human and physical capital. This finding is based on data from the Pakistan Rural Household Survey (PRHS) 2001–02, a nationally representative multipurpose survey of rural households. However, the results also show that changes in household structure and preferences often dampen or delay the direct resource effect of migration.

Because individuals and households choose to migrate, many of the characteristics that influence the decision to migrate are likely to affect other household decisions, such as how much capital investment to undertake or how much to spend on children's education or health. The main econometric challenge in assessing the impact of migration on household investment decisions, therefore, is dealing with the endogeneity of the migration decision. One way to address this potential endogeneity problem is to identify selection in the migration decision by using instrumental variables. Many recent papers (including the three discussed in this chapter) use migration prevalence rates in origin communities as an instrument for the opportunity to migrate. However, any unobserved community characteristics, such as local labor market conditions or the availability or quality of health care services, could affect both household investment decisions and the propensity to migrate. What is really needed, therefore, is an instrument that influences a household's opportunity to migrate, that is uncorrelated with the outcomes of interest, and that varies across households in a community. All three papers discussed in this chapter develop such an instrument.

The following section discusses the data, the context, and the instrumentation strategy. The subsequent section examines the impact of migration on three types of capital investment: the pursuit of nonfarm enterprises, the purchase of major farm machinery, and the purchase of agricultural land. Results indicate that the timing of investments is sensitive to migration-induced changes in male labor availability, making differentiation of ongoing and completed migration episodes important in estimating the effect of migration on entrepreneurship and investment. Investment in nonfarm enterprises as well as in agricultural land and farm assets, such as tractors and tubewells, is significantly dampened when migration is ongoing but increases substantially once the migration episode is concluded and the migrant returns home.

The chapter's last two sections present evidence on the impact of migration on household investments in schooling and early childhood growth. Migration has a positive and extremely significant impact on height for age, particularly for girls. Moreover, when the sample is split into two age groups, this height advantage is sustained in the older age group, underscoring the long-term salutary benefits of

averting nutritional and other health shocks in early childhood. Estimation using child weight-for-age Z-scores yields similar results. The results also suggest that, as expected, selection into migration and community-level unobservables are quite important.

Migrant households make substantially larger investments in education than nonmigrant households. Children in migrant households not only are more likely to attend school, they also are more likely to stay in school and accumulate more years of schooling than their counterparts in nonmigrant households in the same village. They are also less likely to be involved in economic work and to report working for substantially fewer hours. Moreover, gender differentials in the gains from migration are large; relative gains for girls outstrip those for boys by a large margin, resulting in a substantial net reduction in gender inequalities in access to education.

Surprisingly, however, female headship appears to protect boys at the cost of girls. Adolescent girls in female-headed households are much more likely to drop out of school and consequently to have much lower school attainment. The opposite is true for boys, who do significantly better in school retention and accumulated grades. Does this finding reflect a differential impact of female headship on the work burden of children? The data do not support this assertion. Although both boys and girls work substantially more in female-headed households, no gender differences in work burden exist. Female headship also has no impact on the labor supply of adult women in the household. The PRHS contains no comprehensive data on time spent on household chores, domestic work, or child care, by either women or children. Whether such burdens will fall differentially on girls is unclear.

The findings in this chapter suggest, at any rate, that the positive effects of migration observed in the data do not derive from female headship but rather from the income effects of migration. If anything, female headship worsens some outcomes for girls. The context suggests that this phenomenon may be due to an increase in social vulnerability, rather than to preferences, because there are no negative enrollment effects and it is adolescent girls who are most likely to be withdrawn from school.

Data and Context

All three of the studies discussed in this chapter use data from the PRHS 2001–02. The survey contains a separate migration module that collected information on the migration history of each household member.[4] For migrants, data were also collected on the year and duration of migration, migration destination, remittances, and social networks accessed before and after migration. Migrants were

interviewed directly when possible. Otherwise, the individual designated as the male head of the household reported migration and other information for each migrant.

Information on remittances received by the household over the 12 months preceding the survey was collected in a separate module on transfers to and from the household. In addition, the survey contains detailed household and individual characteristics, including demographics, occupation, health, education, investment in farm and nonfarm assets, agricultural production, and household expenditure. Complete data are available for 2,531 rural households in 143 villages in 16 districts across all 4 provinces.

For purposes of the analysis, attention is confined to male migrants age 18 or older who migrated for economic reasons.[5] Using this definition, 977 men (about 15 percent of all men in this age range) are classified as migrants. There are detailed data on 816 of these for whom the migration section was completed. Of these, 32 percent were back from a migration episode in the survey year; the rest were current migrants. At the household level, 691 households (25 percent of all households) had at least one male migrant, and in about 40 percent of cases, the migrant had returned and was in the household for much of the survey recall period.

Information on migration was also collected at the village level by conducting a brief census in all 143 villages in the sample. The census asked each household whether any household member was currently living and working outside the village. This definition thus includes both domestic and international migrants. Using this definition, 14 percent of households report a current migrant.[6]

Migrant Characteristics, Migration Destination, and Return Migration

Since the focus of this work is on the impact of migration on the sending community, permanent out-migrants will tend to be excluded from the analysis by definition. This is partly due to the inability of a household survey in the sending community to trace families that had permanently left the village by the time of the survey. Second, if individual members of a household had left the village and set up permanent homes elsewhere, they were not considered household members and are therefore also excluded from the survey. Since the main channel through which such households or individuals could impact the outcomes of interest would be transfers to their extended families that remain behind, it is important to note that such transfers are in fact negligible.[7]

The median age at first migration in the sample is 22 and over two-thirds of migrants in the sample are married and have their spouses (and any children) living in the village. In fact, the typical migrant is either a household head (38 percent) or

an older son of the head (54 percent). This finding is suggestive of the extent to which migrants are attached to their families of origin in their villages.

Using survey data on per capita expenditures or a measure of wealth based on an asset index, migrant households are significantly wealthier than nonmigrant households. They also have almost three additional grades of schooling than nonmigrant households. However, they are significantly less likely to own a nonfarm business (11 percent compared with 14 percent for nonmigrant households) or to be engaged in agricultural production (53 percent as compared with 60 percent for nonmigrant households). They also own significantly less land than nonmigrant households. The only available measure of wealth that is not correlated with migration is a household's inherited land wealth. This indicates that migrants are drawn largely from the lower end of the wealth distribution. This is particularly so for international migrants. However, they are also much more likely to be active in the market for land.[8]

On average, migrants leave their communities thrice and stay away for a period of five years each time.[9] Close to a third had migrated to international destinations, primarily in the Middle East. Of the rest, the majority (over 80 percent) had moved to an urban destination within the country. The rest migrated to another rural area.

The importance of networks in determining the migration decision is evident in the sharp regional differences observed in the destination of migration as well as the variation in the extent of migration experience across the country. Migrants from the North-West Frontier Province (NWFP) and Baluchistan, for example, are much more likely to migrate abroad. However, while most international migrants from NWFP go to Saudi Arabia (the principal destination for migrants in the sample), their counterparts from Baluchistan are more likely to migrate to the United Arab Emirates and Oman, which are also closer to the coast of Baluchistan. For domestic migrants, the port city of Karachi is by far the main urban destination; however, domestic rural migrants tend to migrate largely within their own regions of origin (table 3A.1). At the provincial level, NWFP is, by far, the region with the most migration experience. The average proportion of migrant households per village is over 30 percent, as compared with the national average of 14 percent. However, there is significant variation in migration experience, at the village level, within all four provinces. In NWFP; for example, the percent of migrant households ranges from a low of 9 percent to a high of 78 percent. The range in Punjab is from 0 percent to 62 percent. This variation makes it possible to identify differences in migration opportunities at the village level and below.

The importance of migrant networks at destination is also clearly evident in the sample. More than two-thirds of migrants report knowing someone in their place of migration before they left. Almost 70 percent also report living with

someone they knew when they first arrived at their migration destination. Most migration also appears to be legal and a substantial number of migrants report moving with jobs in hand. Over one-half report that their first job was arranged by a family member, a friend, or a member of their clan (biradari). In contrast, only 7 percent acquired their first job through a recruiting agent. Almost one-half of all international migrants, and almost three-fourths of internal migrants, also report starting work almost immediately on arrival in the host country/region, and almost all (98 percent) succeeded in finding a job soon after migration.

While the data on migration costs are noisy, they suggest a very wide variation in costs by migration destination. International migrants report that they spend almost nine times as much as domestic migrants. Average reported migration costs were about Rs. 70,000 (US$1,250)[10] for international migrants, but only Rs. 8,122 ($145) for domestic migrants. It is unclear, however, whether migration destination is a function of premigration household wealth. International migrants are, not surprisingly, much wealthier than domestic migrants, using either per capita expenditures or an asset index. However, there is no difference in the inherited land holdings of domestic and international migrants. There is also no difference in the average educational level of international and domestic migrants.[11] Migration destination also does not appear to have a significant effect on the duration of a migration episode. Focusing on completed migration spells, international migrants were away almost two more years, on average, but the difference is only weakly significant (p-value $< .10$).

More than two-thirds of migrants report sending remittances to their families in the village, and three-fourths of those who sent remittances did so on a regular basis.[12] Migrants are more likely to remit if they are household heads, are married, and have children. They are also more likely to remit if they migrate abroad and are more educated.[13] On average, remittances-receiving households get Rs. 46,000 (about US$840) annually, of which about 63 percent is sent regularly. Not surprisingly, international migrants send much larger remittances than domestic migrants (Rs. 84,000 or US$1,500 as compared with Rs. 21,000 or US$382, on average).[14]

Community Migration Prevalence Rates and Selection into Migration

The main econometric challenge is examining the impact of migration on household behavior in an origin community where the migration decision is endogenous. Individuals and households choose to migrate, and many of the characteristics that influence the decision to migrate are likely to affect other household decisions, such as level of capital investment or level of investment in the education or health of children.

One way to address this potential endogeneity problem is to identify selection in the migration decision by using instrumental variables. A number of recent papers (including the three discussed in this chapter) have used migration prevalence rates in the origin communities as an instrument for the opportunity to migrate.

There is a large literature in labor economics that has documented the role of informal networks in securing employment (see, for example, the review of this literature by Montgomery [1991]). For workers seeking employment in unknown and distant labor markets, information problems are likely to be of even greater significance, increasing the value of such informal networks (Borjas 1992; Boyd 1989; Menjivar 1995).

Migrant networks are seen as reducing the costs of migration for potential migrants via two channels. First, they constitute an information network that can educate potential migrants about conditions in specific migration destinations as well as potential hazards and costs, both at home and in the migration destination (Massey et al. 1993), Orrenius 1999). Second, they serve to relax credit constraints (Genicot and Senesky 2004). A number of studies have also shown that networks increase the economic returns to migration (Munshi 2003).

All of this implies that the probability of migration should be higher for households residing in communities with significant migration experience, and this is indeed borne out in empirical studies.[15]

However, any number of unobserved community characteristics, such as local labor market conditions or the availability or quality of health care services, could affect both household investment decisions and the propensity to migrate.[16] What is really needed, therefore, is an instrument that varies across households within a community so that the effect of community-level unobservables can be removed.

The studies discussed in this chapter obtain within-village variation in the instrument in two ways. First, data from the village census on household land ownership are used to construct migration prevalence rates within landholding groups in the village. Access to migrant networks is expected to vary significantly across landholding groups within a village since inequalities in land ownership are pervasive (the mean land gini at the village level is 0.75), and access to land is an important marker of social and political status. This is also evident in village settlement patterns. Land is also acquired primarily through inheritance, often as a gift from parents during their lifetime, so a substantial change in land distribution due to migration is not likely.[17] Second, a feature of migration that is particular to the context under study is used to obtain household-level variation in this instrument. Mobility and seclusion restrictions on women typically require the presence of an adult male in the household.[18] Households with a single adult male are

therefore much less likely to undertake migration, and among households with more than one male, young men are more likely to migrate if the male they would leave behind is an older man.

The sections below describe the instruments used in each case in detail. The basic identification argument is that the incidence of migration, within landholding groups in the village, interacted with the appropriate household-level instrument, should affect a household's opportunity to send a migrant but is unlikely to be correlated with unobservable household or child attributes that affect the costs or returns to investment in physical or human capital. In all cases, village-fixed effects are used to clean out the potential impact of any time-invariant unobserved community characteristics that could be correlated with the migration prevalence rate. All specifications also include a set of exogenous household characteristics, including, in particular, the household's own inherited land holdings and a set of variables that capture household composition.

This last set of variables is important. One concern with excluding the number of adult males in the household is that this could exert a direct effect on both household investment decisions and the decision to migrate. Conditional on appropriate household demographic characteristics, the number of adult males exercises no additional influence on household decisions related to any child outcomes of interest.

This is not the case, however, with household investment in a family enterprise or in farm assets, however. In this case, I use only the age of the oldest male in the household to get household-level variation in the instrument and to directly control for the number of adult males in the second stage.

Of course, migration could also affect other aspects of household composition, including decisions regarding fertility and coresidence in extended families.[19] If so, it may not be correct to think of family size and composition as exogenous in examining the impact of male migration on investment in productive assets or in the health and education of children. It is therefore useful to verify if there is a need to be concerned about the endogeneity of any household demographic variables before turning to the main results.

Migration and Household Structure

Table 3.1 presents the results for five measures of household structure: size, coresidence of more than one nuclear family, the household's dependency ratio, the number of adult males, and female headship. The first row presents the ordinary least squares (OLS) coefficient of the migration effect. Two variables that capture the household's premigration wealth, its inherited land holdings and the maximum years of schooling of adults in the household, are included as controls.

Table 3.1. Migration and Household Structure

	Household size (1)	Household size (2)	Extended family (3)	Extended family (4)	Number of adult males (5)	Number of adult males (6)	Dependency ratio (7)	Dependency ratio (8)	Female head (9)	Female head (10)
Migrant household	1.06***	0.37	0.01	0.09	0.57***	0.61	−0.17***	−0.52	0.14***	0.23**
	[0.20]	[1.75]	[0.01]	[0.08]	[0.06]	[0.54]	[0.05]	[0.44]	[0.01]	[0.09]
Inherited land	0.22***	0.23***	0.00***	0.00***	0.09***	0.09***	−0.02***	−0.02***	−0.01***	−0.01***
	[0.02]	[0.02]	[0.00]	[0.00]	[0.01]	[0.01]	[0.00]	[0.01]	[0.00]	[0.00]
Years of schooling	0.05***	0.05***	0.00	0.00*	0.01***	0.01***	0.00	0.00	0.00	0.00
	[0.01]	[0.01]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Tehsil-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Author.

Note: Robust standard errors are in brackets. The dependent variable in (3) and (4) is an indicator that takes the value 1 if the household is made up of more than one nuclear family. Instrumental variables estimates: migrant household is endogenous. Instrument set: the village migrant network and the coefficient of variation of village rainfall.

*Significant at 10 percent. **Significant at 5 percent. ***Significant at 1 percent.

Regional differences in family structure that may be correlated with migration prevalence rates are cleaned out using fixed effects of tehsils.[20]

Ignoring selection (columns 1, 3, 5, and 9), migrant households are significantly larger, have more adult males, have a lower dependency ratio, and are much more likely to have a female head. After instrumenting for migration, however, the only discernible difference between migrants and nonmigrants is in the prevalence of female headship, where large differences remain. The instruments for migration are the overall migration prevalence rate in the village and the coefficient of variation of village rainfall. This, along with the earlier discussion of the determinants of migration and return migration, suggests that it is the opportunity to migrate that is influenced by the availability of adult males in the household, and not the other way around, so that households with low male endowments and in areas where the prevalence of migration is high are more likely to have female heads.

It is useful to note that there are also no discernible effects of migration destination on household structure, once tehsil-fixed effects are included. International migrants have only slightly larger households and more adult males, but the difference is not significant. There are also no differences in dependency ratios, the likelihood of a female head, or an extended family structure. International migrants are somewhat more likely to be heads of their households (60 percent as opposed to 52 percent for domestic migrants), to have a spouse in the household (89 percent as compared to 71 percent for domestic migrants), and to have children in the household (83 percent as compared to 67 percent), but the differences are insignificant once tehsil-fixed effects are included.

Return Migration, Entrepreneurship, and Investment

In the absence of credit markets, investment and business start-ups are likely to be sensitive to the wealth of potential entrepreneurs, determining not just who starts up a business, but also how existing businesses are run (Evans and Jovanovic 1989; Blanchflower and Oswald 1998; Paulson and Townsend 2004). For resource-constrained households, therefore, remittance flows from migrant members should serve to enhance business creation and investment.[21]

However, while migration is ongoing, the household also suffers a loss of adult male labor, which is often crucial in the establishment and continuation of a nonfarm family enterprise, as well as in agricultural production.[22] To the extent that male labor supply constitutes a binding constraint on investment in productive capacity, migrant households may only be able to undertake such investment once the migration episode is completed.

In the context of this study, such constraints may be tight. Migration is almost exclusively undertaken by relatively young men, and female mobility is quite low. Of course, the returning migrant may also have acquired new skills that could increase the returns to investment or could bring back the bulk of accumulated savings on his return.[23] Regardless, the implication is that the migrant's own labor/managerial contribution is essential to investment, and that nonresource-related constraints could therefore play a significant role in the timing of investment by migrant households. If so, disaggregating the investment behavior of migrant households with completed migration episodes from those with ongoing migration may be important. The evidence presented below shows that is indeed the case. Migrant households that have at least one resident returned migrant behave quite differently than those where no migrant has yet returned.

Three types of investments are considered: the setting up or expansion of a household nonfarm enterprise, the purchase of a major farm asset (a tractor or a tubewell), and the purchase of agricultural land. In the data, about one in five households reported owning a nonfarm business. Over one-half of the sample consisted of farm households, but only 8 percent had purchased some agricultural land in the past 10 years, and 12 percent reported owning a major farm asset.

Household enterprises were managed, by and large, by a male household member, primarily the household head or a son of the head, precisely the same household members most likely to undertake economic migration. Also, most enterprises were small family businesses. Only a third reported any full-time employees other than the person in charge of the business, and many operated from within the home. Farm production was also almost always male managed. In both cases, though, women provided considerable labor.

While the interest of this study is in examining how the migration cycle is likely to affect investment behavior, it is important to first examine the average impact of migration on household investment, since that is how most studies have proceeded.

Consider then the following regression model:

$$I_{jv} = \beta_1 M_{jv} + \beta_3 X_{jv} + \eta_v + \varepsilon_{jv}, \tag{1}$$

where I_{jv} is a measure of investment for household j in village v. M_{jv} is an indicator of whether the household has a migrant, and X_{jv} is a vector of exogenous household characteristics. Thus, β_1 estimates the investment differential between migrant and nonmigrant households. The error component, η_v, captures any unobserved factors common to a given village, such as variation in local labor market conditions or product markets, which could affect both a household's decision to migrate and its investment decisions. The second error component, ε_{jv}, reflects household-specific unobservables, such as preferences or ability, that are not contained in X_{jv}.

Since the decision to migrate could, in general, depend on unobserved differences in village characteristics, $E[\eta_v \mid M_{jv} = 1] \neq 0$, OLS estimates of β_1 are thus likely to be subject to selection bias. This selectivity bias is corrected by using village-fixed effects to purge η_v, so that attention can be confined to differences in investment among migrant and nonmigrant households within each village.

Differencing equation 1 across households within a village yields

$$I_j = \beta_1 M_j + \beta_3 X_j + \varepsilon_j. \tag{2}$$

However, this village-fixed effects estimator is not robust to correlation between M_j and ε_j, since the latter contains not just measurement error, but also unobserved attributes of the household that could be correlated with both investment and the decision to migrate. That is, in general, $E[\varepsilon_j \mid M_j = 1] \neq 0$, and OLS estimates of β_1 will still be biased. This potential endogeneity is dealt with by instrumenting for M_j as discussed above. Specifically, the principal instrument for M_j in equation (2) is the relevant within-land group migration prevalence rate for each household in a given village (VM_{lv}), the age of the oldest male adult in the household ($MAXMAGE_j$), and VML_{lv} interacted with $MAXMAGE_j$.

Tables 3.2–3.4 (columns 1 and 2) present the estimated effect of being in a migrant household on all three types of capital investment. Ignoring selection (column 1), migration has a significant negative effect on all three. Moreover, instrumenting for migration (column 2) only strengthens this negative effect. The instruments have significant power and easily pass the over identification test in each case. The set of exogenous variables also have the right sign. In particular, the household's inherited landholding is negatively correlated with investment in a nonfarm enterprise or the additional purchase of land, but is positively correlated with the purchase of major farm machinery. Household education affects all three investments positively, while the total number of adult male household members (including all migrants) seems to have an effect only for investment in agricultural land. The sign on the coefficient is positive in this case, as one might expect.

These results initially appear to be contrary to intuition and are also inconsistent with the findings of several recent papers that have examined the investment behavior of migrant and nonmigrant households. In particular, Yang (2004) shows that favorable exchange rate shocks in host countries generated greater entry into relatively capital-intensive enterprises by migrants' origin households in the Philippines.[24] In the context of rural Pakistan, Adams (1998) shows no effect of external remittance receipts on nonfarm asset accumulation in rural Pakistan. However, Adams treats remittances as an exogenous income source for the household. Finally, Woodruff and Zenteno (2001) show that, in Mexico, investment in small enterprises (mostly self-employment) is higher in states with higher migration rates and higher remittances receipts.[25]

Table 3.2. Impact of Return Migration on Household Investment in Nonfarm Enterprises

	(1)	(2)[a]	(3)	(4)[b]	(5)[c]
Migrant household	−0.08*** [0.02]	−0.22** [0.11]	−0.11*** [0.02]	−0.24*** [0.07]	−0.13*** [0.04]
Returned migrant			0.07** [0.03]	0.26** [0.11]	0.17** [0.08]
Inherited land	−0.00** [0.00]	−0.00*** [0.00]	−0.00** [0.00]	−0.00*** [0.00]	−0.00*** [0.00]
Maximum years of schooling in the household	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]
Number of adult males	0.02 [0.01]	0.02* [0.01]	0.02 [0.01]	0.02* [0.01]	0.02** [0.01]
Village-fixed effects	Yes	Yes	Yes	Yes	

Source: Author.

Note: Robust standard errors are in brackets. The dependent variables are an indicator for whether the household has a nonfarm enterprise. All specifications include three other demographic controls: the household's dependency ratio, household size, and an indicator that takes the value 1 if the household is made up of more than one nuclear family.

a. Migrant household is endogenous. Instrument set: (1) village migrant network within landownership groups (*nwland*), (2) maximum age of male household members (*maxmage*), and (3) *nwland* interacted with *maxmage*.

b. Migrant household and returned migrant are endogenous. Instrument set: a plus (1) maximum age of female household members (*maxfage*), (2) the mean education level of migrants in the household, and (3) an indicator for whether at least one migrant in the household is the household head.

c. Number of migrants and number of return migrants are endogenous: Instrument set: same as b.

*Significant at 10 percent. **Significant at 5 percent. ***Significant at 1 percent.

The results suggest that factors other than binding resource constraints may be important. In particular, if male absence poses an important constraint on investment, migrant households with resident returned migrants should make different investment choices than those with only ongoing migration episodes.

In the sample, almost 40 percent of migrant households had a resident returned migrant.[26] Moreover, in most cases, only one household member had migrated so that the majority of households with a returned migrant (over 70 percent) had no current migrant. This makes it easier to test whether households with at least one returned migrant had invested more than households where no migrant had returned.

The regression model in this case is

$$I_j = \beta_1 M_j + \beta_2 R_j + \beta_3 X_j + \varepsilon_j, \tag{3}$$

where R_j in (3) is an indicator for whether the household has at least one return migrant.

Table 3.3. Impact of Return Migration on Household Investment in Farm Assets

	(1)	(2)[a]	(3)	(4)[b]	(5)[c]
Migrant household	−0.05*** [0.02]	−0.24*** [0.09]	−0.05*** [0.02]	−0.17*** [0.06]	−0.14*** [0.05]
Returned migrant			−0.01 [0.02]	0.24* [0.14]	0.34** [0.16]
Inherited land	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]
Maximum years of schooling in the household	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]
Number of adult males	0.01 [0.01]	0.01 [0.01]	0.01 [0.01]	0.01 [0.01]	0.01 [0.01]
Village-fixed effects	Yes	Yes	Yes	Yes	

Source: Author.

Note: Robust standard errors are in brackets. The dependent variables are an indicator for whether the household owns a major farm asset (a tractor or tubewell). All specifications include two other demographic controls: the household's dependency ratio and household size.

a. Migrant household is endogenous. Instrument set: (1) village migrant network within landownership groups (*nwland*); (2) maximum age of male household members (*maxmage*), and (3) *nwland* interacted with *maxmage*.

b. Migrant household and returned migrant are endogenous. Instrument set: a plus the mean education of migrants in the household.

c. Number of migrants and number of return migrants are endogenous. Instrument set: same as b.

*Significant at 10 percent. **Significant at 5 percent. ***Significant at 1 percent.

Since R_j suffers from the same endogeneity problem as M_j, R_j is also treated as endogenous in equation (3), and three new instruments are added: the age of the oldest female in the household, an indicator for whether any migrant is also the household head, and the mean education level of migrants in the household.

All three instruments have high power and easily pass the overidentification test. The last two positively affect the odds of having a return migrant in the household, while the first affects it negatively, as one might expect.[27]

Tables 3.2–3.4 (columns 3–5) present the results. Ignoring selection (column 3), return migration has a positive effect on all three types of investment. However, the estimated effect is significant in only one case: investment in a household enterprise. After accounting for selection (columns 4 and 5),[28] it appears that households with return migrants invest significantly more in all three types of productive assets. In fact, the negative impact of migration on household investment in household enterprises, as well as in farm assets, is more than fully reversed once the migrant returns, and this is particularly so for investment in agricultural land.[29]

Table 3.4. Impact of Return Migration on the Purchase of Agricultural Land

	(1)	(2)[a]	(3)	(4)[b]	(5)[c]
Migrant household	0.01 [0.01]	−0.41*** [0.09]	0.00 [0.02]	−0.29*** [0.07]	−0.21*** [0.05]
Returned migrant			0.03 [0.02]	0.68*** [0.15]	0.73*** [0.18]
Inherited land	−0.00*** [0.00]	−0.00*** [0.00]	−0.00*** [0.00]	−0.00*** [0.00]	−0.00*** [0.00]
Maximum years of schooling in the household	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]	0.01*** [0.00]
Number of adult males	0.01 [0.01]	0.03*** [0.01]	0.01 [0.01]	0.02** [0.01]	0.02** [0.01]
Village-fixed effects	Yes	Yes	Yes	Yes	

Source: Author.

Note: Robust standard errors are in brackets. The dependent variable is an indicator for whether the household has purchased any land in the past 10 years. All specifications include two other demographic controls: the household's dependency ratio and household size.

a. Migrant household is endogenous. Instrument set: (1) village migrant network within landownership groups (*nwland*), (2) maximum age of male household members (*maxmage*), and (3) *nwland* interacted with *maxmage*.

b. Migrant household and returned migrant are endogenous. Instrument set: a plus the mean education level of migrants in the household.

c. Number of migrants and number of return migrants are endogenous. Instrument set: same as b.

*Significant at 10 percent. **Significant at 5 percent. ***Significant at 1 percent.

These results suggest that migration ultimately reduces wealth inequalities by allowing households, which otherwise would be credit constrained, to increase productive capacity. In particular, it appears to be an important channel through which poor landless rural households acquire resources to enter the land market.[30] This is even more significant since migrants as a group own substantially less land than other rural households. However, the impact of migration on household investment is likely to be quite sensitive to the location of a household in the migration cycle. Consequently, studies that focus exclusively on the average effect of migration could underestimate impact considerably, particularly in a population with substantial ongoing migration.

To the author's knowledge, Zhao (2002) is the only paper that has examined the effect of migrant return on a range of household investments. While Zhao's results are similar in some respects, there is an important difference. Zhao finds that families with return migrants in China invest more in farm assets. However, they are no more likely to engage in local nonfarm activities than are nonmigrant

families. One concern with Zhao's work is that, like Adams (1998), it does not account for selection into migration.

A final question of interest is whether the coefficient on return migration is picking up the effect of the migrant's enhanced skills and accumulated savings brought home rather than an increase in available male labor. Note first that while personal savings were, by far, the most important source of start-up funds for nonfarm enterprises, most migrants sent very substantial remittances to their households and did so on a regular basis. There is also no significant difference in observable measures of current wealth between migrant households with ongoing migration episodes and those with returned migrants.[31] It is unclear, therefore, that financial resources become available only when the migrant returns.

The evidence also does not support a substantial skill effect. Households with return migrants invest substantially more in productive assets like agricultural land where the relevance of any migration-related skill acquisition is unlikely to be high. Such skills may, of course, have greater relevance in business start-ups. Indeed, among migrant households with nonfarm enterprises, over one-half were created after the migrant's return, and over two-thirds were being managed by the returned migrant. Moreover, while only 16 percent of households with enterprises invested in tools, equipment, or machinery in the survey year, 25 percent of migrant households with returned migrants made such investments.

Is this simply because the migrant's return makes his labor available or does this labor also bring additional skills into the mix? This can be checked by examining the extent to which return migrants opt for nonfarm entrepreneurial activities, where arguably such skills are likely to be of the greatest relevance. Results from this analysis[32] indicate that return migrants are less likely to become entrepreneurs, though the coefficient is not significant. This result is robust to the addition of household-fixed effects, though the sample is considerably reduced since the relevant comparison now is between two adult males within a household, one of whom is a returned migrant.[33] This additional evidence casts further doubt on the possibility that the coefficient on return migration is capturing the effect of new productive or managerial skills.[34]

Impact of Migration on Child Schooling and Labor Market Activity

Low educational attainment in many developing countries has been viewed as arising, at least partly, from barriers to private investment, due to incomplete or absent credit markets. Migration, insofar as it releases such resource constraints, is expected to increase human capital investment among the poor. Moreover, where gender differences in educational attainment are large, a reduction in resource

constraints may also imply a reduction in gender inequalities in access to schooling since investment in the education of girls is more sensitive to household wealth (see figure 3A.1).

However, in a context where there is evidence of strong boy preference, as is the case in rural Pakistan, evidence of differentially better outcomes for girls due to migration may be capturing the effect of a rather different process: male migration often leaves women effectively in charge of their households. If women have more benevolent preferences toward their children, and particularly their daughters, women's ability to make decisions regarding the disposal of such resources due to the absence of males may well provide mothers with an opportunity to more easily realize their preferences with regard to investments in their children's education.[35]

The observed effect is that economic migration can also be disruptive of family life in any number of ways that could adversely affect school attainment. The absence of adult male labor may, for example, result in greater pressure on children to assist with housework, household production, or childcare. In environments where female seclusion practices are important, migration could, as discussed above, generate additional constraints on female mobility that could adversely affect incentives to send girls to school.

If these competing effects are important, female heads could face a potential conflict between their desire to invest in their children and the pressures generated by "male absence" with possible adverse consequences, particularly for the gender allocation of labor and schooling among children.

Mansuri (2006a) examines the effect of migration on schooling and child labor, focusing specifically on gender differentials in school attainment and labor market activity. The impact of female headship is examined by confining attention to migrant households and asking whether schooling and labor market outcomes vary significantly by female headship and whether there are discernible gender differentials in outcomes.

The impact of migration on school attainment and labor market activity is estimated using the following regression function:

$$S_{ijv} = \beta_1 M_{jv} + \beta_2 B_{ijv} + \beta_3 B_{ijv} M_{ijv} + \gamma_1 C_{ijv} + \gamma_2 X_{jv} + \eta_{jv} + \varepsilon_{ijv}, \qquad (4)$$

where S_{ijv} is a measure of school attainment for child i, in household j and village v. M_{jv} is an indicator of whether the household has a migrant, B_{ijv} is the child's gender, and C_{ijv} and X_{jv} are vectors of exogenous child and household characteristics. The mean zero error term η_{jv} captures the effects of unobserved factors common to a given village and household. The child-specific error term ε_{ijv} reflects measurement error in the schooling variables and potentially unobserved attributes of the child, including innate ability or parental preferences that vary by child

gender. The key difference between η_{jv} and ε_{ijv} is that while the latter is unlikely to be correlated with the migration decision, the former could influence both the decision to migrate and investments in human capital formation. At the village level, η_{jv} may, for example, include unobserved variation in local labor market conditions or in school quality, while at the household level, it could include preferences over human capital accumulation, access to credit or insurance markets, or costs that affect schooling but that are not observed in the data.

Since the instrument set used (as discussed above) varies at the household level, any time-invariant characteristics of the village can be differenced out so that attention can be confined to differences in the educational attainment of children in migrant and nonmigrant households within each village.

Differencing equation (4) across households within a village yields

$$S_{ij} = \beta_1 M_j + \beta_2 B_{ij} + \beta_3 B_{ij} M_j + \gamma_1 C_{ij} + \gamma_2 X_j + \zeta_{ij}, \tag{5}$$

where $\zeta_{ij} = \eta_j + \varepsilon_{ij}$.

As noted above, this village-fixed effects estimator is not robust to correlation between M_j and ζ_{ij}, since the latter contains not just measurement error, but also unobserved attributes of the household that could be correlated with household decisions regarding child schooling and labor market activity, as well as the decision to migrate. That is, in general, $\mathrm{E}[\zeta_{ij} \mid M_j = 1] \neq 0$, and OLS estimates of β_1 will still be biased. As before, this potential endogeneity is dealt with by instrumenting for M_j. The principal instrument for M_j in equation (5) is the relevant within-land group migration prevalence rate for each household in a given village (VM_{lv}), the number of adult males in the household (NA_j), and VML_{lv} interacted with NA_j. Additional instruments are constructed by interacting NA_j with the village land gini (VG).[36] These two instruments are interacted with the child's gender in order to estimate β_3.

The set of exogenous child characteristics, C_{ij}, include the child's gender; age and age squared; mother and father's level of education (in completed grades); number of other school-age siblings (age 6–17); number of siblings age 5 or younger, also interacted with the child's gender in order to ascertain any gender differences in childcare responsibilities; and the presence of an older brother or sister under age 18. The rationale for this last set of variables is that children who have older siblings may be less likely to be removed from school in the event of an unexpected income loss or to have fewer household production-related responsibilities. The set of exogenous household-level characteristics, X_j, includes a further set of demographic controls, specifically, an indicator for whether more than one married male with coresident spouse and children is in the household and the household dependency ratio. It also includes the household's inherited landholdings (in acres), the main control for household wealth.

Schooling

Most studies that have examined the impact of migration on child schooling have focused on accumulated schooling as measured in completed grades, regardless of whether the child ever attended school. Where enrollment rates are low, school withdrawal is substantial, and children are actively engaged in the labor market. Accumulated schooling is likely to reflect the combined effects of several distinct schooling decisions. This makes it important to disaggregate the impact of migration on accumulated schooling by examining schooling outcomes at both the intensive and extensive margin.

The survey contains data on schooling outcomes for 7,181 children age 5 to 17 who belong to 2,126 households. Of these, 29 percent belong to migrant households. In practice, the age at which children start school varies widely. However, very few begin school after age nine. In examining the school enrollment decision and accumulated schooling, therefore, the sample is restricted to children age 10–17 to ensure that estimates of enrollment and accumulated schooling are robust to potential late entry. In looking at retention rates, however, the sample includes only children 10–15, since this is the age group that is most at risk for dropping out of school during the transition point from primary to middle school.

Overall, 58 percent of children age 10–17 report having enrolled in school at some point. Of these, 38 percent had dropped out of school by the survey year. The bulk of dropouts, over 85 percent, had dropped out either before or at the end of primary school (grade 5).

While these overall rates of enrollment and retention are quite poor, they conceal very large gender differences. In the sample, 58 percent of girls age 10–17 had never been to school as compared with only 26 percent for boys in this age range. The picture only worsens when one looks at school retention rates. While only 25 percent of enrolled boys in the sample had dropped out by the survey year without completing high school, 44 percent of enrolled girls were no longer in school. Not surprisingly, boys also have significantly more years of schooling, completing an additional half grade more than girls on average (p-value 0.000).

The first four rows of table 3.5 present the estimation results for four measures of school attainment. The first specification in all cases (columns 1–3) presents the OLS estimates of the migration coefficient and its interaction with child gender under the assumption that the migration decision is uncorrelated with unobserved village and household attributes. The second specification (columns 4–6) instruments for migration using the instrument set described above. All specifications include the full set of child and household controls.

The migration effect is positive and significant for all schooling outcomes. Children in migrant households are not only more likely to attend school, they are also more likely to stay in school in the age range when school dropout rates

Table 3.5. Impact of Migration on Schooling and Child Labor

	OLS			IV		
	Migrant household	Migrant household*boy	Boy	Migrant household	Migrant household*boy	Boy
Enrollment	0.08***	−0.05*	0.32***	0.18*	−0.12**	0.34***
	[0.02]	[0.03]	[0.02]	[0.10]	[0.06]	[0.03]
School dropout	−0.08**	0.07	−0.26***	−0.26**	0.18**	−0.30***
	[0.04]	[0.04]	[0.04]	[0.13]	[0.09]	[0.05]
Accumulated schooling	0.23*	−0.08	1.28***	1.12**	−0.41	1.47***
	[0.12]	[0.15]	[0.12]	[0.51]	[0.33]	[0.16]
Progress through school[a]	0.13	−0.21	0.46***	1.18*	−0.99**	0.76***
	[0.16]	[0.19]	[0.12]	[0.62]	[0.42]	[0.19]
Any work (wage and nonwage)	−0.04***	0.04**	−0.02	−0.20**	0.08**	−0.03*
	[0.01]	[0.02]	[0.01]	[0.09]	[0.04]	[0.02]
Days worked	−4.16***	1.16	−0.07	−27.00***	−1.14	0.85
	[1.60]	[2.06]	[1.45]	[8.67]	[3.73]	[2.08]

Source: Author.

Note: Robust standard errors are in brackets. The full set of controls is described in the text. All specifications include village-fixed effects. Migrant household is endogenous. Instrument set: village migrant network and village land gini interacted with the number of adult males in the household.

a. Conditional on ever having enrolled.

*Significant at 10 percent. **Significant at 5 percent. ***Significant at 1 percent.

OLS = ordinary least squares.

peak and to have higher completed grades in their age cohort. Accounting for selection into migration only strengthens these results, indicating that the selection bias is negative.

The evidence also supports migration-induced gender differentials in enrollment rates, school retention, and accumulated schooling. Enrollment rates increase by 54 percent for girls in migrant households (from 0.35 to 0.54). In comparison, being in a migrant household raises enrollment rates for boys by only 7 percent (from 0.73 to 0.78). As a result, the gender gap in enrollment rates in migrant households is quite a bit smaller (at 0.24 as compared with 0.39 among nonmigrant households). Of course, since enrollment rates for boys are much higher to begin with, one might argue that raising the enrollment rates for girls should be easier. Even in this respect, though, the gains for girls are larger. The increase in enrollment closes the gap relative to 100 percent enrollment by 29 percent for girls, compared with 19 percent for boys.

The decline in dropout rates is also substantially larger for girls. The dropout rate for girls falls by 55 percent (from 0.56 to 0.25), while it declines by 44 percent for boys (from 0.25 to 0.14). As a consequence, the gender gap in dropout rates falls sharply (from 0.31 to 0.11). Once again, this implies that for girls the gap from 0 dropout rates is closed by 70 percent, while for boys this gap is closed by 44 percent.

In contrast, the gender differential in accumulated schooling is rather small. Girls in migrant households have about 1.5 more years of schooling compared with their counterparts in nonmigrant households in the same village, while boys have about a grade more. Significantly though, prospects of migration in the future appear to exercise no effect on years of schooling for either boys or girls.

Once the sample is restricted to children who enrolled in school at some point, larger differences in accumulated schooling for girls and boys are observed. In fact, comparing children within migrant households, girls actually exceed boys in absolute terms, completing about a fifth of a grade more. The increase in accumulated schooling for girls is also larger than for boys if children in migrant households are compared with children in nonmigrant households. While girls in migrant households complete almost two grades more than girls in nonmigrants households, boys complete a little less than a grade more than boys in nonmigrant households. The net effect is that in nonmigrant households, boys are almost a full grade ahead of girls in their age cohort, while in migrant households, girls more than make up the gap, exceeding boys in their age cohort by 0.2 grades.

The instrumental variables (IV) results, though strong, could well underestimate the impact of migration on education, since schooling investments are time sensitive. Mansuri (2006a) compares siblings within a household before and after

migration to check this. The results indicate that children who attain school age after the household's first migration episode do much better than those who are too old to benefit.

Since there is no gender difference in the average age in first grade, the evidence suggests either a disproportionate benefit to girls from improved household capacity to bear income risk or a higher incidence of migration-generated burdens on boys.

Child Labor

As might be expected, there is a strong negative correlation among school enrollment, school retention, and labor market activity. Children who are enrolled in school are significantly less likely to report work and work fewer days than those who are never enrolled in school, and the differences are large, particularly for children between the ages of 10 and 17. Children who drop out of school are also significantly more likely to report some work and to work more days than children who remain in school. This suggests that there could be a trade-off between child labor activity and time spent in school, at least for some households.

The survey contains labor market participation information for 5,780 children age 7 to 17 who belong to 1,992 sample households. There are data on five major categories of work. Work on the family farm, agricultural wage work, work on a family enterprise or home-based productive activity, nonfarm wage work, and care of livestock. For children up to age 13, there is also information on time spent on fetching firewood and water. Two definitions of work can be constructed using these data. The more restrictive definition (I) includes only directly income-generating activities. It therefore excludes livestock care and the fetching of firewood and water. The less restrictive definition (II) includes all work.

Using the more restrictive definition, 18 percent of all children in the age group 7–17 report doing some work, and among children age 15 and up, more than a third report some work activity. Interestingly, there appears to be little difference in reported work activity by gender. Using an eight-hour work day and 30 days of work per month, the median days worked by children who report some labor market activity is 1.3 months over a one-year period. The average number of days worked is substantially higher at two months, since there is a strong positive correlation between age and labor market participation. Again, there are no discernible gender differences in days worked. While boys work 12 more days, on average, per year, this difference arises entirely from children 16 and older where boys work for 24 more days per year than girls (p-value $< .00$). In all other age groups, the difference is small and insignificant. If the broader definition of work is used, the labor activity of children age 7–17 rises to 29 percent. The median number of days

worked is close to two months and the average number of days worked rises to about three months.

The principal work activity of children is unpaid work on the family farm. Sixty-three percent of working children report working on their own family farms. However, more than a third (35 percent) also report working as agricultural wage labor, and 13 percent report working on a family enterprise. In contrast, only 8 percent report working as nonfarm wage labor. There are strong gender differences in the type of work undertaken by male and female children. Boys are much more likely to work on the family farm (68 percent of boys and 58 percent of girls: p-value $< .000$), but girls are more likely to work on the household's nonfarm enterprise (16 percent of girls and 10 percent of boys: p-value $< .00$). Girls are also more likely to work as agricultural wage workers (51 percent of girls as compared to only 20 percent of boys: p-value $< .0000$), while boys are more likely to do nonagricultural wage work (14 percent of boys but only 2 percent of girls: p-value $< .0000$). These differences are consistent with other work that has highlighted mobility constraints for girls, particularly after adolescence.[37] Nonagricultural wage work typically requires travel outside the village and is often undertaken individually. In contrast, agricultural wage work is typically undertaken jointly with other family members, particularly other adult females. There is also a pronounced age difference. Both measures of labor market activity use the more restrictive definition of work pattern. Wage labor is largely undertaken by children 14 and older in the sample, and this is particularly evident for nonfarm wage work, which is almost exclusively done by boys age 14 and up. Figure 3A.2 depicts this age pattern. Girls work more than boys until about age 13, but their labor market activity falls off somewhat after that. Girls also bear a substantially larger burden of work in poorer households. Their participation in labor market activity starts out significantly higher than that of boys, but falls sharply with wealth and is significantly below that for boys in the highest wealth quintile (see figure 3A.3).

The last two rows of table 3.5 present the estimation results for two measures of labor market activity: (1) an indicator variable that equals 1 if the child reported any labor market activity over the survey period and (2) the number of reported days of work. Both measures of labor market activity use the more restrictive definition of work. The first specification (columns 1–3), as before, presents the OLS estimates of the migration coefficient and its interaction with child gender under the assumption that the migration decision is uncorrelated with unobserved village and household attributes. The second specification (columns 4–6) instruments for migration using the instrument set described above. All specifications include the full set of child and household controls.

Migration has a strong dampening effect on child labor market participation, regardless of whether the indicator is any work or reported days worked over the

survey year. Overall, days worked fall by about 66 percent (from 27 to 10 for boys and 27 to 9 for girls). Unlike schooling, however, there are no gender differentials in labor market activity. Interestingly, the presence of older siblings is significant and reduces labor market activity for both boys and girls. Finally, accounting for selection into migration serves to strengthen the migration effect substantially, suggesting, again, that there is significant negative selection into migration.

While these results are consistent with the results on schooling, given the strong negative correlation between school attainment and labor market activity, they do not suggest that the poorer performance of boys in school retention or accumulated schooling can be ascribed to increased labor market activity. Does the observed disproportionate benefit for girls reflect the greater weight that women's preferences are likely to get in migrant households? One way to check this is to restrict the sample to migrant households and to ask whether girls do relatively better in female-headed households.

Female Headship, Child Schooling, and Labor Market Activity

For the purpose of the analysis, female headship is defined simply as the absence of an adult male in the household during the survey year. Using this definition, almost 12 percent of sample households can be classified as female headed. What is interesting, though, is that virtually all of these are migrant households. Among nonmigrant households, the incidence of female headship is a meager 2 percent, as compared with 17 percent for migrant households. In rural Pakistan, therefore, female headship is almost exclusively a result of economic migration.

Table 3.6 presents the estimation results. The sample is all households with current migrants, returned migrants, or both. The main variables of interest are an indicator for whether the household is female headed and the interaction of this indicator with child gender. The first specification is OLS with village-fixed effects. The second specification treats female headship as endogenous. The instrument set is as described above, and all specifications include village-fixed effects. Although the relevant comparison is now between migrant households with and without a female head, the odds of female headship could well be correlated with unobserved household or community preferences, say around female seclusion norms, which could also affect schooling choices.

The results are somewhat surprising. First, female headship has no additional effect on school enrollment for either boys or girls. Second, while boys in female-headed migrant households are significantly less likely to drop out as compared with boys in male-headed migrant households, with dropout rates declining from 0.18 to 0.06, girls in such households do much worse than girls in male-headed

Table 3.6. Child Schooling in Migrant Households

	Enrollment		Dropout rates		Accumulated grades: age 11–17		Any work (wage or nonwage)		Days worked in preceding year	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Female-headed HH	−0.01	0.02	0.24***	0.26**	−0.27	−0.12	−0.03	0.12**	−1.43	9.57**
	[0.05]	[0.08]	[0.08]	[0.12]	[0.28]	[0.43]	[0.03]	[0.05]	[2.61]	[4.65]
Female-headed*boy	0.05	0.07	−0.21**	−0.37***	0.19	0.26	0.02	0.01	−0.47	−1.33
	[0.05]	[0.08]	[0.08]	[0.11]	[0.33]	[0.45]	[0.03]	[0.04]	[2.95]	[3.81]
Boy	0.26***	0.25***	−0.18***	−0.12*	1.19***	1.21***	0.00	0.01	1.07	1.72
	[0.04]	[0.04]	[0.06]	[0.07]	[0.23]	[0.26]	[0.02]	[0.03]	[2.18]	[2.41]
Village-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Author.

Notes: The dependent variables are as described in table 3.5. The full set of controls is described in the text. Independent variables estimates: female head is endogenous. Instrument set: village migrant network and village land gini, both interacted with the number of adult males in the household.

HH = household. OLS = ordinary least squares.

Robust standard errors in brackets. *Significant at 10 percent. **Significant at 5 percent. ***Significant at 1 percent.

migrant households, with dropout rates increasing from 0.27 to 0.50. In fact, girls in female-headed migrant households fare little better than girls in nonmigrant households. Moreover, while female headship has no effect on completed grades for boys, it has a large negative effect on girls. In fact, girls in female-headed migrant households do about as well in progressing through school as girls in nonmigrant households.

Finally, both boys and girls work substantially more in female-headed households (24 days, as compared with about 16 days for children in male-headed migrant households). This is consistent with the hypothesis that male absence can increase the work burden of children. However, there is no differential increase in the work burden of boys. Male absence appears to affect both boys and girls equally in this respect. These results are essentially unchanged if the less restrictive definition of work is used.

In summary, the results suggest that girls do much better in male-headed migrant households. Further, this does not appear to reflect a differential incidence of work burden, since girls work about as much as boys, at least on income-related activities. Further, given the context, migration-induced male absence may well imply greater reliance on boys for any number of activities that women and girls cannot undertake due to seclusion-related restrictions on their mobility. It is by no means clear, therefore, that the poorer observed school performance of girls in female-headed households can be reasonably accounted for by their increased responsibilities for domestic activities that are captured poorly in the data. Instead, it would appear that, in households where only women remain, the possible opportunity presented by male absence is overwhelmed by the increased vulnerability of the household, leading to greater restrictions on the mobility of young girls. Note that there is no difference in school enrollement rates for girls in female-headed households, and dropouts occur mainly in the transition from primary to middle school, a time when greater seclusion restrictions could begin to have greater bite, as girls reach adolescence.

Migration and Child Health

Recent work on the intrahousehold allocation of resources and risk has also shown that gender differences in the relative burden of risk may be important[38] and that the allocation of resources to daughters is often one margin along which poor households adjust to uninsurable transitory income shocks.[39] This again suggests that the opportunity to migrate could confer special benefits to girls in origin households. In particular, risk-sensitive outcomes for girls in migrant households should improve to a disproportionate degree, as compared with boys, in the same households.

Mansuri (2006b) examines this issue by focusing on early child growth. There is considerable epidemiological evidence that very young children are particularly vulnerable to shocks that lead to growth faltering, with substantial long-term health consequences. The main child growth measures used here are weight-for-age and height-for-age Z-scores (WAZ and HAZ, respectively). Child height, in particular, is a good indicator of underlying health status, and studies have shown that children experiencing slow height growth are found to perform less well in school, score poorly on tests of cognitive function, and have poorer psychomotor skills and fine motor skills. They also tend to have lower activity levels, interact less frequently in their environments, and fail to acquire skills at normal rates. Studies have also shown that taller women experience fewer complications during childbirth, have children with higher birth weights, and face lower risks of child and maternal mortality. Growth faltering in young girls may therefore be of particular significance, given its intergenerational consequences.

Gender differentials in the impact of migration on child nutritional status are assessed by estimating a version of equation (5), where S_{ij} is child's i's WAZ or HAZ in household j. The instrument set for migration is as described earlier, and, as before, village-fixed effects remove any unobserved community characteristics, such as the availability or quality of health care facilities.

The set of exogenous child characteristics, C_{ij}, include the child's gender, age and age squared, mother and father's level of education (in completed grades), mother and father's age, mother's height, total number of siblings, presence of an older brother or sister under age 18, and presence of a grandmother and grandfather in the house. The rationale for this last set of variables is that young children who have grandparents in the house may get better supervision and child care and possibly also some additional nutritional resources. The set of exogenous household-level characteristics, X_j, is as described earlier.

The final sample includes all children, age 7 months to 10 years, whose Z-scores are in an acceptable range.[40] This leaves a total sample of 4,731 children for whom HAZ scores are in the acceptable range (of which 1,157 are under age three) and 4,906 children with WAZ scores in this range. About 27 percent of these children belong to migrant households.

The mean HAZ is −1.92. More than half the sample (54 percent) have HAZ scores that are below −2 standard deviation (SD), a level that signifies some stunting, and about a third have scores below −3, indicating severe stunting.[41] The mean WAZ in this sample is −1.82. Close to 44 percent of the sample have WAZ scores below −2 SD, and 23 percent have scores below −3, indicating severe malnourishment. In contrast, 29 percent have HAZ scores in the normal range, and 31 percent have WAZ scores in the normal range.

The first panel in table 3.7 presents the estimation results for HAZ. The second and third panels disaggregate the results for HAZ by age, since early childhood height deficits can have permanent effects.[42] The last panel presents the results for WAZ. The first three columns present the estimates of the migration coefficient under the assumption that the migration decision is uncorrelated with unobserved village and household attributes. The last three columns present the coefficients after instrumenting. All specifications control for the full set of household and child variables described above.

OLS estimates indicate that migration has a large positive effect on both measures of child growth, however, there appear to be no significant differences by gender. Instrumenting increases the coefficient estimates (columns 4–6), indicating a negative selection bias, and gender differences are now significant. In particular, girls in migrant households obtain larger gains than boys.

Focusing first on child height, young girls in migrant households are indeed taller than girls in nonmigrant households, and the difference is significant at the 5 percent level. While girls in nonmigrant households are about 0.25 SD below boys, migration increases the HAZ score of girls by 1.5 SD in comparison with 0.82 SD for boys. As a consequence, girls in migrant households actually do better than boys in such households in absolute terms. Once the sample is split by age, the HAZ score for younger girls increases by almost 1.8 SD, while the increase is only 0.36 SD for boys, with the consequence that the HAZ score for girls and boys in this age group is a full SD apart, and this difference is significant at the 5 percent level.

This effect is almost fully sustained among older girls. The coefficient on gender-differentiated effects is now significant at the 1 percent level. Older girls gain about 1.6 SD in HAZ scores, while boys gain only 0.7 SD.

This large impact on girls and the relatively smaller effect on boys suggest that girls in rural Pakistan might bear a higher degree of uninsured household risk. Further, given the epidemiological evidence on the impact of height by age 3 on adult height, the fact that the impact of migration on the height of young girls is carried over as girls grow, provides support to the contention that the ability to avert growth shocks at a young age can have persistent positive growth effects.

Turning next to the evidence on WAZ scores, the results suggest that girls from migrant households have better weight-for-age Z-scores than do boys. While boys are better off by about 0.21 SD in nonmigrant households, girls in migrant households more than make up this loss, gaining 1.21 SD against a gain of about 0.6 SD for boys. Since weight for age is a short-term measure, subject to substantial fluctuation near the time of measurement, there is no advantage in splitting the sample by age group, however.

Table 3.7. Impact of Migration on Child Growth

	OLS			IV		
	Migrant household	Migrant household*boy	Boy	Migrant household	Migrant household*boy	Boy
Height for age (7 mths. to 10 yrs.)	0.42*** [0.12]	−0.12 [0.14]	0.06 [0.07]	1.84*** [0.55]	−0.70* [0.36]	0.25** [0.11]
Height for age (7 mths. to 3 yrs.)				1.81** [0.91]	−1.45** [0.72]	0.43* [0.25]
Height for age (3 to 10 years)				1.66*** [0.52]	−0.93** [0.43]	0.31** [0.13]
Weight for age	0.27*** [0.09]	0.02 [0.11]	0.05 [0.06]	1.21*** [0.43]	−0.57** [0.29]	0.23** [0.10]
Village(V)/tehsil(T)-fixed effects				V	T	T

Source: Author.

Note: Robust standard errors are in brackets. The full set of controls is described in the text. IV estimates: migrant households are endogenous. Instrument set: village migrant network within landowning groups and the number of adult males in the household.

OLS = ordinary least squares.

*Significant at 10 percent. **Significant at 5 percent. ***Significant at 1 percent.

Conclusion

This chapter examines the impact of temporary economic migration on private investments in human and physical capital among migrant households in origin communities in rural Pakistan. It draws on several papers written by the author. The papers have two broad themes in common. All three papers examine the ways in which migration-induced changes in household structure shape the sorts of investments migrant households undertake with their increased resource flows. The two papers on human capital investment focus on whether migration-induced changes in resource constraints and household risk-bearing capacity translate into gender differentials in human capital investments. Given the large gender differences in human capital investments in much of South Asia, this is a question of particular interest in the context studied.

The results discussed in the chapter focus on the impact of migration on three types of physical capital investment—investment in a nonfarm enterprise, the purchase of farm assets, and the purchase of agricultural land—and three types of human capital investment—child schooling, child labor market participation, and child nutrition, as captured in HAZ and WAZ.

The data come from a representative survey conducted in rural Pakistan in 2001–02. The incidence of migration is quite high, with one in four rural households reporting at least one migrant. Since individuals and households choose to migrate, many of the same characteristics that influence the decision to migrate are likely to also affect other household decisions, such as how much capital investment to undertake or how much to invest in the education or health of children. The main econometric challenge in assessing the impact of migration on household investment decisions, therefore, lies in dealing with the endogeneity of the migration decision. All three papers discussed in this chapter develop an instrument for the migration decision that varies at the household level. This is important, since the results suggest that there is negative selection into migration and that the ability to clean out community-level unobservables is likely to be quite important.

The results highlight two key findings. First, the timing of investment can be quite sensitive to migration-induced changes in male labor availability, making it important to differentiate ongoing and completed migration episodes. In particular, investment is significantly dampened when migration is ongoing but increases substantially once the migration episode is concluded. Thus, households with resident returned migrants invest significantly more than nonmigrant households, but households with only ongoing migration episodes invest significantly less.

Second, migration not only has a positive and extremely significant impact on both child schooling and health, but there are important gender differences in this effect, with relative gains for girls outstripping those for boys by a good margin,

resulting in a substantial net reduction in gender inequalities in access to education and health. Further, the height advantage attained by young girls in migrant households is sustained as they grow, underscoring the long-term salutary benefits of averting nutritional and other health shocks in early childhood. Finally, children in migrant households are also less likely to be involved in economic work and report working for substantially fewer hours.

Surprisingly, however, female headship appears to protect boys at the cost of girls. Girls in such households are significantly more likely to drop out and, not surprisingly, they also have a lower level of accumulated schooling. In contrast, boys do significantly better than their counterparts in male-headed migrant households. Interestingly, however, the evidence does not support any gender differentials in the burden of work. While both boys and girls work significantly more in female-headed migrant households, they work about as much. Since male absence only generates a differential negative effect for girls in the case of school retention, it seems likely that in the absence of a male head, young girls face greater mobility restrictions that limit schooling beyond a point.

Notes

1. According to the 1998 census records, some 10 million individuals (almost 8 percent of the country's population) were either domestic or international migrants (see Gazdar 2003). See Addleton (1984), Kazi (1989), and Arif (2004) for a review of migration patterns in Pakistan. In the sample for this chapter, nearly 80 percent of migrants report having undertaken migration in search of employment.

2. Evidence suggests that the gender allocation of resources can be quite sensitive to income and that gender differences in the relative burden of risk may also be important. See, for example, Hoddinott and Kinsey (2001), Rose (1999), Dercon and Krishnan (2000), Das Gupta (1987), Rosenzweig and Schultz (1982), and Behrman (1988).

3. Numerous development benefits are associated with higher investments in female health and educational attainment. Studies have shown that, more educated women tend to have greater labor productivity, lower fertility, and better child outcomes, as well as to make better use of health and other community services and even to participate more in the political process. Studies have also shown that early childhood growth faltering in girls can have intergenerational consequences, including greater susceptibility to infant and maternal mortaility. See, for example, Summers (1992), Schultz, (1989), Strauss and Thomas (1995), Behrman and Deolalikar (1995), and Zia and Bari (1999).

4. In the PRHS, individuals who were away from the household at the time of the survey were classified as household members, provided they were regarded as members of the household before they left and had not set up a permanent home elsewhere. Thus, the census collected all relevant data on current migrants.

5. Migration of children under 18 is virtually nonexistent. The few children who do not live at home move to join a family member or to attend school in a neighboring rural area. Women typically migrate to join family members, most often a spouse. Eight percent of reported migrants are women. Over 82 percent reported that they migrated to join a family member. Only 13 women (1 percent of the sample of migrants) reported that they migrated for an economic reason.

6. Note that this migration incidence is significantly below that obtained from the household survey, which is not restricted to current migrants. The number of households in the sample with a current migrant is just above 13 percent, as would be expected from the census.

7. See note 14 for other relevant information on this matter.

8. Migrants are, however, significantly more active in the land market, in large part due to land purchase by international migrants. Domestic migrant households are about as active in the land market as nonmigrant households.

9. This finding reflects data on completed migration episodes only. If the elapsed duration of ongoing migration episodes is examined instead, the median (elapsed) duration is five years, and the average (elapsed) duration is closer to eight years. In the survey, those who reported having migrated more than once (a third of the sample) were asked to provide details of their longest migration episode. All others, including seasonal migrants (4 percent), were asked to report the details of their first migration.

10. This figure reflects an exchange rate of Rs. 56 for US$1.

11. However, households with international migrants have about 1.6 grades more schooling overall.

12. Remittances from international migrants constitute the single largest source of foreign exchange earnings for the country. According to one estimate, international migrants annually remit $2.4 billion, or 4 percent of the country's gross national product (see Gazdar 2003).

13. One-half of all remittance senders are located abroad.

14. Almost all remittance income (95 percent), at the household level, comes from family members working outside the village.

15. Winters, de Janvry, and Sadoulet (2001) show that the probability of migration to the United States is higher for households residing in Mexican communities that have greater experience with migration. Banerjee (1991) and Caces (1986) have shown the importance of networks in the rural-urban migration decision in the Indian and Philippine contexts, respectively. Ilahi (1999) has shown the importance of extended family networks in financing migration costs in Pakistan.

16. For example, Alderman and Garcia (1994), among others, have shown that the estimated impact of income and education on child health status will be biased if unobserved community-level characteristics are ignored. More significantly, they find that quality of health care services, rather than the more commonly measured health service availability or distance to a health care facility, matters most.

17. In the PRHS 2001–02, for example, 83 percent of landowning households report that all of their land is inherited. However, migrants are significantly more likely to purchase land.

18. All males age 18 and older are classified as adults.

19. For example, households in which males intend to migrate might be more likely to form extended families, or household fertility choices might affect the health and education outcomes of children.

20. Tehsils are administrative units below districts. Two to four tehsils are usually included in a district.

21. In the present analysis' sample, only 3 percent of households reported using a loan from a formal credit source to finance a business start-up. Thus loan capital for nonfarm businesses would appear to be in rather short supply.

22. The links between male labor supply and the success of nonfarm family enterprises and agricultural production may be due, at least in part, to incomplete labor markets (Benjamin 1992; Fafchamps 1993).

23. Ilahi (1999) and Mesnard (2004) analyze the effect of accumulated savings on occupational choice (entrepreneurship and self-employment) for returned migrants. Both find that returned migrants who saved more and stayed abroad longer were more likely to take up self-employment. For both Ilahi and Mesnard, this result suggests a motive for temporary migration: to overcome borrowing constraints in the home country. Because savings is a variable that is likely to be endogenous in explaining occupational choice (workers may accumulate savings in the foreign country so that they can become self-employed after their return home), Mesnard (2004) uses the past migration history of the worker and the migrant's age at return to instrument for savings.

24. Yang (2004) uses exchange rate shocks in the migration destination to deal with selection into migration.

25. Woodruff and Zenteno (2001) use migration rates for the entrepreneur's state of birth to measure exposure to migration networks.

26. Although domestic migrants were somewhat more likely to return home than international migrants, the difference was not statistically significant.

27. Constant and Massey (2003) and Dustmann (2003) also find that return migration is systematically related to certain demographic characteristics of the household and the migrant—characteristics that reflect the degree of the migrant's attachment to the family of origin.

28. In column 3, the number of migrants and returned migrants in the household is endogenous.

29. Table 3A.2 presents the first stage results for both migration and return migration.

30. Households with no hereditary land wealth exclusively reported the purchase of land.

31. These measures of household wealth are agricultural land holdings, consumption expenditures, and major assets.

32. See Mansuri (2007).

33. If selection of returned migrants is negative—that is, less talented individuals return, as suggested by Borjas and Bratsberg (1996), or less wealthy individuals return—the negative sign would simply reflect this selection bias. Of course, within-household heterogeneity, such as innate ability or entrepreneurial talent, still poses an identification problem if it is systematically related to migration history.

34. This result is contrary to the findings of Dustmann and Kirchkamp (2002) for Turkish return migrants.

35. A substantial body of research has identified important gender differences in preferences regarding the welfare of children and has shown, in particular, that investments in child education increase significantly in contexts in which mothers exercise greater control than fathers over the use of household resources.

36. The direct effect of observable village-level characteristics has already been removed using the village-fixed effect; the household's own landholdings are directly controlled for in the second stage of the analysis.

37. See World Bank (2005).

38. See Hoddinott and Kinsey (2001).

39. See Rose (1999), Dercon and Krishnan (2000), Das Gupta (1987), Rosenzweig and Schultz (1982), and Behrman (1988).

40. This analysis follows the convention for dealing with extreme Z-score values (see, for example, Hoddinott and Kinsey 2001) in using –6 to 6 as the acceptable range. Scores outside this range are typically indicative of measurement error in height, weight, or age.

41. This percentage is somewhat higher than the 48.9 percent stunting rate reported for the country as a whole in the Pakistan Demographic and Health Survey (1990). This finding is not surprising given that the PRHS sample includes only rural children.

42. The main disadvantages of using anthropometic measures are that body size is a stock variable and is likely to be affected by inputs other than consumption. Neither of these disadvantages is a concern in the present analysis, which does not examine changes in a child's body size over time.

References

Adams, R. 1998. "Remittances, Investment, and Rural Asset Accumulation in Pakistan." *Economic Development and Cultural Change* 47 (1): 155–73.

Addleton, J. 1984. "The Impact of Migration on Economic Development in Pakistan." *Asian Survey* 24 (5): 574–96.

Alderman, H., and M. Garcia. 1994. "Food Security and Health Security: Explaining the Levels of Nutritional Status in Pakistan." *Economic Development and Cultural Change* 42 (3): 485–507.

Arif, G. M. 2004. "Effects of Overseas Migration on Household Consumption, Education, Health and Labour Supply in Pakistan." In *International Labour Migration from South Asia,* ed. Hisaya Oda. Chiba, Japan: Institute of Developing Economies and Japan External Trade Organization.

Banerjee, B. 1991. "The Determinants of Migrating with a Pre-Arranged Job and the Initial Duration of Urban Unemployment: An Analysis Based on Indian Data on Rural to Urban Migration." *Journal of Development Economics* 36 (2): 337–51.

Behrman, J.R. 1988. "Intrahousehold Allocation of Nutrients in Rural India: Are Boys Favored? Do Parents Exhibit Inequality Aversion?" *Oxford Economic Papers* 40 (1): 32–54.

Behrman, J.R., and A. Deolalikar. 1988. "Health and Nutrition." In *Handbook of Development Economics,* ed. H. Chennery and T.N. Srinivasan, 631–711. North Holland: Elsevier B.V.

———. 1995. "Are There Differential Returns to Schooling by Gender? The Case of Indonesian Labor Markets." *Oxford Bulletin of Economics and Statistics* 57 (1): 97–118.

Benjamin, D. 1992. "Household Composition, Labor Markets, and Labor Demand: Testing for Separation in Agricultural Household Models." *Econometrica* 60 (2): 287–322.

Blanchflower, D., and A. Oswald. 1998. "What Makes an Entrepreneur." *Journal of Labor Economics* 16: 26–60.

Borjas, G. 1992. "Ethnic Capital and Intergenerational Mobility." *Quarterly Journal of Economics* 107(1): 123–50.

Borjas, G., and B. Bratsberg. 1996. "Who Leaves? The Outmigration of the Foreign-Born." *Review of Economics and Statistics* 78 (1): 165–76.

Boyd, M. 1989. "Family and Personal Networks in International Migration: Recent Developments and New Agendas." *International Migration Review* 23 (3): 638–70.

Caces, Fe. 1986. "Immigrant Recruitment into the Labor Force: Social Networks among Filipinos in Hawaii." *Amerasia Journal* 13 (1): 23–28.

Constant, A., and D. Massey. 2003. "Self-Selection, Earnings, and Out-Migration: A Longitudinal Study of Inmigrants to Germany." *Journal of Population Economics* 16: 631–53.

Das Gupta, M. 1987. "Selective Discrimination against Female Children in India." *Population and Development Review* 13: 77–101.

Dercon, S., and P. Krishnan. 2000. "In Sickness and in Health: Risk Sharing within Households in Rural Ethiopia." *Journal of Political Economy* 108 (4): 688–727.

Dustmann, C. 2003. "Children and Return Migration." *Journal of Population Economics* 16 (4): 815–30.

Dustmann, C., and O. Kirchkamp. 2002. "The Optimal Migration Duration and Activity Choice after Re-Emigration." *Journal of Development Economics* 67: 351–72.

Evans, D., and B. Jovanovic. 1989. "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints." *Journal of Political Economy* 97: 808–27.

Fafchamps, M. 1993. "Sequential Labor Decisions under Uncertainty: An Estimable Household Model of West African Farmers." *Econometrica* 61: 1173–97.

Gazdar, H. 2003. "A Review of Migration Issues in Pakistan." Mimeo, Collective for Social Sciences Research, Karachi, Pakistan.

Genicot, G., and S. Senesky. 2004. "Determinants of Migration and 'Coyote' Use among Undocumented Mexicans in the United States." Mimeo, Georgetown University, Washington, DC.

Hoddinott, J., and B. Kinsey. 2001. "Child Growth in the Time of Drought." *Oxford Bulletin of Economics and Statistics* 63 (4): 409–36.

Ilahi, N. 1999. "Return Migration and Occupational Change." *Review of Development Economics* 3: 170–86.

Kazi, S. 1989. "Domestic Impact of Overseas Migration: Pakistan." In *To the Gulf and Back: Studies on the Economic Impact of Asian Labor Migration,* ed. Rashid Amjad, 167–96. New Delhi: International Labour Organization/United Nations Development Programme.

Mansuri, G. 2006a. "Migration, School Attainment and Child Labor in a Rural Economy." Policy Research Working Paper 3945, World Bank, Washington, DC.

———. 2006b. "Migration, Sex Bias, and Child Growth in Rural Pakistan." Policy Research Working Paper 3946, World Bank, Washington, DC.

———. 2007. "Return Migration, Entrepreneuship, and Rural Development." Mimeo, Development Research Group, World Bank, Washington, DC.

Massey, D., J. Arango, G. Hugo, A. Kouaouci, A. Pellegrino, and J.E. Taylor. 1993. "Theories of International Migration: A Review and Appraisal." *Population and Development Review* 20 (4): 699–751.

Menjivar, Cecilia. 1995. "Kinship Networks among Immigrants: Lessons from a Qualitative Comparative Approach." *International Journal of Comparative Sociology* 36 (3–4): 219–32.

Mesnard, A. 2004. "Temporary Migration and Capital Market Imperfections." *Oxford Economic Papers* 56: 242–62.

Montgomery, J. 1991. "Social Networks and Labor Market Outcomes: Toward an Economic Analysis." *American Economic Review* 81 (5): 1408–18.

Munshi, K. 2003. "Networks in the Modern Economy: Mexican Migrants in the U.S. Labor Market." *Quarterly Journal of Economics* 118 (2): 549–99.

Orrenius, P.M. 1999. "The Role of Family Networks, Coyote Prices and the Rural Economy in Migration from Western Mexico: 1965–1994." Working Paper 9910, Federal Reserve Bank of Dallas, Dallas.

Paulson, A., and R. Townsend. 2004. "Entrepreneurship and Financial Constraints in Thailand." *Journal of Corporate Finance* 10 (2): 229–262.

Rose, E. 1999. "Consumption Smoothing and Excess Female Mortality in Rural India." *Review of Economics and Statistics* 81 (1): 41–49.

Rosenzweig, M., and T. P. Schultz. 1982. "Market Opportunities, Genetic Endowments and Intrafamily Resource Distribution: Child Survival in Rural India." *American Economic Review* 72 (4): 803–15.

Schultz, T. P. 1989. "Benefits of Educating Women." Background Papers Series, Population and Human Resources Department, World Bank, Washington, DC.

Strauss, J., and D. Thomas. 1995. "Human Resources: Empirical Modeling of Household and Family Decisions." In *Handbook of Development Economics,* vol. 3A, ed. J. Behrman and T.N. Srinivasan, 1883–2023. North Holland: Elsevier B.V.

Summers, L. 1992. "Investing in All the People." Policy Research Working Paper 905, World Bank, Washington, DC.

Winters, P., A. de Janvry, and E. Sadoulet. 2001. "Family and Community Networks in Mexico-U.S. Migration." *Journal of Human Resources* 36 (1): 159–84.

Woodruff, C., and R. M. Zenteno. 2001. "Remittances and Micro-Enterprises in Mexico." Mimeo, Graduate School of International Relations and Pacific Studies, University of California, San Diego.

World Bank. 2005. "Pakistan Country Gender Assessment." World Bank, Washington, DC.

Yang, D. 2004. "International Migration, Human Capital and Entrepreneurship: Evidence from Philippine Migrants' Exchange Rate Shocks." Mimeo, Ford School of Public Policy, University of Michigan, Ann Arbor.

Zia, S., and F. Bari. 1999. "Baseline Report on Women's Participation in Political and Public Life." Aurat Publication and Information Services Foundation, Lahore.

Zhao, Y. 2002. "Causes and Consequences of Return Migration: Recent Evidence from China." *Journal of Comparative Economics* 30: 376–94.

Annex 3.1

Table 3A.1. Migrants' Region of Origin and Destination

Region of destination	Region of origin					
	Central Punjab	South Punjab	Sindh	NWFP	Baluchistan	Full sample
International migrants (percent)	*22.8*	*5.8*	*19.6*	*57.8*	*51.7*	*37.3*
Saudi Arabia	11.0	2.5	9.8	35.8	0.0	20.7
United Arab Emirates	3.7	0.8	5.9	16.5	37.9	10.6
Kuwait	1.8	0.0	0.0	2.8	0.0	1.8
Iran, Islamic Rep. of	2.3	0.0	0.0	0.3	3.5	0.9
Oman	0.0	0.0	0.0	0.0	10.3	0.4
Others	4.0	2.5	3.9	2.4	0.0	2.9
Domestic urban migrants (percent)	*62.1*	*79.3*	*33.3*	*38.8*	*25.1*	*50.7*
Abbottabad	3.2	0.8	0.0	1.1	0.0	1.5
Hyderabad	0.5	1.7	3.9	0.0	0.0	0.6
Karachi	13.2	36.4	17.7	19.0	3.5	19.4
Lahore	9.6	1.7	0.0	0.3	0.0	3.1
Quetta	3.7	0.0	0.0	0.6	0.0	1.3
Rawalpindi	3.7	0.8	0.0	3.0	0.0	2.6
Others	28.2	37.9	11.7	14.8	21.6	22.2
Domestic rural migrants (percent)	*15.1*	*14.9*	*47.1*	*3.3*	*24.1*	*12.0*
Central Punjab	8.7	5.8	5.9	0.6	0.0	4.0
South Punjab	3.6	5.8	0.0	0.0	0.0	1.9
Sindh	2.3	3.3	37.2	0.0	3.4	3.7
NWFP	0.5	0.0	2.0	2.1	0.0	1.3
Baluchistan	0.0	0.0	2.0	0.6	20.7	1.1

Source: Author.

Note: NWFP = North-West Frontier Province.

Table 3A.2. Determinants of Migration and Return Migration

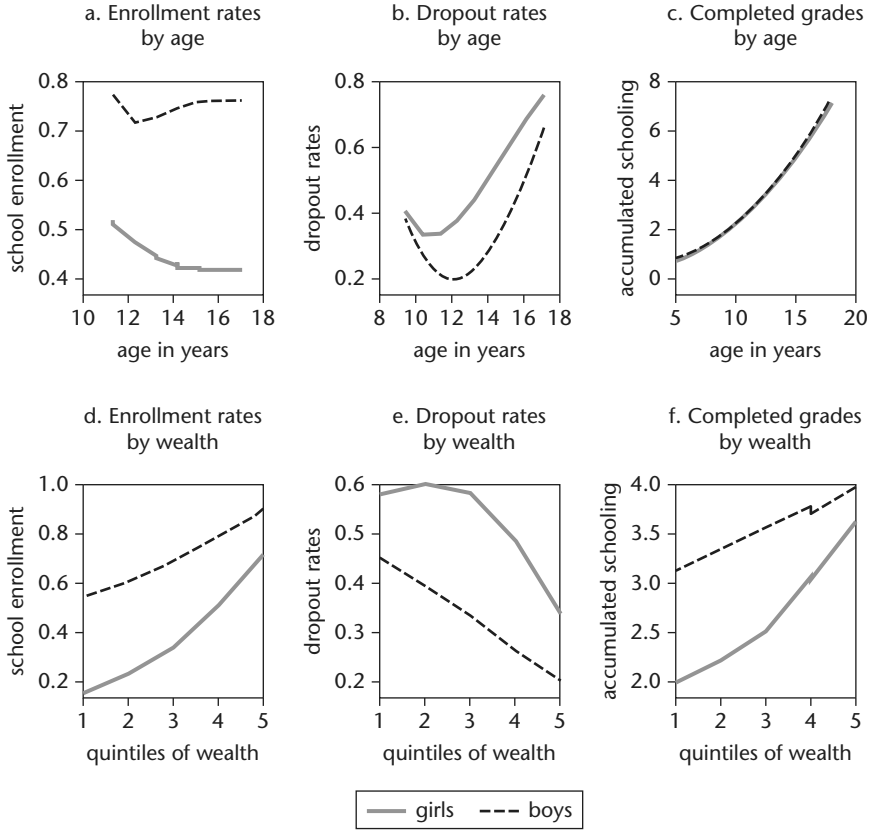
	Migration (1)	Return migration (2)
Years of schooling	−0.0059***	−0.0025**
	[0.0013]	[0.0012]
Inherited land	−0.0008*	0
	[0.0005]	[0.0005]
Number of adult males	0.0522***	−0.0150**
	[0.0075]	[0.0070]
Dependency ratio	−0.0066	−0.0217***
	[0.0071]	[0.0067]
Household size	0.0073***	0.0118***
	[0.0025]	[0.0023]
Extended family	−0.0046	−0.0392***
	[0.0098]	[0.0092]
Village migration prevalence rate within landownership groups (nwland)	0.0106	−0.3908***
	[0.1064]	[0.0993]
nwland*age of the oldest male in the household	0.0039***	0.0071***
	[0.0013]	[0.0012]
Age of the oldest male in the household	−0.0014***	0.0028***
	[0.0004]	[0.0004]
Age of the oldest female in the household	0.0008**	−0.0009***
	[0.0003]	[0.0003]
Mean education level of migrants	0.2405***	0.0733***
	[0.0091]	[0.0085]
Migrant is household head	0.6139***	0.4865***
	[0.0168]	[0.0156]
Village-fixed effects	Yes	Yes

Source: Author.

Note: Robust standard errors are in brackets.

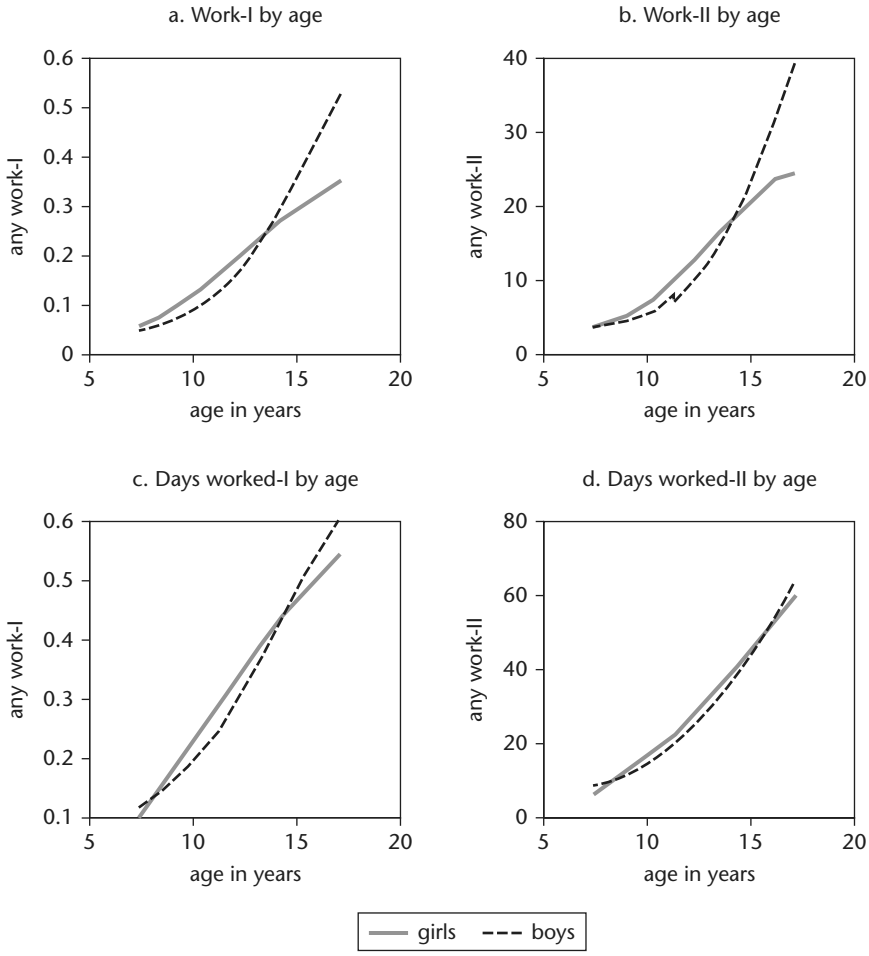
*Significant at 10 percent. **Significant at 5 percent. ***Significant at 1 percent.

Figure 3A.1. Enrollment and Dropout Rates, by Age and Wealth



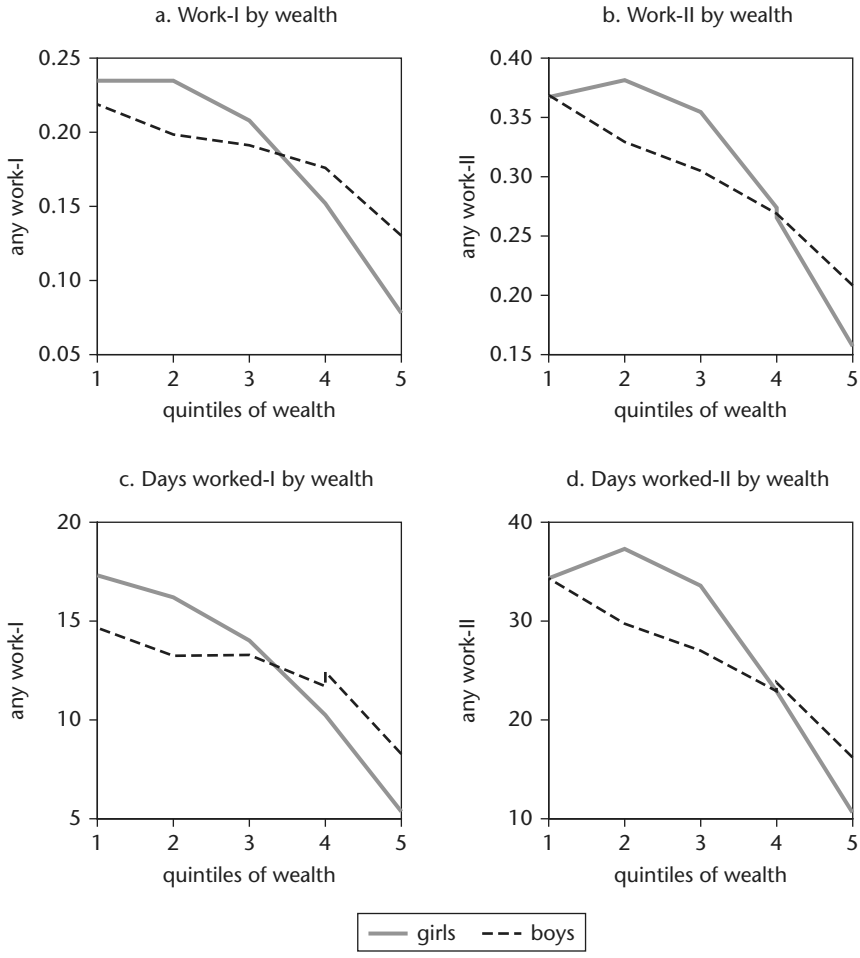
Source: Author.

Figure 3A.2. Gender Differences in Child Labor, by Age



Source: Author.

Figure 3A.3. Gender Differences in Child Labor, by Wealth



Source: Author.

4

ENTREPRENEURSHIP, LABOR MARKETS, AND INTERNATIONAL REMITTANCES: EVIDENCE FROM EL SALVADOR

Pablo Acosta

International migrant remittances constitute one of the main income sources in the developing world. In some countries, they have outpaced official aid and even foreign direct investment. Nearly a quarter of today's remittances flows goes to Latin America, and almost 40 percent of these remittances go to Mexico. In certain Central American and Caribbean countries, such as Haiti, Jamaica, and El Salvador, international remittances account for more than 15 percent of GDP. It has been extensively studied in the literature how remittances can influence expenditure patterns at destination, with effects on education (Cox-Edwards and Ureta 2003; Hanson and Woodruff 2003; Lopez-Cordova 2005; Acosta 2006; Yang forthcoming), labor supply (Funkhouser 1992; Hanson 2005; Acosta 2006; Yang forthcoming), entrepreneurship (Massey and Parrado 1998; Woodruff and Zenteno 2007), and health (Hildebrandt and McKenzie 2005; Lopez-Cordova 2005).

The present study deals with the effects of migration and international remittances flows on labor markets, mainly on occupational choice, hours worked, and labor force participation. A direct impact of out-migration in labor markets operates through a reduction in the labor force at home, in particular among young adults, who have the highest emigration rates. Indirect impacts may come

through an upward pressure on wages. Mishra (2007) estimates that during the period 1970–2000, emigration raised average wages in Mexico by 8 percent. Whether higher wages have an income- or substitution-dominant effect on leisure consumption, reducing or increasing hours worked, is a matter of question. Presumably the need to replace the income lost due to migration of wage earners, or higher market wages resulting from the scarcity of labor force, could result in a net increase in labor participation among stayers.

Indirect effects in labor markets may also come through migrant remittances sent back home. On one hand, remittances can be channeled into self-employment or microenterprises activities, creating employment opportunities in areas with limited labor and credit markets. Several studies have highlighted the impact of wealth constraints on enterprise investment (Evans and Jovanovic 1989; Blanchflower and Oswald 1998; Paulson and Townsend 2004). International remittances can contribute to alleviate credit constraints that block investment in developing countries. In that sense, it would be expected that remittances recipient households invest more in their own business and become increasingly engaged in self-employment activities.

However, as mentioned above, migration of family members (the cause of remittances receipts in most cases) can leave the household without enough labor force to undertake risky activities. Massey and Parrado (1998) point out that under many circumstances the creation of a new business after migration would be illogical, as migrant families are typically young and growing, and they tend to have high consumption needs. In addition, their communities are typically distant from markets and lack basic infrastructure. Under such circumstances, it is unrealistic to expect migrant families to channel their resources into risky productive activities.

Additionally, as remittances involve a higher income-effect component and less of a substitution-effect compared with local earned income, the process of sending money back home could result in a decline in domestic labor force participation due to a preference for leisure consumption. If this effect dominates, labor supply is expected to fall in recipient families. Previous evidence for Latin American and Caribbean countries on the impact of migration and remittances flows in adult labor supply of the home country corroborates this claim. Funkhouser (1992) shows that remittances tend to reduce labor force participation in males and females in Nicaragua, although the impact is small and not significant. In contrast, Hanson (2005) concludes that in rural Mexico, having a migrant member reduces labor force participation by 30 percent among males and by 10 percent among females, and hours worked from five to six hours per week for males and females, respectively. Finally, Acosta (2006) reports that remittances reduce labor supply by males and females in El Salvador, by 2 and 9 percent, respectively,

although only the negative impact among females remains after the study accounts for selection into migration.

Evidence from Latin America and the Caribbean on effects on entrepreneurship (family business ownership and self-employment) is limited to Mexico and Nicaragua. Funkhouser (1992) presents evidence that remittances increase self-employment by males in Nicaragua, with no additional impact among females. Massey and Parrado (1998), even though they register a negative relationship between migration and new business formation in central-west Mexico, find that the impact of cumulative remittances value and earnings from work in the United States on business investment is positive. Woodruff and Zenteno (2007) relate the value of invested capital in small Mexican enterprises to the percentage of migrants and the value of remittances in the state of reference, finding in both cases a positive and significant association, even after accounting for endogeneity of migration and remittances. The authors associate the findings with the presence of wealth and capital constraints in enterprise development. Other studies on the impact of migration and remittances on entrepreneurship in developing countries from other regions include Adams (1998) and Ilahi (1999) for Pakistan, Mesnard (2004) for Tunisia, and Yang (forthcoming) for the Philippines.

A methodological concern regarding the impact of remittances on household outcomes is that the pool of migrants and remittances' senders is not a random sample. As pointed out by Hoddinott (1994), migration can be modeled as the outcome of a joint utility maximization made by the prospective migrant and other household members. The presumption that migrant families are systematically different from nonmigrant families in observable (wealth, education) and unobservable characteristics (ability, income shocks) complicates the identification of the effect of remittances using standard ordinary least squares (OLS) techniques. Sample selection as an omitted variable problem may be present in this context.

Similarly, remittances receipts can be correlated with unobserved determinants of the outcome of interest. For instance, if remittances constitute the return on an investment, where the asset is the family member residing abroad, the household head's decision to send a member abroad and work at home may be simultaneously determined. Similarly, unobserved (by the econometrician) income shocks can stimulate higher remittances flows and at the same time have a direct impact on working decisions. Indeed, previous studies have stressed the role of remittances as an insurance mechanism in volatile environments (Yang forthcoming; Yang and Choi forthcoming). One way to address the endogeneity problem regarding remittances is by using appropriate instrumental variables (IV) techniques.

This chapter collects evidence from a nationally representative household survey in order to present evidence for El Salvador. Results suggest that labor

force participation falls for remittances recipient women, but not among men. However, both males and females reduce total hours worked per week when they receive migrant transfers. Regarding entrepreneurship, recipient males are more likely to be engaged in self-employment activities, while business management (nonfarm enterprises) is higher among females receiving remittances. These results are robust after instrumental variables are used to test for the potential problems of selection biases in migration and endogeneity of remittances flows.

The next section of this chapter describes the Salvadoran case in terms of migration and international remittances flows and discusses the data sources used in the present study. The subsequent parts of the chapter describe the empirical results for labor force participation and for self-employment and entrepreneurship. The chapter ends with comments and conclusions.

Migration and Remittances in El Salvador

El Salvador has a long history of external migration to neighboring countries and to the United States. Starting in the 1970s, armed conflicts displaced a great proportion of the population to other areas in the country (internal migration) and abroad (external migration). Funkhouser (1997) notes that approximately 15 percent of the population emigrated between 1979 and 1989, mostly due to political reasons (armed conflicts). According to the 2000 U.S. Census, 817,000 Salvadorans live in the United States, with 60 percent of them entering the country before 1990. Official Salvadoran migrants in member countries of the Organisation for Economic Co-operation and Development (OECD) reached 12 percent of total population by 2000 (Acosta et al. 2006).

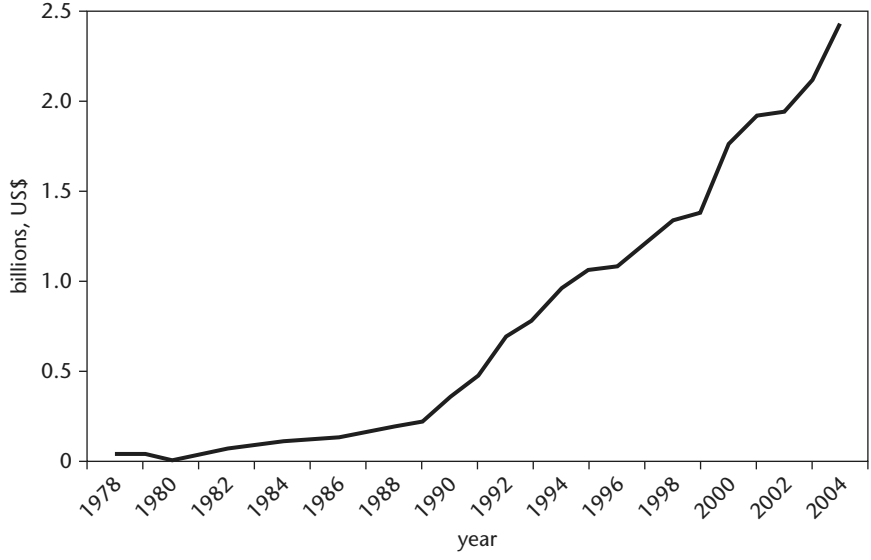
Acosta (2006) shows that there are great disparities in the pattern of external migration by region in El Salvador, with certain states systematically sending abroad more people than others. The states of San Miguel, Morazan, and La Union, in the eastern region, have the highest emigration rates (almost 25 percent of households report having international migrant members). It is also worthwhile to remark that those eastern states that have higher emigrants and remittances, together with central eastern states (Chaletanango, Cabanas, and San Vicente), were the states where the political conflict of the 1980s was more intense (Funkhouser 1997).

Early migrants constituted a social network at destination that helped subsequent emigration during the 1990s. Even after achieving peace in the 1990s, migration flows remained high during the last 15 years. Menjivar (2000) finds evidence of the existence of large social networks among Salvadorans in California, with 80 percent reporting that they received help from U.S. relatives and friends

for the trip. Additionally, the majority of migrants appear to be permanent: household survey data for 1997 show that, among the households with a family member abroad, 67 percent believe that their migrant relatives will not come back to live permanently in their home country.

However, migrant remittances flows have gained importance as a source of income only in the last two decades (figure 4.1). For instance, migrant transfers flows represented 0.3 percent of GDP in 1980, but their share increased to 7.4 percent of GDP in 1990, 12.9 percent in 1998, and 15.3 percent in 2004. Figure 4.1 shows that, in 2004, official data estimate total remittances at $2.42 billion in El Salvador. Among the largest developing countries, El Salvador ranks very high in terms of the share of remittances to GDP. This share is only below that of Haiti (41.2 percent of GDP) and Jamaica (17.7 percent), among Latin American and Caribbean countries, and that of Tonga (45.3 percent), Moldova (23.9 percent), Lesotho (23.8 percent), Jordan (22.3 percent), and Lebanon (20.2 percent) in the rest of the world (data for 2003). Indeed, Funkhouser (1997) states that labor constitutes the largest export of the country. Household survey data for 2000 reflect that nearly 20 percent of the households in the country receive remittances from abroad, while 15 percent of them actually have a family member living in a foreign country.

Figure 4.1. El Salvador, International Migrant Remittances Flows, 1978–2004



Source: Balance of Payments, IMF.

A plausible explanation for the increase in the number of remittances recipients is the decrease in transfer costs for sending money back home, due to technological advances and more competition among financial institutions. Indeed, Acosta (2006) mentions that 74 percent of households received money transfers through courier agencies (that is, Western Union) and 9 percent through banks and other financial institutions; only 17 percent received money directly from relatives and friends (unofficial channels).

Data and Descriptive Statistics

The data for this chapter come from a nationally representative household survey, Encuesta de Hogares de Propositos Multiples (EHPM), for year 2000.[1] This national survey (covering both urban and rural areas) contains detailed information on demographic characteristics, current and previous employment status, earnings and expenditure (food, health, education, housing), the number of family members residing abroad, transfers among family members living in the country and abroad (remittances), and how this money was spent (food, health, education, housing). Survey questions are at the household level, but they include information on every member of the household. Unfortunately, the survey contains no information on the sender side: only the number of migrant family members is known (the question refers to the "number of members from this household living abroad"). The survey contains information on approximately 15,000 households that are not followed over time. Cox-Edwards and Ureta (2003) use the 1997 wave in their paper, and Acosta (2006) uses the 1998 wave. In this case, the 2000 wave is employed.

Table 4.1 shows mean differences by remittances recipient status. Nearly 20 percent of the households in the sample are remittances recipients. Recipient households are typically poorer in terms of per capita nonremittances income, although the income loss due to migration is compensated by the amount received as remittances. In fact, recipient and nonrecipient families are indistinguishable in terms of total income. Regarding demographic characteristics, as expected, recipient households are much more likely to have family members abroad. Households receiving remittances are also typically larger in size (nonmigrant members, measured in adult equivalency), they are more likely to have a female head (suggesting that most migrants are males), their household head is older, and they are less likely to have young children. They are also more likely to have water, electricity, and sanitary services at home.

The objective of the chapter is to look at whether international migrant remittances and occupational choice are related. Although these are just mean descriptive differences, without necessarily implying causality, adult males and females

Table 4.1. Descriptive Differences by Remittances Recipient Status, 2000 Household Survey

Variable	Remittances	
	Nonrecipients	Recipients
Households	12,506	3,090
Members (adult equivalents, nonmigrants)	4.015**	4.098**
	(0.018)	(0.037)
Per capita nonremittances income (dollars per month)	99.300***	68.318***
	(1.694)	(1.683)
Per capita total income (dollars per month)	99.300	102.317
	(1.694)	(1.861)
Female head	0.239***	0.417***
	(0.004)	(0.009)
Age of household head (years)	46.413***	53.243***
	(0.141)	(0.310)
Adults' average education (years)	5.873	5.772
	(0.039)	(0.075)
Number of children (under 18 years old)	1.976	1.951
	(0.016)	(0.033)
Child 0–5 years old	0.694***	0.600***
	(0.008)	(0.016)
Adult males (20–59 years old) in labor force	0.914***	0.828***
	(0.003)	(0.008)
Adult females (20–59 years old) in labor force	0.529***	0.441***
	(0.005)	(0.009)
Family business	0.136***	0.165***
	(0.003)	(0.007)
Rural area	0.381	0.392
	(0.004)	(0.009)
Access to electricity	0.761***	0.876***
	(0.004)	(0.006)
Access to running water	0.522***	0.588***
	(0.004)	(0.009)
In-house sanitary service	0.340***	0.413***
	(0.004)	(0.009)
Family member abroad	0.032***	0.634***
	(0.002)	(0.009)

Source: Encuesta de Hogares de Propositos Multiples (MECOVI) 2000.

Note: Standard errors are in parentheses.

***Significant at 1 percent level. **Significant at 5 percent level. *Significant at 10 percent level.

from recipient households are less likely to participate in the labor market. Similarly, families with remittances are also likely to have family businesses (at least one member of the household reported working as a boss or business head). Whether these labor market trends can be related to the increase in remittances flows is subject to test in the rest of the chapter.

Migration, Remittances, and Labor Supply

Do these differences in labor force participation among males and females according to remittances recipient status (table 4.1) hold after controlling for other observable characteristics of adults? These discrepancies could be due to differences in household composition after migration. As shown in Acosta et al. (2006), migrants in Latin America and the Caribbean come from different segments of the age, education, and income distribution compared with nonmigrants.

This chapter attempts to identify the links between labor force participation and remittances by showing regression results for both the probability of participating in the job market and the number of hours worked, as a function of individual, household, and community characteristics using the nationally representative household survey for year 2000. A probit model is employed for the case of labor force participation, where the dependent variable is a binary indicator for whether the individual is employed or looking for a job. For hours worked, a tobit specification takes into account the fact that many individuals do not participate in the labor market and thus report zero worked hours. The sample considered for both set of regressions is made up of individuals age 20 to 59.

More formally, let an outcome, Y_{ij}, representing the (latent) decision to participate in the labor market or the number of hours worked, be modeled as a linear reduced form as follows:

$$Y_{ij} = X'_{ij}\alpha + W'_j\beta + R'_j\gamma + \mu_{ij} \quad (1)$$

Where Y_{ij}, is related to a set of demographic characteristics (X_{ij}), for individual i in household j, (W_j) is a set of household characteristics, (R_j) is the variable of interest related to migration or remittance receipts, and (μ_{ij}), a term associated with unobserved heterogeneity for the individual.

Two separate sets of regressions are considered for both labor force participation and hours worked, each one with a different variable of interest associated with migration and remittances. The first one is "access to remittances," an indicator variable for whether the household reports receiving money transfers from friends and family members living in other countries. The second one attempts to capture the direct impact of migration by controlling for an indicator variable for having an international migrant family member.[2]

Each specification includes several controls: a quadratic term in age, indicators for years of education, marital status, number of children in the household, presence of a zero- to five-year-old child, number of adult males and females in the household, family home ownership, proportion of households with sanitary services in the county of residence, proportion of household heads working in agricultural activities in the county of residence, and state/province indicators. Robust Huber-White standard errors are computed. Results are presented separately by gender and by urban and rural areas.[3]

Table 4.2 shows that remittances are significantly associated with lower labor force participation among males and females, in both rural and urban areas. For instance, rural males from remittances recipient households are 4.6 percent more likely to quit the labor market, while the corresponding decline among urban counterparts is around 5.7 percent. Females have higher disincentive effects compared with males, ranging between 9.9 and 10.7 percent, depending on the area of residence. Among both males and females, stronger negative impact in terms of labor supply for individuals reporting remittances are found in urban areas. Limited options for hiring labor in rural regions could explain the lower impact in rural areas.

In terms of hours worked, results resemble those for labor force participation. Rural males from remittances recipient households tend to work on average 4.5 hours less in a week than nonrecipient counterparts. Again, stronger effects in terms of less hours worked are found among females, with 12.3 and 8.6 hours per week in rural and urban areas, respectively. In all cases, the negative relationship between "access to remittances" and hours worked is significant at 1 percent level.

The variable "access to remittances" could be capturing an effect that is not necessarily associated with remittances flows but with migration per se (as both variables are highly correlated). When the variable of interest is the presence of an international migrant member, results are the same in terms of the direction of the effect compared with those found with the remittances variable. However, it is interesting to notice that while among males the negative association with respect to labor force participation is stronger for migration (compared to remittances), the opposite is found among females (less impact using the migration variable), even in terms of hours worked.

As mentioned above, a problem with both variables—"access to remittances" and "international migrant member"—is that they could be contaminated by selectivity bias and endogeneity if, for instance, unobserved determinants of migration and remittances are correlated with labor force participation. Household wealth, not observed in the data, could be an omitted variable correlated with both the outcome of interest and migration status and access to remittances. More formally, imagine that R_j depends on a set of household characteristics Z_j

Table 4.2. Probit and Tobit Results for Labor Force Participation and Hours Worked, 2000 Household Survey

Estimation	Probit				Tobit			
Age group	20–59				20–59			
Dependent variable	Labor force participation				Hours worked			
	Rural		Urban		Rural		Urban	
Sample	Males	Females	Males	Females	Males	Females	Males	Females
Household receives remittances	−0.046***	−0.099***	−0.057***	−0.107***	−4.498***	−12.257***	−5.546***	−8.580***
	(0.012)	(0.016)	(0.010)	(0.013)	(0.986)	(2.089)	(0.847)	(1.115)
Household has migrant member	−0.054***	−0.096***	−0.065***	−0.099***	−4.360***	−11.227***	−6.880***	−7.703***
	(0.014)	(0.017)	(0.012)	(0.015)	(1.113)	(2.273)	(0.979)	(1.271)
Number of observations	5,415	6,244	8,719	10,818	5,415	6,244	8,719	10,818

Source: Author.

Note: Other controls include a quartic in age and indicators for years of education, marital status, number of children in the household, presence of a child zero to five years old, number of adult males and females in the household, home ownership, proportion of households with sanitary services in the county of residence, proportion of household heads working in agricultural activities in the county of residence, and state/province indicators. Robust Huber-White standard errors are in parentheses. Marginal effects are reported in the probit specification.

***Significant at 1 percent level. **Significant at 5 percent level. *Significant at 10 percent level.

(that may include some of the characteristics in W_j but it is not a subset of W_j). In other words,

$$R_j = 1 \quad \text{if} \quad Z_j'\theta + \varepsilon_{ij} > 0 \tag{2}$$

If so,

$$E(Y_{ij}/X_{ij}, W_{ij}, R_j = 1) = X_{ij}'\alpha + W_j'\beta + \gamma + \rho E(\mu_{ij}/\varepsilon_j > -Z_j'\theta) \tag{3}$$

where $\rho = \text{corr}(\mu_{ij}, \varepsilon_j)$. If the last term is not zero, failure to control for it could generate biased estimates. An omitted variable problem in the form of sample selection would be present. In the absence of natural experiments, a way to attenuate the bias is by means of instrumental variables. Amemiya's generalized least squares (GLS or "IV probit") results for labor force participation, and two-stage least squares (2SLS) for hours worked are presented in table 4.3.[4]

Among the variables available in the household survey, and in the absence of migrant or sender characteristics, the main instrument employed in the results in table 4.3 is the percentage of households that have international migrants in the respective county of residence (a proxy for the presence of migrant networks). As mentioned before, certain states are traditionally migrant senders, and those regions are probably more accustomed to being recipients of remittances for reasons other than income diversification. For instance, states with more migrants abroad (San Miguel, Morazan, and La Union) were the states with more political conflicts in the 1970s and 1980s. In most cases, migration for political reasons is not a family decision. Hence, it may be expected that the underlying factors that motivate political migration may be different in more developed and less conflict-affected regions.[5]

In order to ensure sufficient variation at the household level, migration rates are interacted with variables that can affect the decision to migrate (following the approach in Hanson and Woodruff 2003). The interaction variables selected are already included in the main equation: home ownership (capturing economic status of the family), the number of adult males (a measure of labor force availability at home), and the presence of 0–5 year-old children in the household (in order to assess the degree of attachment to the family home). All these household level variables interacted with migration rates at the county level are good predictors of the remittances recipient status of the family (all significant in the first stage) and are considered valid instruments according to Sargan's overidentification test (do not reject the null hypothesis that the instruments are valid).

The results indeed show that selection into migration is a serious problem in this case, as the estimates differ considerably from those in table 4.2. Confirming instrumental variables results for the Salvadoran case in Acosta (2006), the negative relationship between remittances and labor supply only remains

Table 4.3. IV Probit and 2SLS Results for Labor Force Participation and Hours Worked, 2000 Household Survey

Estimation	IV Probit				2SLS			
Dependent variable	Labor force participation				Hours worked			
	Rural		Urban		Rural		Urban	
Sample	Males	Females	Males	Females	Males	Females	Males	Females
Household receives remittances	−0.016	−0.446***	−0.090	−0.422***	−15.666***	−28.627***	−24.440***	−20.867***
	(0.068)	(0.037)	(0.142)	(0.110)	(4.665)	(3.642)	(8.448)	(6.355)
Hansen overidentification test (p-value)	*0.356*	*0.153*	*0.513*	*0.285*	*0.841*	*0.216*	*0.187*	*0.402*
Household has migrant member	−0.028	−0.451***	−0.061	−0.384***	−18.595***	−31.385***	−19.106***	−19.154**
	(0.086)	(0.031)	(0.100)	(0.107)	(5.499)	(3.985)	(6.167)	(6.074)
Hansen overidentification test (p-value)	*0.374*	*0.414*	*0.582*	*0.169*	*0.965*	*0.417*	*0.266*	*0.270*
Number of observations	5,415	6,244	8,719	10,818	5,415	6,244	8,719	10,818

Source: Author.

Note: Instruments are a percentage of households with international migrants in the county of residence and its interaction with home ownership, number of adult males in the household, and presence of a child zero to five years old. Other controls include a quartic in age and indicators for years of education, marital status, number of children in the household, presence of a zero- to five-year-old child number of adult males and females in the household, family home ownership, proportion of households with sanitary services in the county of residence, proportion of household heads working in agricultural activities in the county of residence, and state/province indicators. Marginal effects are reported in the IV probit specification.

***Significant at 1 percent level. **Significant at 5 percent level. *Significant at 10 percent level.
IV = instrumental variables. IV Probit = generalized least squares. 2SLS = two-stage least squares.

among females. Even among females, stronger effects are found for rural regions, corroborating Hanson's (2005) results for Mexico. The probit and tobit negative impact for males disappears after accounting for endogeneity. However, the negative impact of remittances on hours worked remains for both males and females in urban and rural regions, again with stronger effects among rural females and urban males. When the variable of interest is migration of household members instead of remittances, the main results remain. The overall conclusion is that robust results that take into account selection and endogeneity problems suggest that remittances are more likely to reduce and not increase labor supply among recipient individuals.

Migration, Remittances, and Entrepreneurship

A relevant question is the definition of what makes an entrepreneur. Existing literature usually identifies an "entrepreneur" as an individual involved in self-employment activities or managing a business ("patron"). However, discussion of whether individuals in particular in developing countries choose self-employment activities is ongoing. The Harris-Todaro model (Harris and Todaro 1970) of labor markets in developing countries argues that the informal self-employment sector is a "parking lot" where aspirants to formal waged employment bide their time. Recent views challenge the Harris-Todaro view of self-employment, noting that there is evidence of substantial voluntary movement of workers from the formal to the informal sector; that self-employed earn more than waged employees; and that human capital, age, and other endowments are among the main determinants of self-employment (Sumner 1981; Blau 1985, 1986). In the analysis that follows, both self-employment and business management are interpreted as "entrepreneurial" activities.

As mentioned in the introduction, international remittances flows can help to overcome borrowing constraints and help to finance microenterprises and self-employment activities. In order to test this claim, table 4.4 shows separate probit regression results for the probability of self-employment and the probability of managing a microenterprise (conditional on working in any paid activity), as a function of household and community characteristics, using the nationally representative household survey. Once again, the two variables of interest are "access to remittances" and "having an international migrant member." The rest of the control variables are those used for labor force participation.

Remittances are not significantly associated with self-employment activities across any demographic group. In contrast, remittances receipts are positively and significantly related with business ownership in all groups except urban males. The evidence thus seems to indicate that migrant transfers can help boost business

Table 4.4. Probit and Tobit Results for Self-Employment and Business Ownership, 2000 Household Survey

Age group	20–59				20–59			
Dependent variable	Self-employment indicator				Own business indicator			
	Rural		Urban		Rural		Urban	
Sample	Males	Females	Males	Females	Males	Females	Males	Females
Household receives remittances	0.003	−0.033	0.010	−0.004	0.049***	0.067***	0.007	0.039***
	(0.021)	(0.031)	(0.013)	(0.016)	(0.012)	(0.018)	(0.010)	(0.011)
Household has migrant member	0.003	0.010	0.018	−0.044**	0.057***	0.050***	0.023*	0.071***
	(0.024)	(0.035)	(0.015)	(0.018)	(0.015)	(0.018)	(0.013)	(0.014)
Number of observations	4,460	2,244	6,911	4,460	4,460	2,244	6,911	4,460

Source: Author.

Note: Sample includes only paid workers. Other controls include a quartic in age and indicators for years of education, marital status, number of children in the household, presence of a 0–5 year old child, number of adult males and females in the household, family home ownership, proportion of households with sanitary services in the county of residence, proportion of households working in agricultural activities in the county of residence, and state/province indicators.

Robust Huber-White standard are in parentheses. Marginal effects are reported.

***Significant at 1 percent level. **Significant at 5 percent level. *Significant at 10 percent level.

creation, with stronger effects in rural underdeveloped regions and among females, who are usually more vulnerable to borrowing constraints. Of course, this claim should be tested in a setting that addresses potential endogeneity of remittances flows. It may be the case that wealthier families are those that can afford to finance migration and family enterprises, thereby introducing an artificial association due the omission of household wealth (not available in the data) in the regression equation. When the variable of interest is the existence of migrant members, results are qualitatively the same with the exception of urban males, for whom migration seems to actually reduce the likelihood of self-employment. Overall, these results corroborate existing literature findings (Funkhouser 1992; Massey and Parrado 1998; Woodruff and Zenteno 2007).

Again, a way to overcome estimation concerns about selection into migration and endogeneity of migration and remittance receipts, in the absence of natural experiments, is by means of instrumental variables. Using the instruments applied to the labor force participation case (the percentage of families with migrants in the county and its interaction with household level variables), table 4.5 shows that, after accounting for endogeneity, migration and remittances increase the probability of self-employment among males, with a stronger impact in rural regions. On the contrary, remittances recipient males (and males from migrant households) have no higher chance of managing a business compared with non-recipient (or without migrant relatives) counterparts. However, remittances and migration boost business management among females, in particular in rural areas. Overall, the results confirm that remittances seem to reduce credit constraints, principally in rural regions.

Conclusions

The evidence for the impact of international migration and remittances on labor supply and entrepreneurship in El Salvador confirms previous literature findings that labor force participation tends to fall among remittances recipients. At the same time, remittances increase entrepreneurial activities (self-employment, business ownership) among recipients. Preferred estimates that take into account selection into migration and potential endogeneity of remittances flows stress that labor supply disincentives operate more strongly among females than among males.

The results signaling that the additional income derived from migration reduces women's labor supply, with no major impact on activity choice, suggest the presence of gender differences in the use of remittances across households. Unfortunately, the data do not allow testing for intrahousehold gender differences in the use of remittances, as the money received from abroad is reported at the

Table 4.5. IV Probit Results for Self-Employment and Business Ownership, 2000 Household Survey

Age group	20–59				20–59			
Dependent variable	Self-employment indicator				Own business indicator			
	Rural		Urban		Rural		Urban	
Sample	Males	Females	Males	Females	Males	Females	Males	Females
Household receives remittances	0.689***	0.148	0.363*	0.124	0.106	0.210**	0.128	0.282*
	(0.098)	(0.142)	(0.246)	(0.182)	(0.112)	(0.143)	(0.191)	(0.200)
Hansen overidentification test (p-value)	*0.321*	*0.229*	*0.537*	*0.612*	*0.158*	*0.135*	*0.306*	*0.157*
Household has migrant member	0.751***	0.119	0.302*	0.135	0.167	0.495***	0.106	0.285**
	(0.076)	(0.157)	(0.197)	(0.173)	(0.162)	(0.238)	(0.150)	(0.193)
Hansen overidentification test (p-value)	*0.140*	*0.173*	*0.558*	*0.663*	*0.285*	*0.804*	*0.297*	*0.174*
Number of observations	4,460	2,244	6,911	4,460	4,460	2,244	6,911	4,460

Source: Author.

Note: Instruments are percent of households with international migrants in the county of residence and its interaction with home ownership, number of adult males in the household, and presence of a child zero to five years old. Other controls include a quartic in age and indicators for years of education, marital status, number of children in the household, presence of a zero- to five-year-old child, number of adult males and females in the household, family home ownership, proportion of households with sanitary services in the county of residence, proportion of households working in agricultural activities in the county of residence, and state/province indicators. Marginal effects are reported.

***Significant at 1 percent level. **Significant at 5 percent level. *Significant at 10 percent level.

household level and not on an individual basis. All that can be said is that, across households, remittances do not have the same impact across gender groups.

Although a reduction in labor force raises doubts concerning whether remittances are fully exploited in order to achieve sustainable economic growth and development in recipient countries, this finding should not be associated with a negative side effect of migrant remittances at destination without further information on alternative activities. Acquisition of human capital (for example, education), time dedicated into parenting activities or home production are growth-enhancing activities as well. Or recipient households could spend the extra income hiring outside labor, creating a positive externality of remittances in neighbor families, or accumulating capital goods that would raise labor productivity.

Regarding entrepreneurship, evidence for the country shows that self-employment increases among remittances recipient males, while recipient females are more likely to be engaged in own microenterprise management than their nonrecipient counterparts. The results support the idea that remittances reduce liquidity constraints in high-risk labor activities.

Notes

1. The Encuesta de Hogares de Propositos Multiples (EHPM) survey is part of the program "Programa para el mejoramiento de las encuestas y la medicion de las condiciones de vida en America Latina y el Caribe" (MECOVI), a joint project of the Inter-American Development Bank and the United Nations' Economic Commission for Latin America and the Caribbean.

2. An alternative to access to remittances as the variable of interest is the amount remitted. However, recall bias may be substantially important for households whose members decide to pool their income, regardless of sources. Families are presumably more likely to remember whether they received financial aid from abroad, or from other sources, than they are to remember the exact amount. Previous studies have shown that remittances reported in household surveys appear to be lower than macroeconomic balance-of-payments figures would suggest (Freund and Spatafora 2005; Acosta et al. 2006). For instance, in the household survey used here, the calculated remittances over nonremittances income ratio is 5.7 percent, much lower than the 15.4 percent of remittances over GDP ratio reported in the International Monetary Fund's balance-of-payments statistics. Measurement error in the reported amount of remittances would introduce a downward bias in the coefficient of the impact of remittances.

3. Regression details are available on request.

4. As pointed out in Newey (1987), the use of 2SLS in a context of a binary outcome (labor force participation) and a binary endogenous variable can result in inconsistent estimates. Although Angrist (1991) provides certain conditions under which 2SLS can perform well with binary endogenous variables, Newey (1987) suggests the use of Amemiya's maximum-likelihood GLS estimator.

5. Similarly, there appears to be no direct relationship between county-level migration rates and regional development; correlations between migration rates on the one hand and county-level per capita income, unemployment rates, and school enrollment rates on the other hand are low (-0.112, -0.063, and 0.064, respectively) and not statistically significant. Hanson and Woodruff (2003), Hildebrandt and McKenzie (2005), Lopez-Cordova (2005), Acosta (2006), and Woodruff and Zenteno (2007) have used historical migration rates as instruments for remittances receipts.

References

Acosta, P. 2006. "Labor Supply, School Attendance, and Remittances from International Migration: The Case of El Salvador." Policy Research Working Paper 3903, World Bank, Washington, DC.

Acosta, P., C. Calderon, P. Fajnzylber, and H. Lopez. 2006. "Remittances and Development in Latin America." *World Economy* 29: 957–87.

Adams, R. 1998. "Remittances, Investment, and Rural Asset Accumulation in Pakistan." *Economic Development and Cultural Change* 47: 155–73.

Angrist, J. 1991. "Instrumental Variables Estimation of Average Treatment Effects in Econometrics and Epidemiology." Working Paper 115, National Bureau of Economic Research, Boston, MA.

Blanchflower, D., and A. Oswald. 1998. "What Makes an Entrepreneur?" *Journal of Labor Economics* 16: 26–60.

Blau, D. 1985. "Self-Employment and Self-Selection in Developing Country Labor Markets." *Southern Economic Journal* 52 (35): 13–63.

———. 1986. "Self-Employment, Earnings and Mobility in Peninsular Malaysia." *World Development* 14: 839–52.

Cox-Edwards, A., and M. Ureta. 2003. "International Migration, Remittances, and Schooling: Evidence from El Salvador." *Journal of Development Economics* 72: 429–61.

Evans, D., and B. Jovanovic. 1989. "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints." *Journal of Political Economy* 97: 808–27.

Freund, C., and N. Spatafora. 2005. "Remittances: Transaction Costs, Determinants, and Informal Flows." Policy Research Working Paper 3704, World Bank, Washington, DC.

Funkhouser, E. 1992. "Migration from Nicaragua: Some Recent Evidence." *World Development* 20: 1209–18.

———. 1997. "Labor Market Adjustment to Political Conflict: Changes in the Labor Market in El Salvador during the 1980s." *Journal of Development Economics* 52: 31–64.

Hanson, G. 2005. "Emigration, Remittances, and Labor Force Participation in Mexico." Mimeo, University of California, San Diego.

Hanson, G., and C. Woodruff. 2003. "Emigration and Educational Attainment in Mexico." Mimeo, University of California at San Diego.

Harris, J., and M. Todaro. 1970. "Migration, Unemployment and Development: A Two-Sector Analysis." *American Economic Review* 60: 126–42.

Hildebrandt, N., and D. McKenzie. 2005. "The Effects of Migration on Child Health in Mexico." *Economia, Journal of the Latin American and Caribbean Economic Association* 6: 257–89.

Hoddinott, J. 1994. "A Model of Migration and Remittances Applied to Western Kenya." *Oxford Economic Papers* 46: 459–76.

Ilahi, N. 1999. "Return Migration and Occupational Change." *Review of Development Economics* 3, 170–86.

Lopez-Cordova, E. 2005. "Globalization, Migration and Development: The Role of Mexican Migrant Remittances." *Economia, Journal of the Latin American and Caribbean Economic Association* 6 (2): 17–56.

Massey, D., and E. Parrado. 1998. "International Migration and Business Formation in Mexico." *Social Science Quarterly* 79: 1–20.

Menjivar, C. 2000. *Fragmented Ties: Salvadoran Immigrants Networks in America.* Berkeley: University of California Press.

Mesnard, A. 2004. "Temporary Migration and Capital Market Imperfections." *Oxford Economic Papers* 56: 242–62.

Mishra, P. 2007. "Emigration and Wages in Source Countries: Evidence from Mexico." *Journal of Development Economics* 82 (1): 180–99.

Newey, W. 1987. "Efficient Estimation of Limited Dependent Variable Models with Endogenous Explanatory Variables." *Journal of Econometrics* 36 (23): 12–50.

Paulson, A., and R. Townsend. 2004. Entrepreneurship and Financial Constraints in Thailand. *Journal of Corporate Finance* 10: 229–62.

Sumner, D. 1981. "Wage Functions and Occupational Selection in a Rural Less Developed Country Setting." *Review of Economics and Statistics* 63: 513–19.

Woodruff, C., and R. Zenteno. 2007. "Migration Networks and Microenterprises in Mexico." *Journal of Development Economics* 82: 509–28.

Yang, D. Forthcoming. "International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks." *Economic Journal.*

Yang, D., and H. Choi. Forthcoming. "Are Remittances Insurance? Evidence from Rainfall Shocks in the Philippines." *World Bank Economic Review.*

5

THE DEMOGRAPHIC BENEFIT OF INTERNATIONAL MIGRATION: A HYPOTHESIS AND ITS APPLICATION TO MIDDLE EASTERN AND NORTH AFRICAN CONTEXTS

Philippe Fargues

Development economists commonly regard migration as a potentially win-win process: it could create a net gain in both the origin and the destination regions of migrants. But is international migration a "positive sum game" in terms of demography? This chapter argues that international migration has helped contain the demographic explosion. More precisely, population movements from developing countries to more developed countries since the 1970s have resulted in a global world population smaller than that had no international migration taken place. In other words, the chapter argues that international migration has helped reduce the risk of world overpopulation[1]—that is, it has increased global security through demographic change.

This chapter hypothesizes that migration from high to low birth-rate countries during the period of demographic transition[2]—a period during which international

differentials in birth rates are peaking—has affected global demography. The assumption is that international migrants adopt models and ideas that prevail in host countries and send them back to their home countries. In that sense they are agents of the diffusion of demographic modernity.

The Middle East and North Africa (MENA) offers a particularly interesting case for exploring the hypothesis that migrants are potential vectors of demographic change. Several countries in this region witness intense emigration; emigrants are bound for the Arab Gulf States or for the West according to countries of departure and time. With regard to demographic differentials encountered through migration, the region thus offers contrasting situations: host countries of emigrants are sometimes less, sometimes more advanced in their demographic transition than emigrants' home countries. If the central hypothesis of this chapter is true, emigration from countries in the Middle East and North Africa will have modified the course of the demographic transition of emigrants' origin countries in opposite directions according to destinations. Such emigration will have slowed demographic transition where emigrants are destined to the Gulf and accelerated it where they move to the West.

The chapter has five sections. First section examines the place of migration in demographic analysis. Second section proposes a general framework of interaction between migration and demographic change. Third section provides an overview of the well-documented side of this framework—that is, the impact of migration on the demography of migrants. Next section is a first attempt to explore the other side of the framework, that is, the impact of migration on the demography of nonmigrants in countries experiencing significant rates of emigration and the Middle East and North Africa is used as an example. Final section offers a partial validation of the main hypothesis by comparing evidence from Egypt, Morocco, and Turkey.

Demographic Ideal of a Closed Population

Demographers have never analyzed migration at the same level of formal elaboration as the two other components of population change: birth rates and death rates that together form the "natural" growth of any population. Migration is absent from the core model of formal demography—known as the "theory of stable populations"—and methods for estimating migration are much less settled than those for measuring fertility and mortality.

Formal demography is anchored in the tradition of biology. It models population dynamics as the result of two biological processes: natality and mortality. The modern mathematical demography founded by Alfred Lotka simply excludes external migration:[3] "By a very natural abstraction, demographic analysis envisages

as a point of departure the case of a closed population, that is to say, a population whose numbers receive new accessions only through births and suffers losses only through deaths, immigration and emigration being excluded" (Lotka 1998 [1939], 53). Basic analytical models—the most commonly used one is the life table, which describes the extinction of a generation "in the absence of external migration"—are constructed on the assumption of a "closed" population—that is, a population that receives or sends no external migrants.[4]

True populations, however, are not closed. States, or nations, define populations, and borders separate national populations from one another. As soon as a border delineates a population, crossing the border becomes one of the factors of the population's growth and reproduction. For Lotka this phenomenon is not a reason for introducing migration in the fundamental demographic equations:

> Demographic statistics is concerned primarily with human populations, and particularly with certain more or less isolated populations, as for example those of a nation [. . .] The practical problems [posed by migration across borders] are reduced more and more as the area included in the study expands, since emigration and immigration are plainly functions of the border periphery, whereas births and deaths are instead functions of the land area, and the ratio between the periphery and the internal area continuously decreases as the latter increases. Circumstances of politics and commerce further tend to accentuate that effect, so that for an entire country migration can in certain cases be almost negligible as a factor determining the growth of its population [. . .] (Lotka 1998 [1939]).[5]

States are not only frames of reference for the delimitation of any national population; they also form the actual frame of population data collection. Statistical records thus incorporate migration, implicitly in vital statistics[6] or explicitly in migration statistics. As a result, demographers take migration into account as soon as they leave models to tackle real statistics. Their interest in migration can follow two distinct purposes: eliminating migration from vital records because of its interference with biological demography or measuring migration for its contribution to overall demography.

Eliminating the interference of external migration with the statistical observation of births and deaths has been an important concern for demographers. Following chemistry, formal demography aims at studying fertility and mortality "in the pure state," and for this purpose it must remove the blurring effect of external migration (Henry 1972). The number of births and deaths that would have been recorded if no migration had occurred is the question to be answered. Because migration is a selective process and because it changes the course of life, its statistical

interference with fertility and mortality is a complex one. Do emigrants have the same probability of giving birth or of dying as non-migrants? To what extent do birth rates and death rates obtained on the basis of incomplete statistics (they do not cover emigrants) apply to all members of the generation under consideration? How should demographers deal with the dependence between probability of emigration on one side, and fertility or mortality on the other side? These questions have produced more interesting methodological developments in demography than additional knowledge on migration.[7]

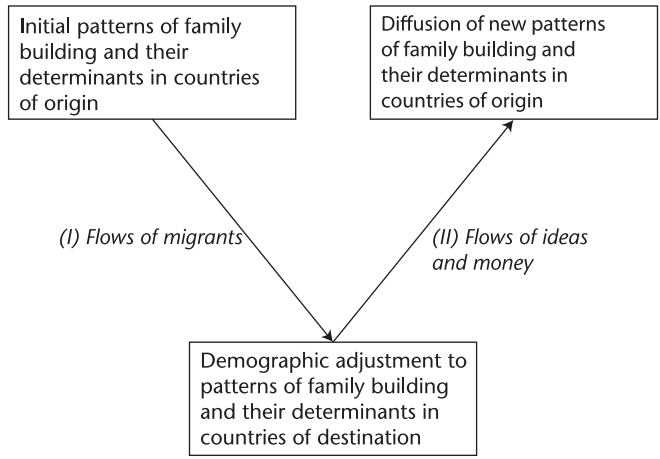
Measurement of migration also enters within the scope of demography, insofar as the overall growth of any population is the addition of its external migration to its natural growth.[8] Because migrants have a specific age profile, their contribution to the age structure of the population has also become a topic of interest in demography—a topic recently rekindled by the worry about the consequences of ageing in industrialized countries. The question of how to balance decreasing fertility rates with sustained flows of immigrants has received some attention from demographers (Keyfitz 1981; United Nations 2000).[9] However, for logical reasons intrinsic to migration itself, the modeling of external migration never proceeded far in demographic analysis, and given limits to the social, rather than the biological, nature of external migration, no robust framework of determinants comparable to those applied to mortality and fertility was devised in the demographic study of migration. As Davis (1988, 245) puts it,

> international migration [. . .] resembles mortality and fertility in being part of the fundamental balancing equation in demography, which says that any population change is a function of natural increase and net migration [. . .] but unlike mortality and fertility, it has no biological constraints and hence no built-in limits. There is no 'normal' or 'natural' rate of migration.

Modeling the Impact of International Migration on Birth Rates

Demography basically deals with international migration as numbers to be added (immigration) or subtracted (emigration) to any population defined by national boundaries. No individual country has a zero balance of external migration, but the entire world has such a balance, because it receives no external migration. Despite this indisputable fact, this chapter argues that flows of international migration might change the total number of inhabitants on Earth as a result of the potential impact of international migration on natural population growth, notably on birth rates.[10] The focus of this chapter is two subpopulations: migrants and the communities they have left behind in home countries.

Figure 5.1. A Framework of the Impact of International Migration on Birth Rates



Source: Author.

For those who move, migration is likely to produce two distinct impacts on patterns of family building. The first is a short-term impact that results from imbalances in the sex-ratio of migration flows—labor migration (whether of men or of women) delays marriage and procreation, whereas migration for family reunification yields the opposite effect and allows recovery of birth-rate deficits of previous steps in individuals' life cycle. The second impact is a long-term one resulting from the gradual adjustment of migrants to their host population, which translates into a convergence of migrants' demographic patterns with the patterns prevailing in receiving countries (see left arrow of figure 5.1). This impact is a limited one, because it affects only migrants.

Those who do not migrate but live in communities from which numerous migrants have departed might also see their demography affected by migration. The emigration of relatives or neighbors can transform their living conditions and expose them to alternative models that change their vision of life. Expatriates are more likely today than in the past to stay in close contact with their communities left behind whether through fast travel or improved telecommunications. As a result, modern migrants are still part of the society in their home countries. Figure 5.1 (right arrow) depicts the potential impact of migrants' diffusion of models on patterns of family building and procreation. The impact is not limited to migrants and their close families; it extends to their entire local community at home, and possibly to the larger society through the media. This process interacts

with the first one: the more emigrants assimilate to their host society—and the more connected they are to the world they left behind—the more efficient their diffusion of new models and ideas in their home society.

This argument refers to the ideational frame of the demographic transition, which is far less researched and less modeled than its structural frame. Demographers have written more on the decline of fertility in relation to structural transformations such as the spread of mass education and urbanization, or the shift from agriculture to services, than on the role that culture and values play in demographic change. As a consequence, empirical evidence is scant. Most, if not all, large fertility surveys designed on a highly standardized and comparative scheme[11] have disregarded ideas and values, with the exception of a few questions directly related to family building, such as ideal number children, sex preference, or views on marriage. Due to lack of individual data on more fundamental ideas and values expressing the way people view their lives, this chapter will content itself with a macro approach of descriptive character and will not reach the micro level that would allow a true validation of the hypothesis that migration is a vehicle for alternative ideas.[12] To be validated, this hypothesis must be tested econometrically with empirical data. Hence, this chapter could be viewed as a first attempt to explore the relationship between ideas which are channeled through migrants and fertility.

Downstream Demographic Adjustment of Migrants

When people move, they change their environment but not themselves. They are quickly subjected to new living conditions, which are important to determine the cost of children. For material reasons, migration will most probably affect the timing of childbearing and the desired number of children.[13] Changing some of their individual characteristics, such as level of education, which is recognized to be an important determinant of fertility, and adapting to a new culture will occur later in the course of their lives or occur only in the course of their children's lives. A quick but limited effect of migration on fertility is to be expected before any deeper shift takes place.

In fact, the convergence of immigrants' fertility with natives' fertility appears to be a slow process. For example, in France—the country that hosts the largest Arab expatriate community outside the Arab world—total fertility rates among immigrant women from the Middle East and North Africa have decreased during the 1980s and the 1990s, thus reducing the distance to their host population, but surprisingly at a much slower pace than in their countries of origin (table 5.1). Algerian women living in France experienced an earlier fertility decline than those women left behind in Algeria (6.77 children per woman compared with 4.22 in

Table 5.1. Total Fertility Rates of Foreign Citizen Women Residing in France Compared with Women in Their Country of Origin and with French Women, Around 1980, 1990, and 2000

Citizenship	Residence 2000	1980	1990
Algerian	France		
	3.19	4.22	3.22
	Algeria		
	2.97	6.77	4.67
Moroccan	France		
	3.32	5.14	3.51
	Morocco		
	2.87	5.65	4.03
Tunisian	France		
	3.29	5.21	3.93
	Tunisia		
	2.16	5.30	3.62
Turkish	France		
	3.35	5.13	3.73
	Turkey		
	2.57	4.40	3.40
French	France		
	1.82	1.87	1.76

Sources: France (in 1982, 1990, 1999): Legros 2003; Algeria, Morocco, Tunisia, Turkey: United Nations 2003.

Note: The total fertility rate is the final average number of children born per woman, obtained as the sum of age-specific fertility rates from 15 to 49 years, during a given period of time.

1980), but because this decline has been slower among the former than among the latter, Algerian emigrants now have higher fertility rates than their nonmigrant fellow citizens in Algeria (3.19 compared with 2.97 in 2000). The same trend holds for Moroccan, Tunisian, and Turkish women. This unexpected finding is largely due to a statistical artifact resulting from two characteristics of migration: for women, migration is often the result of marriage (another result of which is fertility), and migration is a selective phenomenon.

In order to fully understand this artifact, the reader must bear in mind that, since the quasi-closure of Europe to labor immigration beginning in the mid-1970s, family reunification has become the first channel of legal entry for non-European aliens. Family reunification applies to wives or husbands, which means that a birth is likely to follow shortly after migration.[14] On average, 49 percent of

Table 5.2. Total Fertility Rates in 1999 Among Foreign Women Residing in France According to Date of Immigration

Nationality\Date of immigration	1980–89	1990–99
Algerians	2.66	4.08
Moroccans	2.91	4.31
Tunisians	2.66	4.46
Turks	2.46	3.99

Source: Legros 2003.

Algerian immigrant women are married at the time of immigration in France, 52 percent of Moroccans and Tunisians are married, and 59 percent of Turks are married (Borrel and Tavan 2003). The fact that births delayed in countries of origin are recovered in countries of destination clearly emerges from the fact that, for the same generation of women, those who reside in France for more than 10 years have a much lower level of fertility than those who reside less than 10 years (table 5.2).[15] The demographic adjustment effectively operates, but only after certain duration of stay. Family reunification tends to perpetuate the social selection of migrants, and those who arrived in France at the time of massive labor migration (before 1974) were mostly unskilled workers belonging to social groups with a fertility higher than the national average in their home countries.

Two remarks on the adjustment of migrants to their host societies are critical at this point. First, the social selection of migrants varies with home and host countries. For example, despite the fact that Egypt has higher birth rates than Lebanon, Egyptian immigrants in Australia have much lower birth rates than Lebanese immigrants in the same country. In 1981, total fertility rates were 5.40 children per woman in Egypt and 4.05 in Lebanon; their immigrant communities in Australia had total fertility rates of 2.51 and 4.80, respectively (Young 1991). Egyptians in Australia were more advanced than Lebanese in their demographic transition, but Lebanese in Lebanon were more advanced than Egyptians in Egypt, a possible sign of upward social selection of migrants to Australia in Egypt and of downward social selection in Lebanon. Fertility decreased from one generation of immigrants to the next among Lebanese as a result of their convergence with native Australians, but not among Egyptians, who since their arrival had a lower fertility than average Australians.[16]

Second, convergence might occur more quickly in demography than in other family-related issues. A survey of immigrants from Turkey and Morocco carried out in Belgium in the early 1990s found that in matters directly related to fertility—such as desired family size, the preference for boys or girls, the utility of children, and contraception—migration produces a decisive change. For example, the percentage

of married women aged 25–29 using contraceptives was, respectively, 79 percent and 71 percent among Turkish and Moroccan women living in Belgium, compared with 44 percent and 35 percent in their countries of origin in the same year. When it comes to marriage, the choice of partner, and female autonomy, however, only a "prudent shift in the code of conducts" is observed. Marriage decided on the basis of free individual choice without parental interference remains rare and is most often a source of conflict. Social and cultural changes would thus proceed at different paces according to domains (Lesthaeghe and Surkyn 1995).

Patriarchal versus Individualistic Values Sent Home by Migrants

From the mid-1970s until the late 1980s, Arab countries were displaying a puzzling pattern of fertility differential. Contrary to a negative correlation between GDP per capita and birth rates as observed in most countries, the richest Arab countries were also those with the highest birth rates. As discussed below, this divergence has been interpreted as the result of oil wealth and the particular type of state-to-society relationship it generated (Fargues 1994). Even more puzzling, when only non-oil Arab countries were compared with one another, some of those best endowed with what are considered universal factors of the fertility transition—such as good health or a high level of female education—were maintaining higher levels of fertility than countries less endowed with these factors. In other words, a single country could be characterized as simultaneously advanced in well-being but delayed in demographic matters.[17] This apparent anomaly was due in part to migration, which served as a vehicle for values and models.

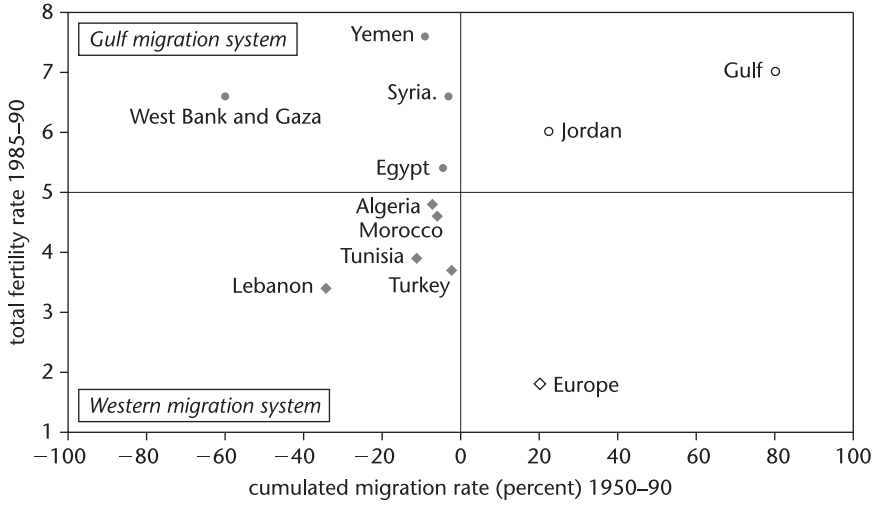
Before the 1973 Arab-Israeli war, all Arab countries except Lebanon were in a pretransitional stage regarding fertility; total fertility rates ranged from 6 to more than 8 children per woman. Only in the second half of the 1970s did social and economic transformations begin to translate into rising marriage age among women (Rashad and Osman 2003) and birth control. However, in major Arab oil-producing countries (the Gulf states, Libya, and Algeria), the sudden change in the scale of state revenues in the immediate aftermath of the 1973 war, which sent crude oil prices soaring, halted the fertility transition. Oil revenues enabled governments to establish welfare state systems by simultaneously financing development (health, education, and so on) and subsidizing consumption.

Although development activities were conducive to fertility decline, subsidized consumption, by reducing the cost of raising children, had the opposite effect in many Arab countries, especially in the most oil-rich ones. By keeping the population in check through generous oil wealth redistribution, the governments of these countries were able to play the forces of social conservatism and social

change against one another. Social conservatism was reflected, in particular, by the low rate of labor force participation among married women.[18] By cutting the costs of fertility and keeping women in the home, oil revenues indirectly promoted high fertility. In other words, oil revenues "generated" population to some extent.[19] Early marriage and high birth rates persisted, as if by contagion, in the non-oil countries of the Mashreq (except Lebanon), but not in the distant Maghreb, where delayed marriage and birth control gradually increased. The fertility transition in Tunisia and Morocco occurred earlier than that in Jordan, Syria, Yemen, and even Egypt. Migration offers a key for understanding what happened then. Figure 5.2 clearly shows that in the second half of the 1980s, when fertility differentials among countries of the Middle East and North Africa were peaking, all the countries of emigration to the Gulf had an above-average level of fertility (see upper left-hand panel), whereas all the countries of emigration to the West had below-average levels of fertility (see lower left-hand panel).

As soon as large fertility surveys in the late 1980s and early 1990s revealed the surprising pattern of Mashreq-Maghreb demographic differentials, researchers developed the idea that cultural models encountered through international migration reinforce, to a certain extent, the geography of demographic transition.

Figure 5.2. Migration and Fertility in the Middle East and North Africa at the Time of Maximum Variation in Fertility



Source: Cumulated Migration is computed by the author applying the method described in Table 5.A1 in the Appendix.

The Maghreb, which has a foothold in Europe through its émigrés, has experienced a marked decline in its birth rate, whereas the Egypt of the *Infitâh,* which has strengthened its Arab exchanges through a million and a half expatriates in the Gulf, saw the rate rise again from 1974 to 1985. Migration contributed to the renewed increase in the birth rate, because Egyptians came into contact with the large family standard that is common in the Gulf. In the same way, migration to Europe has accelerated the decline of the birth rate in the Maghreb (Fargues 1994). In a comparison of Egypt and Morocco, Courbage (1995) reiterated the hypothesis that emigration contributes to the diffusion in emigrants' home countries of ideas and models prevailing in emigrants' host countries. Courbage emphasized that contrasted marriage patterns were key factors differentiating the level of fertility in the two countries.

Subsequent studies of marriage in Egypt revealed that rising material expectations and increased consumerism among youth had affected the cost and the timing of marriage. This phenomenon is attributed to changes in aspirations—notably regarding the acquisition of consumer durables—among male labor migrants returning from Saudi Arabia and other Gulf countries, as well as to actual increases in income and standards of living generated by migrant workers' remittances. Singerman and Ibrahim (2003) found that the cost of marriage in Egypt, which dramatically increased in the 1970s and the 1980s and stabilized in the 1990s, has been responding to the growing then stabilizing size of the Egyptian labor migration to the Gulf. Other scholars have interpreted decreasing rates of economic activity among women in the 20–24 age group between 1988 (24 percent) and 1998 (21 percent)—"contrary to the expectations for a period of structural adjustment"—as a sign that "modern marriage in Egypt may offer young girls something of greater value than the alternative of earning their own income through wage work" (Amin and Al-Bassusi 2003, 3). However strong material motives might be, they are not the only force at play. Ideas also matter. Social and cultural conservatism encountered in Saudi Arabia by Egyptian migrants and brought home to a more open Egyptian society is probably part of the explanation (Singerman and Ibrahim 2003).

Why did Egyptians or Jordanians, but not Moroccans or Tunisians (or Turks, outside the Arab world), translate material aspirations raised by contact with wealthier societies into conservative views and practices in matters related to family building? What mechanisms determine whether women gain access to wealth through marriage and rising dowry (Egypt and Jordan) or through economic activity and paid labor (Tunisia and Morocco, or Turkey)? This chapter argues that international migration has served as a vehicle for the patriarchal model where emigrants were bound for Saudi Arabia and the Gulf and for the individualistic model where they were destined for Europe. In other words, migration is

hypothesized to have brought about normative changes, sometimes reinforcing control of the family over its members and sometimes increasing individual autonomy.

Upstream Diffusion of Demographic Models by Migrants

What would have been the fertility level if no international migration had taken place? Comparisons over time and space offer an imperfect but workable method to answer this question.

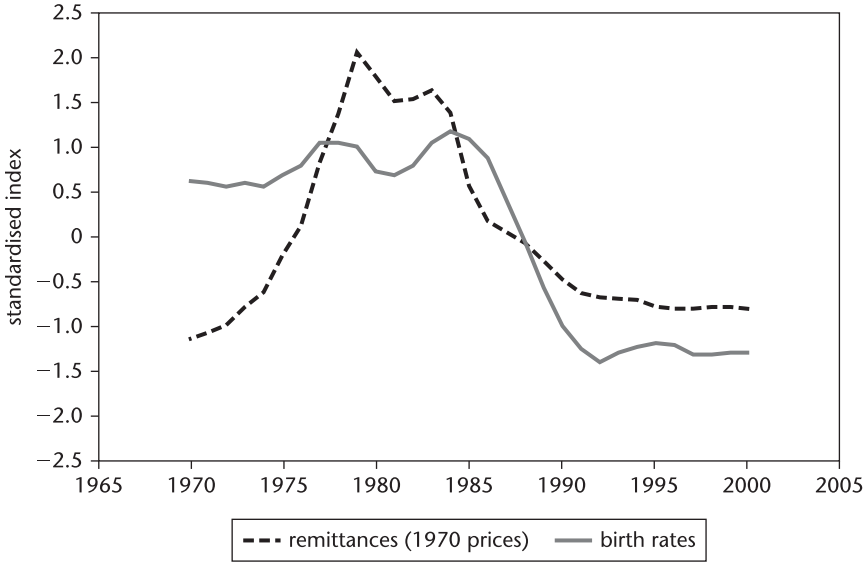
Compare Morocco to Egypt over time. Both countries have experienced intense emigration during the last three decades. Annual flows of emigrants are not recorded, but flows of remittances are. Money transferred by emigrants is directly linked with increases in household income that are hypothesized to play on patterns and timing of family building. In addition, one can reasonably assume that the amount of remittances is a good proxy for the intensity of the overall relationship kept by emigrants with their home country, that is, a remote proxy for ideas, values, and models that emigrants convey to the community left behind. The contrast between Egypt (figure 5.3) and Morocco (figure 5.4) is striking. The time correlation between remittances and birth rates is as highly positive in the former (+0.623) as it is negative in the latter (−0.741).

This chapter does not explore the particular role that can be attributed to state policies in the discontinuous history of birth control and fertility decline in Egypt (Fargues 1997). It contents itself with noting how perfectly any change in private money transfers made by emigrants translates into a parallel change in birth rates two to three years later. Income provided by emigrants appears to directly affect the cost of children (a cost alleviated by additional resources from abroad) but not the desired size of the family (which remains unchanged).

Morocco offers a pattern of birth rates and remittances opposite that of Egypt. Not only do the rates fall and the remittances rise, but the irregularity of remittances contrasts with the perfect regularity of birth rates, as if remittances had no direct impact on birth rates. The size of the Moroccan expatriate community and the intensity of the nonmaterial links that the community's members develop with Morocco matter: ideas continuously circulate; their remittances are not subject to the same volatility as money transfers.

To summarize, time series data suggest that Egyptian migration to the Gulf did not bring innovative attitudes regarding marriage and birth back home. Instead, it brought material resources—in quantity varying with years—for the achievement of traditional family goals. In Morocco, by contrast, emigration to Europe has coincided with a fundamental change of attitudes, and variations in material resources generated by emigration have not affected this change.

Figure 5.3. Remittances and Birth Rates in Egypt (correl = +0.623)



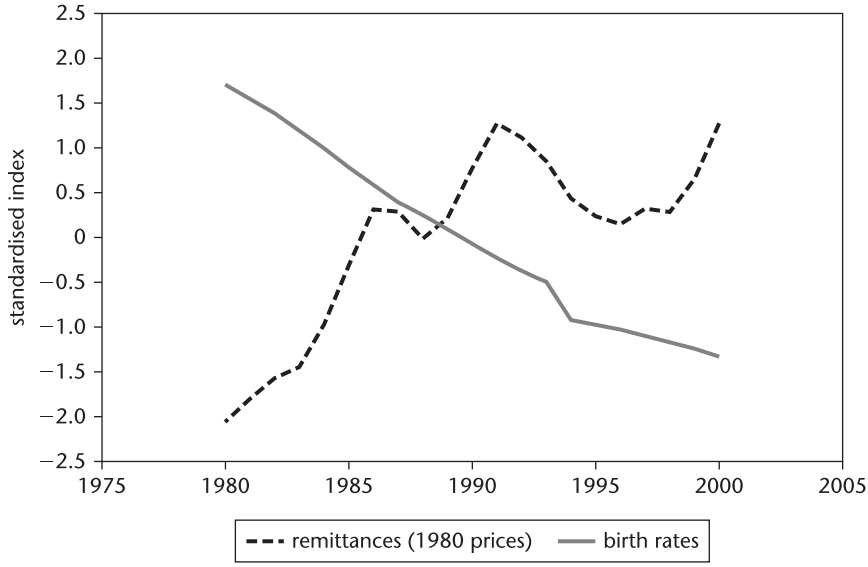
Sources: Birth rates: Central Agency for Public Mobilization and Statistics, Egypt (CAPMAS); remittances at current prices: Central Bank of Egypt; at 1970 prices: computed by the author using indexes of prices provided by CAPMAS. For the underlying data for both variables, please see Table 6 in Fargues (2006).

Note: Standardized Index is defined as [x-average (x)]/standard deviation (x).

Time correlation is not causation, however. The present analysis suggests a relationship between migration and fertility, but given that the analysis is unconditional, the direction of causation cannot be determined and, moreover, the possibility that other nonobserved variables are causing changes in fertility rates cannot be ruled out. To assert that migration helps determine the pace and direction of changes in birth rates, rather than simply covariates with these changes, empirical analysis has to verify that changes in birth rates vary with the degree of exposure to migration. Regions with intense emigration should display more dramatic demographic changes than those with little or no emigration—the closer the agents of diffusion, the stronger their impact. Space correlations are expected to corroborate time correlations.

In both Egypt and Morocco, emigration and the pace of fertility transition are found to covariate in space.[20] In Egypt (see figure 5.5), the higher the rate of emigration, the slower the process of fertility decline, a correlation that suggests that migration has curbed forces of change, possibly in relation to a stronger exposure to conservative ideas prevailing in countries of emigration, that is, the

Figure 5.4. Remittances and Birth Rates in Morocco (correl = −0.741)



Sources: Fargues (2006).

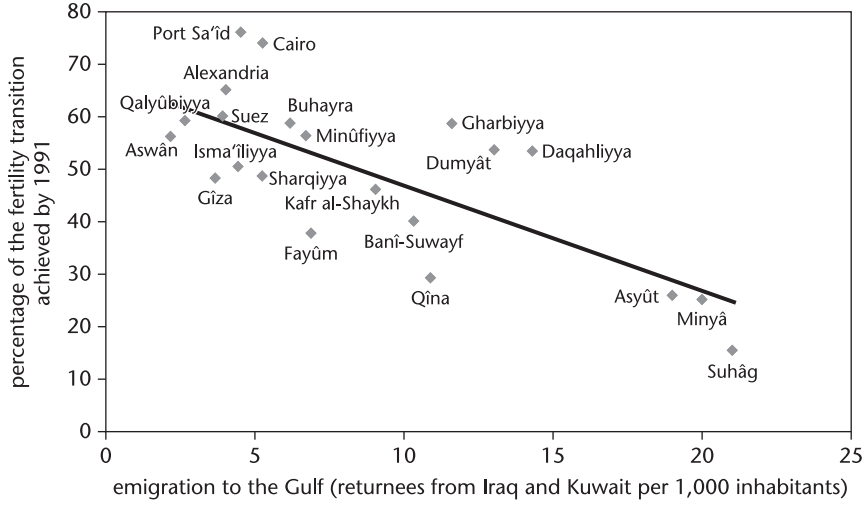
Note: Standardized Index is defined as [x-average (x)]/standard deviation (x).

Gulf countries and Saudi Arabia. The contrary holds true for Morocco (see figure 5.6), where contact with European culture and way of life accelerated demographic change.

A key intermediate variable between emigration and demographic change in the populations left behind appears to be education. Evidence that education is the single most important determinant of the fertility transition in developing countries is overwhelming (Cleland and Hobcraft 1985; Jejeebhoy 1995), and countries in the Middle East and North Africa are not exceptions to this rule. In Egypt, as well as in Morocco, declines in fertility have been associated with rising education, particularly among women.

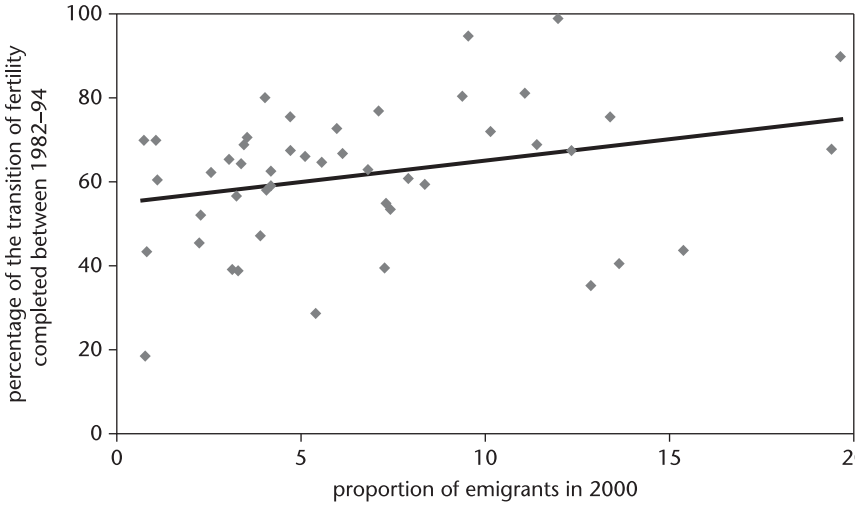
On the other hand, data support the hypothesis that migration has had an impact on the average education of nonmigrant populations in the Middle East and North Africa and that this impact varies according to the region to which major streams of emigrants are destined. Emigration to the Gulf would have slowed the progress of education in regions of origin. Emigration to the West would have accelerated it.

Figure 5.5. Emigration to the Gulf and the Transition of Fertility in Egypt at the Time of the Gulf War (1991), by Governorate



Source: Geographical distribution of returnees provided in Khûrî (1991). Percentage of the fertility transition completed in 1991 computed by the author as [45-CBR(1991)]/30 where Crude Birth Rates for 1991 are given by CAPMAS. For the underlying data, please see Table 8 in Fargues (2006).

Figure 5.6. Emigration and the Fertility Transition by Province in Morocco



Source: Author's calculation from Hamdouch (2000) for emigrants and CERED (various dates) for birth rates. For the underlying data, please see Table 9 in Fargues (2006).

Table 5.3. Correlation Coefficients Among Emigration, Education, and Fertility in Egypt, Morocco, and Turkey

Variables	Egypt	Morocco	Turkey
Emigration × fertility	+0.66	−0.29	−0.42
Education × fertility	−0.85	−0.45	−0.84
Emigration × education	−0.50	+0.26 (U)/+0.40 (R)	+0.32

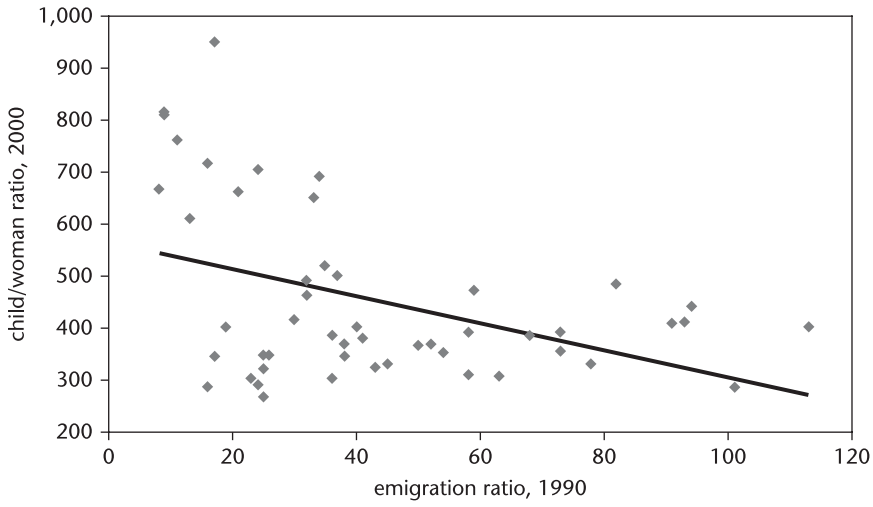
Source: Author.

Note: Correlation computed for provinces with a Human Development Index (HDI) below 750.

U = Urban Areas; R = Rural Areas

In effect, emigration is negatively associated with the progress of education in Egypt, whereas a positive association is found in Morocco (table 5.3). Whether the antecedent is education or emigration—that is, whether regional differences in education are a cause or a consequence of regional differences in emigration—cannot be established with the available data.[21] Evidence from Turkey points in the same direction (figure 5.7). If the analysis excludes the most developed provinces of the country—those where an early demographic transition was recorded in the wake of a modernization process that took place during the first half of the twentieth century, that is, before emigration to the West started (Duben and Behar 1991)—a negative correlation between cumulated emigration before

Figure 5.7. Emigration and Fertility by Province in Turkey, 2000



Source: Author. For the underlying data, please see Table 10 in Fargues (2006).

1990 (as reflected in the proportion of expatriates per 1,000 inhabitants in the 1990 population census) and the child/woman ratio in 2000 (reflecting fertility in the 1990s) is found. As in Morocco, this negative association corresponds to the combination of a positive correlation between emigration and education (education index in 2000) and a negative correlation between education and fertility (table 5.3).

The important point is that emigration to the West could have fostered education in regions of origin, thus indirectly contributing to the demographic transition of nonmigrant populations. Ideas and values would have affected a key structural determinant of fertility. The inducement effect of migration on the formation of human capital in migrants' countries of origin does not refer to the "brain gain" hypothesis, according to which the success encountered abroad by highly skilled emigrants would encourage their nonmigrant fellow citizens to invest in education, thus resulting in more human capital than if no brain drain had taken place (Stark 2002). It rather emphasizes the impact of migration on the average level of mass education. Evidence accumulated in various contexts shows that remittances channeled by families reach the very places from where migrants come and are used for basic needs, including education and health care, that is, for human capital investment (Newland and Patrick 2004). In addition, if emigrants are living in a region in which education is more widely spread than the region from where they come, they convey pro-education values to their community of origin.

Conclusion: Global Demographic Benefit of Migration

When people move from one country to another, they alter their cultural, social, and economic environment, as well as their individual position in the environment where they actually live. Such a change affects the way they behave, including in matters related to demographic reproduction. The impact can be a direct one on marriage and fertility or an indirect one through education. Because migrants are conveyors of values and ideas to the world left behind, non-migrants in countries of origin can react to changes induced by mobility. In addition to the space distribution of people on earth, international migration affects their reproduction. The direction in which it alters demographic processes—producing either more or less fertility—will depend on the social, economic, and cultural context in which migration takes place.

Populations of the Middle East and North Africa have known intense movements of international migration starting from the 1970s, that is, during the critical decades of the demographic transition, at a time when fertility contrasts across the world were sharper than ever. Most emigrants from the Maghreb and Turkey headed to Europe, while most emigrants from the Mashreq headed to the Arab

Peninsula and the Arab Gulf States. The former encountered societies in which small-size families and individualistic values were predominant, while the latter found societies with larger families than those left behind and deeper-rooted patriarchal values.

From where they lived, be it Europe or Arabia and the Gulf, these emigrants of modern times could keep close and often daily ties with their home society. Through these ties, they could have an impact on the way marriage, family building, and the education of children evolved in their country of origin. This chapter has presented the hypothesis that migration to Europe was in fact accompanied by an accelerated move toward low birth rates, whereas migration to the Gulf coincided with a slowed fertility transition. In other words, emigration may have indirectly altered demographic reproduction and affected population numbers in the regions of origin, resulting in fewer inhabitants in the Maghreb and Turkey, but in larger numbers in the Mashreq.

Two broader conclusions can be drawn. The first relates to global demography. In most modern international migration, the host society has a lower level of fertility than the home society. From this point of view, migrants from Turkey and the Maghreb to Europe are the rule and those from the Mashreq to Arabia and the Gulf, the exception. The acceleration of demographic transition found in Turkey and the Maghreb is correlated with migration to Europe. This fact suggests that international migration could produce a global demographic benefit, under the form of relaxed demographic pressures at the world level, if a similar relation applies to migration from countries with high birth rates to those with lower rates.

The second conclusion relates to the circulation of ideas. If it turns out that emigrants are agents of the diffusion of new ideas in matters related to family building and education, they may be agents of a wider range of civil behaviors. Because modern migrants maintain strong links with their community of origin, they are susceptible to becoming key conveyors of ideational change among nonmigrants in origin communities.

Notes

1. Some might associate migration with the search for vital space—that is, with the demographic expansion of mankind rather than with the reduction of its rate of growth. As Davis (1988, 252–53) puts it, "Liberal political and economic leaders tend to believe that a movement from areas of high population density to areas of low population density is [. . .] desirable [while] their opponents point out that the earth is already too crowded, that migration, by helping to fill the last remaining open spaces, is making the crowding worse." Historically, migration has often resulted in populating of scarcely populated areas. But "empty" places no longer exist, and the world is now divided into well-delineated political entities, between which stark economic differentials, rather than population density, are the main driver of migration.

2. The "demographic transition" is the shift from high to low levels of death and birth rates, with a time gap between the decrease of death rates and that of birth rates, and consequently a period of rapid population growth when death rates are already low while birth rates remain high.

3. This section uses the term *external* rather than *international* migration. The latter refers to nations, a modern division of the world that bears no meaning for most of history, whereas the former refers inclusively to any sort of territory.

4. Keyfitz (1968) later introduced the notion of "interacting populations" and the tool of "immigration vector" in the mathematics of population.

5. Theories of international migration put no greater emphasis on demography than demographic theory puts on international migration. Economists recognize that international differentials are key factors of migration, but they rarely consider demographic differentials (in population density or population growth) as true factors. Few of them would endorse a statement such as "modern migration stems mainly from the difference in population growth between the developed and the less developed countries" (Davis 1988, 256). Too many exceptions exist. For example, Lebanon is a country of emigration to Saudi Arabia, despite the fact that Lebanon has a much lower rate of natural population growth than Saudi Arabia (less than 1 percent compared with 3.3 percent in 1995–2000), and Lebanon is a place of immigration for Syrians, despite the fact that Lebanon has a much higher demographic density than Syria.

6. For example, international migration affects death records and, consequently, the statistical observation of mortality: the death of an emigrant escapes national statistics of countries of origin so that emigration produces the same result as death in reducing the size of a generation.

7. An overview of the (modest) place of migration in demography is given by Keely (2000).

8. The balancing equation of population growth is as follows: $P2 - P1 = B - D + I - E$, where P1 and P2 give the total population at dates 1 and 2, and B, D, I, E are, respectively, the numbers of births, deaths, immigrants, and emigrants recorded between dates 1 and 2.

9. A much debated report of the United Nations (2000) made use of population projections to answer the question "What level of migration from less developed countries would be required to compensate for negative demographic trends in more developed countries?"

10. Mortality is also linked with migration. For example, an interesting "Mediterranean" pattern of health has been found among migrant populations (Khlat and Darmon 2003). Including mortality in this chapter would have added little value, because mortality does not play as important a role as fertility in contemporary international demographic differentials.

11. The core questionnaire of the World Fertility Survey (WFS) devised in the 1970s has been reproduced—with some amendments—in all major subsequent surveys, notably the Demographic and Health Survey (DHS) of the 1980s and 1990s and the Papchild (1990s) and Papfam (2000s) initiated by the Arab League.

12. Moreover, for lack of accurate time series on migration in many countries, the chapter will offer no estimation of the global demographic impact of international migration on reduction of growth rate of the world population.

13. The literature on fertility adjustment of immigrants in host societies is vast (see, for example, Hervitz 1985 and Kulu 2005). Because this chapter focuses on fertility impacts in countries of origin, discussions of mechanisms of fertility transitions in host countries are beyond its scope.

14. A high proportion of children are first born children, and most first born children are born during the first years of marriage.

15. Carlson (1985) analyses in another (U.S.) context how the event of migration and a new social context combine to affect the vital rates of migrant populations. The timing of marriage remains affected by a cultural factor "which may be more than a simple combination of levels of schooling and job experience" (Carlson 1985, 64). The timing of births reflects a strong, temporary, and short-term impact of immigration but offers no evidence of any longer-term effect: migrants are highly adaptable.

16. Total fertility rates had declined from 5.09 children per women among Lebanese immigrant women in Australia born in the 1917–21 period to 4.35 for those born in the 1937–41 period (the youngest generation having completed its fertility in 1981); among Egyptians, the decline was only from 2.57 to 2.42 (Young 1991).

17. For example, Jordan was better endowed than Morocco with regard to the health and educational status of the population, but Morocco was far in advance of Jordan with regard to birth control.

18. Labor imports sustained this mechanism in the Gulf, where immigrant women could occupy women-dominated jobs—notably in education, health, and administration.

19. The oil crisis that started in the mid-1980s gradually put an end to this mechanism.

20. Note that space correlations are lower and in opposite directions than time correlations.

21. Emigration indexes used here are stocks, that is, cumulated numbers of emigrants (return migrants in Egypt) at the time of the survey/census, which thus refer to migration movements that took place during the open period of time before the survey/census. Education indexes are those provided by Human Development Reports for Morocco, Egypt and Turkey (United Nations Development Program, 2003, 2004a, 2004b) and all refer to 2000.

References

Amin, Sajeda, and Nagah H. Al-Bassusi. 2003. "Wage Work and Marriage: Perspectives of Egyptian Working Women." Working Paper 171, Policy Research Division, The Population Council, New York.

Borrel, Catherine, and Chloé Tavan. 2003. ≪La vie familiale des immigrés.≫ In *France: portrait social 2003/2004,* ed. INSEE, 109–124. Paris: Institut National de la Statistique et des Etudes Economiques.

Carlson, Elwood. 1985. "The Impact of International Migration upon the Timing of Marriage and Childbearing." *Demography* 22 (1): 61–72.

Cleland, John G., and John Hobcraft. 1985. Reproductive Change in Developing Countries: Insights from the World Fertility Survey. Oxford: Oxford University Press.

Courbage, Youssef. 1995. "Fertility Transition in the Mashriq and the Maghrib: Education, Emigration, and the Diffusion of Ideas." In *Family, Gender, and Population Policy: Middle-Eastern Realities,* ed. Carla Obermeyer, 80–104. Cairo: American University in Cairo Press.

Davis, Kingsley. 1988. "Social Science Approaches to International Migration." *Population and Development Review,* supplement to vol. 14: 245–61.

Duben, Alan, and Cem Behar. 1991. *Istanbul Households: Marriage, Family and Fertility, 1880–1940.* Cambriadge: Cambridge University Press.

Fargues, Philippe. 1994 . "Demographic Explosion or Social Upheaval?" In *Democracy without Democrats?* ed. Ghassan Salame, 155–81. London: I.B. Tauris.

———. 1997. "State Policies and the Birth Rate in Egypt: From Socialism to Liberalism." *Population and Development Review* 23 (1): 115–38.

———. 2006. "The Demographic Benefit of International Migration: Hypothesis and Application to Middle Eastern and North African Context." Policy Research Working Paper #4050, The World Bank, Washington DC.

Hamdouch, Bachir, ed. 2000. *Les Marocains résidant à l'étranger : une enquête socioéconomique.* Rabat: Institut national de statistiques et d'économie appliquée (INSEA).

Henry, Louis. 1972. *Démographie: Analyse et modèles.* Paris: Larousse.

Hervitz, M. Hugo. 1985. "Selectivity, Adaptation, or Disruption? A Comparison of Alternative Hypotheses on the Effects of Migration on Fertility: The Case of Brazil." *International Migration Review* 19 (2): 293–317.

Jejeebhoy, Shireen J. 1995. *Women's Education, Autonomy, and Reproductive Behaviour: Experiences from Developing Countries.* Oxford: Clarendon Press.

Keely, Charles B. 2000. "Demography and International Migration." In *Migration Theory: Talking across Disciplines,* ed. Caroline B. Brettell and James F. Hollifield, 43–60. New York: Routledge.

Keyfitz, Nathan. 1968. *Introdution to the Mathematics of Population.* Reading, MA: Addison-Wesley.

———. 1981. "The Limits of Population Forecasting." *Population and Development Review* 7 (4): 579–93.

Khlat, Myriam, and N. Darmon. 2003. "Is There a Mediterranean Migrants Mortality Paradox in Europe?" *International Journal of Epidemiology* 32 (6): 1115–18.

Khûrî Nabîl (Ed). 1991. *Egypt Emigration Survey* (In Arabic: *Masah Al-Hijra Al-Khârijiyya Fî Jumhûriyya Misr Al- 'Arabiyya),* 4. Vol., CAPMAS, ILO, Cairo: Dâr al-Mustaqbal al-'arabî

Kulu, H. 2005. "Migration and Fertility: Competing Hypotheses Re-examined." *European Journal of Population* 21: 51–87.

Legros, Françoise. 2003. "La fécondité des étrangères en France: une stabilisation entre 1990 et 1999." *INSEE Première* 898: 1–4.

Lesthaeghe, Ron, and Johan Surkyn. 1995. "Heterogeneity in Social Change: Turkish and Moroccan Women in Belgium." *European Journal of Population* 11 (1): 1–29.

Lotka, Alfred J. 1998 [1939]. *Analytical Theory of Biological Populations.* New York and London: Plenum Press (English translation of [1934 and 1939] *Théorie analytique des associations biologiques,* Paris: Hermann & Cie).

Newland, Kathleen, and Erin Patrick. 2004. *Beyond Remittances: The Role of Diaspora in Poverty Reduction in Their Countries of Origin.* Washington, DC: Migration Policy Institute.

Rashad, Hoda, and Magued Osman. 2003. "Nuptiality in Arab Countries: Changes and Implications." In *The New Arab Family,* ed. Nicholas Hopkins, 20–50. *Cairo Papers in Social Science* 24 (1–2). Cairo: American University of Cairo Press.

Singerman, Diane, and Barbara Ibrahim. 2003. "The Costs of Marriage in Egypt: A Hidden Variable in the New Arab Demography." In *The New Arab Family,* ed. Nicholas Hopkins, 80–116. *Cairo Papers in Social Science* 24 (1–2). Cairo: American University of Cairo Press.

Stark, Oded. 2002. "The Economics of the Brain Drain Turned on Its Head." Paper presented at the Annual Bank Conference on Development Economics—Europe World Bank Conference, Oslo, June 24–26.

United Nations. 2000. *Replacement Migration: Is It a Solution to Declining and Ageing Populations?* ST/ESA/SER.A/206, New York.

———. 2003. *World Population Prospects: The 2002 Revision,* ST/ESA/SER.A/222, New York.

United Nations Development Program. 2003. *Human Development Report Morocco: Governance and Acceleration of Human Development*, New York.

———. 2004a. *Human Development Report Egypt: Choosing Decentralization for Good Governance*, New York.

———. 2004b. *Human Development Report Turkey: Information and Communication Technology*, New York.

Young, Christabel. 1991. "Changes in the Demographic Behaviour of Migrants in Australia and the Transition between the Generations." *Population Studies* 45 (1): 67–89.

Appendix

Table 5A.1. Estimation of Net Migration Using UN Sources—Example of Morocco, 1950–2000

Year t	Total Population (1)	Birth Rate [t, t + 5] (2)	Death Rate [t, t + 5] (3)	Natural Increase [t, t + 5] (4)	Expected Population [t, t + 5] (5)	Net Migration (6)
1950	8953	0.0504	0.0257	0.0247	8953	2
1955	10132	0.0504	0.0227	0.0277	10130	−11
1960	11626	0.0501	0.0196	0.0305	11637	−218
1965	13323	0.0482	0.0174	0.0308	13541	−231
1970	15310	0.0456	0.0157	0.0299	15541	−474
1975	17305	0.0394	0.013	0.0264	17779	−365
1980	19382	0.0371	0.0114	0.0257	19747	−45
1985	21995	0.0323	0.0089	0.0234	22040	−161
1990	24564	0.0267	0.0074	0.0193	24725	−214
1995	26839	0.0244	0.0066	0.0178	27053	−229
2000	29108	0.0232	0.006	0.0172	29337	−158
2005	31564	—	—	—	31722	—
1950–2005						−2104

Source: Columns (1) to (3) United Nations 2003; Columns (4) to (6) computed by the author as: (4) = (2) − (3); (5) = (1)*Exp[(4) × *2.5]; (6) = (1) − (5).

N.B. Table 4 shows how migration flows can be estimated (very imperfectly) in the absence of any reliable source on migration, using the United Nations demographic database. Cumulated migration from 1950 to 1990 (amounting to −1,503 in the example of Morocco) divided by the total population in 1990 (24,564 million in Morocco) gives the rate of cumulated migration provided in Table 5 in Fargues (2006) (Morocco: −6.1 percent).

6

IMMIGRATION INCENTIVES AND POLICY IN SWITZERLAND

Dominique M. Gross

Among developed countries, Switzerland has one of the largest foreign populations. In 2003, according to official statistics, foreign nationals (1,471,003) made up 20.1 percent of Switzerland's total population. In comparison, the shares were 10.6 percent in France, 9 percent in Germany, and 6.8 percent in Great Britain. Even traditional immigration regions such as North America and Oceania do not have as high a proportion of foreigners when comparable figures are used.[1] The U.S. Census Bureau (Larsen 2004) estimates that the foreign-born population in the United States represents 11.7 percent of total population; a comparable figure for Switzerland is 15.4 percent (IMES 2004b).

Throughout the 20th century, immigration to Switzerland was organized around labor market needs and, as in many other Western European countries, shortages of (mostly unskilled) workers were filled by foreigners. However, since the 1960s, the Swiss government has been under political pressure to control the country's ever-rising foreign population. Thus, the government has relied on policies of economic incentives and closely managed quotas to control the foreign population. Economic incentives were expected to generate a constant outflow of foreigners (rotation principle), and annual quotas put limits on the inflow of new workers, thereby stabilizing foreign population growth.

The government's expectations of the effectiveness of these policies were clearly validated during the economic recession of the 1970s. However, by the 1990s, three phenomena—growing labor needs, major institutional changes in

Switzerland, and the internal dynamics of the work permit policy, which allowed for graduation to permanent residency—modified foreigners' incentives to return to their home country, rendering policies to control the growth of the foreign population residing in Switzerland ineffective. Nevertheless, workers from different source countries reacted differently to these changes, and one interesting case is that of nationals from the former Yugoslavia.

Historically, Italy, Portugal, and Spain supplied most of Switzerland's migrant workforce. In 1970 the Yugoslavs made up only 23,000 of Switzerland's one million foreign permanent residents. But the Yugoslav community in Switzerland began to grow in the mid-1980s with an unprecedented conjunction of factors that included a strong economic recovery in Switzerland, specificities of the Swiss immigration legislation, and (later on) the political crises in the former Yugoslavia. From less than 5 percent in 1980, the share of Yugoslav nationals in the total foreign population of Switzerland rose to almost 25 percent in 2000, and the Yugoslav community became, along with the Italian community, the largest in Switzerland. Furthermore, throughout the 1990s, the Yugoslav community expanded quickly in spite of changes in the immigration policy that severely limited its access to the Swiss labor market. Interestingly, in the 1980s, growth in the Yugoslav population in Switzerland was mostly generated by large numbers of workers obtaining relatively long-term work permits, and, overall, immigration from Yugoslavia to Switzerland could be characterized as economic rather than political.

This chapter's analysis of the determinants of immigration inflows to Switzerland shows that, from 1981 to 1995, factors (financial and cultural) driving immigration from the former Yugoslavia were similar to those driving immigration from southern European countries, which also are major suppliers of unskilled labor. After 1995, however, immigrants from the former Yugoslavia[2] appear to have become less sensitive to the relatively high real income in Switzerland than their counterparts from southern Europe. This weaker attraction of financial returns might reflect the heavier weight that migrants from the former Yugoslavia place on the nonmonetary benefits of migration, which include the possibility of graduation to permanent residency. In addition, the cost advantage provided by cultural networks is also weaker in recent years for nationals from the former Yugoslavia than for nationals from other southern European countries. Interestingly, the change in responsiveness to standard immigration factors is consistent with the expected impact of the shift in immigration policy that in recent years gave priority to skilled workers from countries other than those of the European Union.

This chapter summarizes immigration policy in Switzerland since the 1970s. It then provides a statistical picture of immigration flows. Finally, it describes—statistically and empirically—immigration from the former Yugoslavia to Switzerland.

Swiss Immigration Policy and Its Instruments

Like most European countries, Switzerland has always claimed that it is not an immigration country and that its policy was and is determined by the labor market. From 1963 to 2002,[3] following political pressure to control the growth in foreign population, the government concentrated on the close management of entries of *new* immigrant *workers* through various types of work permits and permit-specific quotas. The policy reflected, in part, the assumption that economic migrants viewed migration as temporary. According to the rotation principle, migrants eventually return home, regardless of their status in their new country. Switzerland relied on factors outside immigration policy, such as institutional and economic factors in Switzerland and abroad and immigrants' strong preference to reside in their home country, to serve as incentives for return. Hence, Swiss immigration policy implied that these incentives could vary across source countries and change over time.

Types of Work Permits

Switzerland's immigration law, the Federal Legislation on Residence and Establishment of Foreigners (CH 2004a), dates from 1931 and was in place until September 2006, when a new immigration law was adopted by popular vote. The initial law established three basic types of work permits for newcomers, depending on length of work contract and the right of residence. These permits were the short-term permit (the seasonal permit), the one-year permit, and the establishment permit.

Until its elimination in 2002, the short-term permit was mostly for seasonal work. It was delivered for a given job for 9 months over a period of 12 months. Holders were obligated to go home for the remaining three months. Family reunion was not allowed. However, after receiving seasonal permits for many consecutive years, which decreased from a maximum of 10 years, workers could request a one-year permit if they held a job contract for at least 12 months. In 2002, a new short-term, nonconvertible permit became available for skilled workers from countries outside the European Union (EU)/European Free Trade Association (EFTA) with a job contract for less than one year. Short-term permits were also allocated to students, trainees, retirees, and independently wealthy people.

The one-year permit was awarded to foreign workers with work contracts of one or more years. It was automatically renewable with a work contract, but an authorization had to be sought to change employers or cantons (equivalent to states or provinces) in Switzerland. The permit covered children born in Switzerland to permit holders or family members who joined holders in Switzerland. After a number of years, the permit could be converted into an establishment permit.

The establishment permit was given to all family members once a worker had fulfilled the required waiting period with a one-year permit and to newborns in families with an establishment permit. Only foreign residents who left and returned to Switzerland by a certain deadline or who married a Swiss citizen had direct access to an establishment permit. The permit had no time limit and entitled the holder to job and residence mobility. Some municipalities have given voting rights to holders of establishment permits.

Immigration Policy

The legislation on immigration describes the conditions attached to the various work permits, as well as the legal rights and obligations of foreigners. The federal government and its administration define the goals and instruments of immigration policy through government orders. Unlike immigration to traditional immigration countries, immigration to Switzerland is strongly driven by the attribution of work permits on the basis of job contracts.

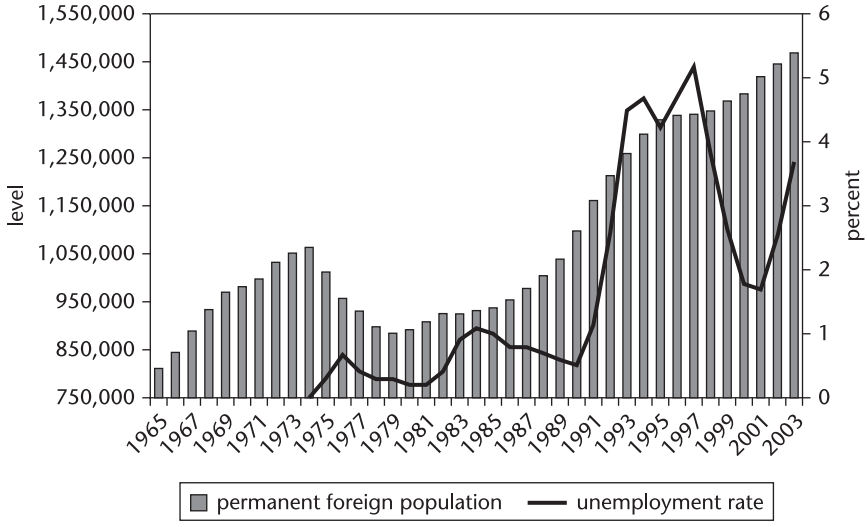
According to the definition used in national statistics, the permanent foreign resident population includes foreigners who have been residing in Switzerland for at least one year without interruption and holding a long-term or establishment, one-year, or short-term permit renewed for at least 12 consecutive months. Note that this definition does not cover holders of seasonal permits.[4] But it does include many second- and third-generation migrants, because being born in Switzerland does not entitle a person to citizenship. In 2001, 84.6 percent of the foreign population 15 years of age and older were born abroad, and 13.4 percent were born in Switzerland from a foreign-born parent (OFS 2002).

Since the early 1960s, the goal for immigration policy has been control of the level of the permanent foreign resident population (hereafter referred to as the foreign population). Three periods can be identified on the basis of active management of quotas: the late 1960s, 1970 to 1990, and 1990 to 2002.[5] A short overview of each period follows.

Specific Ceilings: 1963–70

Until the early 1960s, workers with a valid work contract could obtain their work permit after entering Switzerland. Enterprises were filling their labor needs mostly with workers from neighboring European countries. Competition for immigrants from southern Europe was fierce among the wealthier European countries (Belgium, France, Germany, and the Netherlands); source countries opened recruiting offices and signed bilateral agreements with host countries. Many source and destination countries considered temporary migration based on the rotation principle a win-win process.[6] There was a strong belief that migration

Figure 6.1. Level of Permanent Foreign Population and Unemployment Rate



Sources: IMES 2004a; OFS 2004a.

was a transitory phenomenon in people's life and that migrant workers who made money and gained work experience abroad would eventually return home.

Under rising political pressure to control the growth of the foreign population,[7] Switzerland began implementing firm ceilings on foreign employment in 1963. However, in 1969, the number of permanent foreign residents had reached 971,795, or 15.8 percent of total population, up from 10.8 percent in 1960 (see figure 6.1). In March 1970, faced with the failure of its targeted quota policy, the government implemented an order that explicitly defined overall quotas for new workers' permits. The so-called global ceiling policy would, by and large, remain in place until June 2002.

Global Ceiling: 1970–90

The global ceiling policy was an attempt to reconcile control of foreign population growth with labor shortages in the economy (the unemployment rate was close to 0 percent; see figure 6.1). Management of immigrant flows was based on a centrally administered registry for foreigners and on determination of annual global quotas every November 1 for new seasonal and one-year permits for the next 12 months (see table 6.1). The quota on one-year work permits directly affected entries of workers considered permanent residents, whereas the quota on seasonal work permits limited the number of permits that could be converted into

Table 6.1. Quotas on One-Year and Seasonal Permits, November to October

	Quotas on one-year work permits	Quotas on seasonal permits
1970–74	Between 22,000 and 10,000	From 152,000 up to 220,000
1976–88	Between 7,500 and 10,000	Between 135,000 and 150,000
1989–91	From 11,000 up to 17,000	From 145,000 down to 135,000
1992–98	17,000	From 135,000 down to 88,000

Sources: Adapted from Piguet and Mahnig 2000; CH 2004b.

one-year permits. The government determined quotas on the basis of employer requests for workers and the number of workers taken off the registry during the preceding year.

At first, the policy's impact was far from that intended. As figure 6.1 shows, the foreign population passed the one million mark in 1972. By 1974, the share of foreign residents in the total population was 16.8 percent, a full percentage point higher than in 1969—even though in 1970/71 and 1971/72 only 20,000 new one-year work permits were allocated, a sharp drop from the preceding years before quotas were established.

Nevertheless, in the early 1970s, the first oil shock severely hit the Swiss economy. From 1974 until 1976, total employment fell by an average of 3.9 percent per year, and foreign employment fell by an average of 10.6 percent per year. In 1974 and 1975, approximately 256,000 jobs disappeared; foreigners held 171,000 of these jobs (see figure 6.2). Not surprisingly, Switzerland reduced quotas as requests by employers fell and the inflow of immigrant workers dropped sharply (see table 6.1 and figure 6.3).

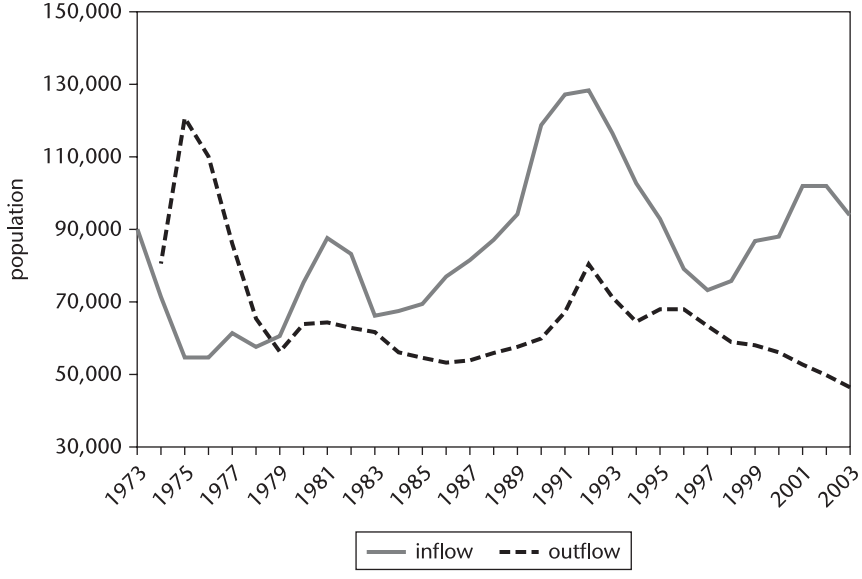
The outflow of permanent foreign residents rose drastically in the mid-1970s (see figure 6.3); in particular, the number of residents with establishment permits who left Switzerland more than doubled in two years (from 20,359 in 1974 to 44,827 in 1976). This exodus is often viewed as voluntary, because these foreign residents could stay unconditionally in Switzerland and therefore had no legal obligation to emigrate. However, at the time, no unemployment insurance program existed,[8] and the foreign workforce was hit disproportionately hard by layoffs. Hence, the rotation assumption underlying immigration policy was validated: foreign residents were going back to their home countries, where the cost of living was lower and where they might find a job on the basis of their work experience. Between 1974 and 1976, about two-thirds of emigrants were from Italy and Spain, and income per capita in Switzerland was 3.1 times higher than in Italy and 3.7 times higher than in Spain. Overall, the migration balance turned negative in the mid-1970s, and, by 1979, the foreign population in Switzerland reached its lowest level since the late 1960s.

Figure 6.2. Employment of Foreign and Swiss Populations (thousands)



Source: OFS 2004a.

Figure 6.3. Total Inflow and Outflow of Foreign Permanent Residents



Source: IMES 2004a.

The Swiss government could find some reassurance that its immigration policy based on quotas and economic incentives was functioning well.

During the 1980s, annual quotas for new one-year permits remained tightly controlled at under 10,000 per year. But the overall inflow of newcomers increased steadily throughout the decade. The natural dynamics of the immigration policy was the main determinant of this growth as workers with uninterrupted seasonal permits for 10 years could automatically request a one-year permit, provided they had a matching work contract. In the 1980s, between 9,000 and 10,000 seasonal permits were converted each year on average. Conversions immediately triggered a multiplier effect as each one opened access to family reunion. Between 1981 and 1990, the inflow of people under family reunion provisions increased from about 20,000 to 30,000 per year. Neither conversions nor family reunions were subject to quotas.

By the late 1980s, controlling foreign population growth and accommodating employers' demand for labor were increasingly in conflict. Requests from enterprises were pressing, and employment of foreigners was rising fast (see figure 6.2). Simultaneously, new external developments were calling for changes in the immigration policy. The question of whether Switzerland should join the European Economic Area (EEA), which would integrate EFTA members more closely with EU members, was being addressed. Free mobility of labor, which would automatically follow from EEA membership, was at the heart of the debate. Redefining the modalities of the immigration policy became a necessity: with EEA membership, the global ceiling policy would become obsolete, because the vast majority of workers were coming from EU countries.[9]

Global Ceiling and Priority for EU Workers: 1990–2002

Membership in the EEA was rejected, but the government started direct negotiations with the EU. These negotiations involved free mobility of workers in the future. In 1990 the government began implementation of the "three-circle model," which identified three source regions for immigration. The first circle covered EU15 and EFTA member countries,[10] with the aim of establishing free mobility and abolishing seasonal worker status. Priority had to be given to workers from these countries. The second circle covered countries in areas economically and culturally close to Switzerland, such as North America, Oceania, and Eastern Europe. Permits could be awarded only for workers with skills in shortage. Finally, the third circle included all other countries; workers from these countries could obtain only one-year permits and only under exceptional circumstances. Overall, quotas continued to apply to one-year and seasonal permits (a total of 17,000 for one-year permits and 135,000 for seasonal permits; see table 6.2).

In 1990 the Swiss economy plunged into a deep recession; as in the early 1970s, employment of foreigners decreased much more than that of the Swiss (−6.5 percent

Table 6.2. Composition of Foreign Labor Force (end of December)

	Seasonal permits (percent)	One-year permits (percent)	Establishment permits (percent)	Total
1970	154,732 (20.7)	410,321 (54.8)	182,898 (24.5)	**747,951**
1980	109,873 (18.0)	126,864 (20.8)	374,240 (61.2)	**610,977**
1990	121,704 (15.3)	169,937 (21.5)	499,865 (63.2)	**791,506**
2000	30,999 (4.1)	181,597 (24.3)	535,678 (71.6)	**748,274**

Source: OFE 2001b.

compared with −1.7 percent; see figure 6.2). However, unlike in the early 1970s, the unemployment rate rose to a level never before observed (above 5 percent; see figure 6.1); the migration balance remained largely positive, and the foreign population kept growing (with 11.8 percent from 1991 to 1994; see figure 6.1) as the outflow of foreign permanent residents increased little and the inflow continued to rise (figure 6.3). The likely factors for this evolution in the flow response are explored below.

In 1995, in light of concerns about discriminatory treatment of immigrant workers, the Swiss government merged its second and third circle categories and decided to progressively eliminate seasonal permits. In addition, it raised quotas for annual permits and targeted skilled workers for immigration. The government reminded employers to give priority to migrants from EU countries, but employers were free to prospect worldwide for skilled workers (Piguet 2004). Simultaneously, the government negotiated a free mobility agreement with the EU, which was approved by popular vote in May 2000. The agreement specified June 1, 2002, as the beginning of a period of transition to completely free mobility; restrictions were to be progressively lifted until 2007.[11] Since 2000, the government has expected most economic labor needs to be met by EU/EFTA workers and has voted on new legislation for citizens from other countries. The new legislation continues to consider that immigration is work driven and to anchor policy in the allocation of work permits for nationals from non-EU/EFTA countries.

In summary, to achieve stability in the foreign resident population, authorities actively managed the allocation of new work permits through quotas on the basis of the rotation principle. The policy was quite successful in the 1970s. In the 1980s and 1990s, it could no longer achieve its goal, despite strict enforcement of quotas.

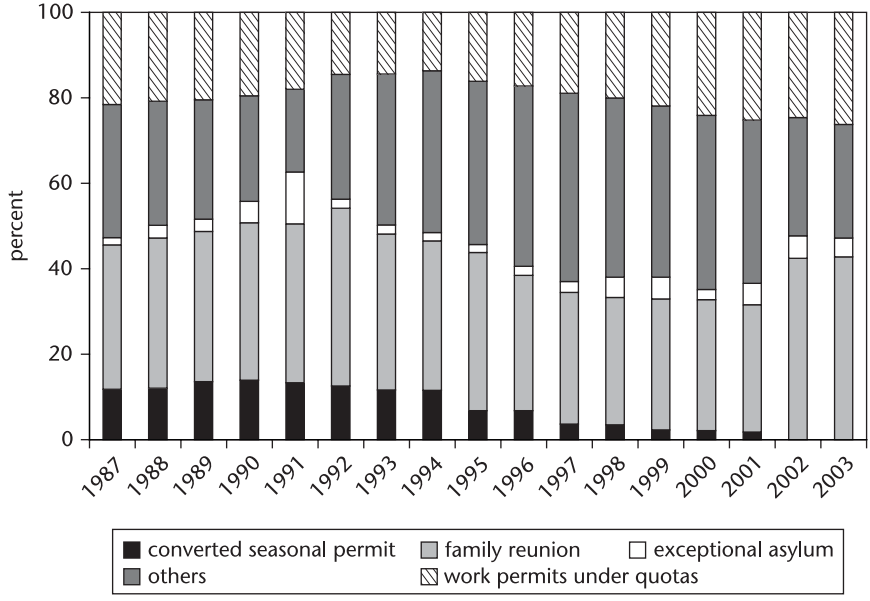
Flows of Migrants

This section considers how institutional and economic changes in Switzerland and in source countries combined with the inherent dynamics of the attribution of work permits to alter foreign workers' migration incentives. Examination of the composition of migrant flows helps explain why Switzerland's immigration policy became increasingly ineffective in controlling foreign population growth.

Inflow of Migrants

New permanent residents in Switzerland can be classified according to motives for migration. These motives include work (new one-year work permits and conversions of seasonal permits), family reunion, and exceptional asylum. Only new one-year permits were ever subject to quantitative restrictions. Figure 6.4 shows that the unrestricted share of immigrants increased significantly in the early 1990s. From a high of 78 percent in 1987, it increased to 86 percent in 1994. By 2001, the share dropped to 75 percent as the government phased out seasonal permit conversion. The narrow definition of quotas and the dynamics embodied in the work permit system are the direct cause of this development.

Figure 6.4. Shares of Inflow of Permanent Residents by Motives



Source: OFE 2001a.

In the early 1990s, seasonal permits were converted at unprecedented levels.[12] Two effects were at work. First, many seasonal workers had maintained uninterrupted work spells throughout the 1980s thanks to continuous economic growth. Second, newly signed agreements with Spain and Portugal had shortened the residence period before permit conversion from 10 to 5 years.[13] Moreover, each conversion allowed permit holders to bring family members to Switzerland. An average of more than 46,000 family members of permit holders entered the country each year between 1990 and 1993; that number is 2.5 times the quota on one-year work permits. This influx of family members, in turn, influenced another source of foreign population growth: children born to foreign parents. These children receive the same status as their parents. Beginning in 1988, the number of births in the foreign population had grown by more than 60 percent to reach about 18,800 in 2003; the number peaked in 1996 at 21,800. Another factor that played a role is the exceptional number of political crises in the world (notably, crises in Lebanon, Sri Lanka, Turkey, and the former Yugoslavia), which raised the number of permits allocated for humanitarian reasons more than fivefold. The annual number of such permits rose from 2,678 in 1989 to 15,424 in 1991.

Hence, changes in the composition of the migrant inflow significantly weakened the government's ability to control the inflow of newcomers through quotas on one-year permits. However, the invalidity of the rotation principle had also changed the effectiveness of the overall immigration policy.

Outflow of Migrants

The assumption underlying the rotation principle was that mainly economic incentives would stimulate returns to home countries. The migrant outflow that occurred in the early 1970s appeared to validate the principle. But by the 1990s, foreign residents' incentives had clearly changed.

Throughout the 1980s, the outflow of foreign residents had stabilized slightly above 50,000; but from 1992 on, it declined steadily to reach the lowest level in 30 years in 2003, despite a record high number of foreign residents (see figure 6.3). In 1996 the annual outflow rate was 5.5 percent, and in 2003 it was 3.1 percent. Clearly, the economic slowdown in the 1990s did not produce large returns of foreign residents to their home countries. Although almost 400,000 people (approximately 40 percent of the foreign population) left the foreign resident registry between 1974 and 1977, only about 275,000 people (23.4 percent of the foreign population) left it between 1990 and 1993.

The overall migration balance remained positive, despite deterioration in the labor market and a large increase in unemployment. Many people with the right to permanent residence did return home: among these people, the number of

returnees increased from about 24,000 in 1990 to 39,223 in 1992. However, the rise was not comparable to the doubling in numbers observed in the early 1970s.[14] Two factors are likely to have accounted for the much weaker response in the 1990s. First, in the 1990s, general unemployment insurance was in place, and employees had compulsory pension plans (ILO 2004, 373–78). Second, the standard of living in the main suppliers of foreign workers—Italy, Portugal, and Spain—had converged closer to that of Switzerland.[15] The ratio of income per capita between 1974 and 1992 decreased from 3.72 to 3.09 with Spain, 5.82 to 4.22 with Portugal, and 3.14 to 2.4 with Italy. Hence, making money in Switzerland to have a better life later at home had become a much less attractive proposition, especially for Italians. In addition, institutional changes in Switzerland and economic opportunities abroad had significantly modified foreign residents' incentives to leave. The Swiss government could no longer rely on returns to stabilize the level of the foreign population.

Quotas and the Rotation Principle: An Evaluation

Swiss immigration policy has always been linked to the labor market. In the 1970s, the quota policy was designed to lower political pressure to control the growth of the foreign population in the midst of acute labor shortages. The policy relied on sufficient returns of foreign workers and their families to their home countries and the imposition of quantity restrictions on some types of new work permits. The policy, perhaps effective in the 1970s, proved ineffective in moderating foreign population growth in the 1990s.

At least two factors undermined the validity of the rotation principle. First, the inherent dynamics of the work permit system, under which foreign workers could graduate from seasonal nonresident to permanent resident status, induced foreign workers to settle in Switzerland (see table 6.2). In 1970, more than half of the foreign labor force was holding renewable one-year permits, and a little less than one-quarter, long-term establishment permits.

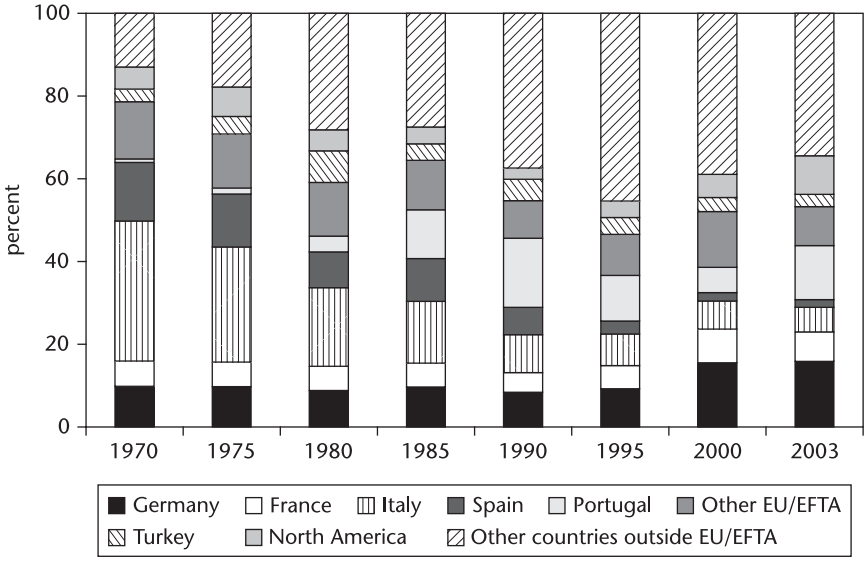
By 1990, as the foreign labor force was approaching 800,000, more than 63 percent held establishment permits, and in 2000, 72 percent did. Hence, over the 30 years of management through quota, on average, foreign workers gained much more secure resident status, and the foreign resident population continued to increase. These two facts clearly do not lend much support to the rotation principle. Second, institutional changes in Switzerland, such as the introduction of unemployment insurance, and economic progress in the main source countries that increased the relative cost of living in Switzerland had substantially diminished immigrants' incentives to return to their home countries. Nevertheless, immigrants from different source countries have reacted differently to these incentives.

Source Countries

This section provides a short overview of the distribution of immigrants' countries of origin. For the historical reasons described above, the vast majority of immigrants to Switzerland come from European countries. Between 1970 and 1990, the majority of the inflow was from EU/EFTA countries,[16] but the share from these countries declined steadily from almost 80 percent in 1970 to only 54.7 percent in 1990 (see figure 6.5).

Between 1970 and 1990, the annual number of newcomers from Italy and Spain declined by a factor of 3 and 2, respectively. In 1990 immigrants were coming increasingly from outside the EU/EFTA, in particular from Eastern Europe, Asia, and South and Central America (together, these regions supplied nearly one-third of Switzerland's new permanent residents in 1990). Immigration from North America had fallen to 2.8 percent from a peak of 7.1 percent in 1975. This gradual shift in the ethnic composition of immigrants influenced the design of the three-circle model, which allowed for differentiated treatment of immigrants according to their nationality and which accorded priority to EU citizens. In 1995, immigrants to Switzerland from Eastern Europe dropped sharply as they lost access to some preferential treatment (the share of immigrants from the former Yugoslavia was down

Figure 6.5. Distribution of Immigrants from Some Regions of Origin



Source: OFE 2001a.

to 10.3 percent in 2003 from 26 percent) to the benefit of immigrants from Asia and Central and South America (from 7.5 percent to 12.4 percent and from 4.4 percent to 5.8 percent, respectively). By 2000, a countershift in the distribution of source countries was starting to develop, and it was being reinforced by implementation of the free mobility agreement with the EU15 in June 2002. In 2003, immigrants from the EU/EFTA countries represented more than half of the total inflow for the first time since 1990. In addition, North America's share more than doubled from 4 percent in 1995 to 9.4 percent in 2003. Hence, incentives as well as policy affected the geographical distribution of source countries; the evolution of migration from the former Yugoslavia is particularly interesting.

Case Study: The Former Yugoslavia

Immigration from the former Yugoslavia to Switzerland has followed a unique path. From 1960 to 2003, the share of Yugoslav citizens in the foreign population rose hundredfold, from 0.2 percent to 23.8 percent, and in 2003, for the first time, the Yugoslav community overtook the Italian community as the largest foreign community in Switzerland. In the 1960s, citizens from France, Germany, Italy, and Spain made up more than three-quarters of the foreign population (see table 6.3), and the Yugoslav community was similar in size to that of Turkey or Portugal.

By 1980, Yugoslavia's share of the foreign population in Switzerland had risen to 4.9 percent, but Portugal's was only 2 percent. This disparity is partly explained by the different positions of the former Yugoslav and Portuguese governments on emigration of workers. Until the democratic Carnation Revolution in April 1974, emigration from Portugal was strictly controlled. Starting in 1965, the Tito government in the former Yugoslavia implemented a new policy based on the rotation principle by actively encouraging workers to go abroad as guest workers. They would migrate temporarily to make money and acquire skills. In 1973, 1.1 million Yugoslavs were living abroad, 900,000 of them in Western Europe (Curtis 1992). About 31,600 were registered as permanent residents in Switzerland and held work/residence permits for more than one year, and 3,362 held seasonal permits.[17]

Between 1980 and 2000, the Italian and Spanish communities decreased, while the Yugoslav permanent resident population rose from about 44,000 to more than 337,000 (almost 25 percent of the foreign population) in 2000. This fast growth occurred despite the nonpreferential treatment of Yugoslav citizens under the three-circle policy since 1990. Citizens from Italy, Portugal, and Spain benefited from the preferential treatment applied to EU/EFTA countries. Yugoslav nationals were initially assigned to the second circle and in 1991

Table 6.3. Permanent Residents in Switzerland by Source Country (level and percent)

	1	2	3	4	5	6	7	8	9
	Total	Yugoslavia[a]	Turkey	Portugal	Italy	Spain	Germany	France	Others
1960	584,739	1,169 (0.2)	645 (0.1)	386 (0.1)	346,223 (59.2)	13,524 (2.3)	93,406 (16.0)	31,328 (5.4)	98,058 (16.8)
1970	982,887	22,972 (2.3)	12,137 (1.2)	3,167 (0.3)	526,579 (53.6)	102,341 (10.4)	115,564 (11.8)	51,396 (5.2)	148,731 (15.1)
1980	892,807	43,898 (4.9)	38,073 (4.3)	10,687 (1.2)	420,700 (47.1)	97,232 (10.9)	86,402 (9.7)	46,177 (5.2)	149,638 (16.8)
1990	1,100,262	140,739 (12.8)	64,192 (5.8)	85,649 (7.8)	378,749 (34.4)	116,138 (10.6)	83,401 (7.6)	49,980 (4.5)	181,414 (16.5)
2000	1,384,382	337,335 (24.4)	79,476 (5.7)	134,675 (9.7)	319,641 (23.1)	83,405 (6.0)	108,815 (7.9)	59,813 (4.3)	261,222 (18.9)
2003	1,471,033	350,829 (23.8)	77,671 (5.3)	149,839 (10.2)	303,770 (20.7)	76,773 (5.2)	133,636 (9.1)	65,006 (4.4)	313,509 (21.3)

Sources: Computed from IMES (2004a, table S1A.1850R) and OFS (2004a, table P02F).

a. The figures for 2000 and 2003 reflect the sum of residents from Bosnia and Herzegovina, Croatia, FYR Macedonia, Serbia Montenegro, and Slovenia.

moved to the third circle, because the human rights situation was generating large numbers of refugees, a situation perceived to be incompatible with the economic focus of Swiss immigration policy (see Piguet 2004). They became eligible for a permit only if they had skills in demand. Under pressure from industries that lost their access to much seasonal labor, the government allowed a transition period that extended the period for issuance of seasonal permits until 1996 and the period for conversions of seasonal permits into one-year permits until 1995 (Hirter et al. 2002). Nevertheless, in 1995 the Swiss government overhauled its immigration policy; the three-circle policy became the two-circle policy, and all non-EU/EFTA countries became subject to the same provisions. Since then, workers from Yugoslavia have had access to the Swiss labor market only under exceptional circumstances and only if they were skilled. As a result, after 2000, the Yugoslav community grew until 2003 but much more slowly than in previous years.

More than other foreign workers, Yugoslav workers have taken advantage of the graduation possibilities through immigration permits, as is clear in table 6.4. In the mid-1980s, Yugoslav nationals represented 11.5 percent of the total inflow of new permanent residents and 27.7 percent of seasonal permit conversions. By the mid-1990s, when war had struck most regions of the former republic, citizens from Yugoslavia had lost access to seasonal work permits, and the deadline set for conversion of these permits was approaching.

In 1994 the number of conversions represented more than half of all conversions in that year (54.2 percent), and each one opened the door to family reunion (45.9 percent of the total). With new policy provisions in place, conversions dropped to zero, family reunion slowed, and the inflow reflected exceptionally high allocations of one-year permits for humanitarian reasons (326 in 2000 and more than 1,800 in 2001 and 2002; see Gross 2006b).

To summarize, a shared understanding of the rotation principle by the Yugoslav and Swiss governments led to large worker inflows throughout the second part of the 20th century. However, immigrants from the former Yugoslavia appear to have responded differently to the incentives provided by Swiss immigration policy than their southern European counterparts. In particular, they exhibited a much stronger propensity to secure permanent residence in Switzerland and to acquire citizenship.[18]

What Drives Immigration?

To evaluate how the motives of Yugoslav nationals to migrate to Switzerland differ from the motives of other foreign nationals, the present study employs an inflow framework similar to the one used in Gross and Schmitt (2006) and Hatton and

Table 6.4. Percent of Migrants from the Former Yugoslavia in Total Migrant Flow from All Countries

	Inflow of permanent residents							
	Total	Family reunion	Conversions of seasonal permits	Recognized refugees (including family members of permit holders)	Humanitarian permits	New establish-ment permits	Outflow of permanent residents	Acquisition of Swiss nationality
1984	11.5	15.7	27.7	—	—	8.0	6.5	n.a.
1990	23.5	36.0	35.3	—	—	15.6	9.8	n.a.
1994	30.7	45.9	54.2	52.1	7.5	23.0	12.5	13.2
2000	12.4	28.2	0.1	18.2	15.2	22.0	7.9	21.3
2003	10.3	18.0	—	13.7	41.7	n.a	4.5	33.8

Sources: IMES 2004a; OFE 2001a; OFR 2004.

n.a. = not available.

Willamson (2002)—that is, an augmented gravity model for immigration flows[19]—with the following empirical specification:

$$\begin{aligned} Linfl_{i,t} = {} & \alpha_0 + \alpha_1 Lpopsou_{i,t-1} + \alpha_2 Lycapsou_{i,t-1} + \alpha_3 LycapCH_{t-1} \\ & + \alpha_4 Com.Border + \alpha_5 Lnetwork_{i,t-1} + \alpha_6 UrateCH_{t-1} \\ & + \sum_k \beta_k X_{i,k} + \varepsilon. \end{aligned} \tag{1}$$

The dependent variable, $Linfl_{i,t,}$ is the natural logarithm of immigration flows from country *i* to Switzerland during period *t*. The inflow is measured as new permanent entries net of family reunions and conversions of seasonal permits. Family reunions follow from decisions made by immigrants who entered the country, and conversions of seasonal permits result from a two-step decision process begun several years earlier.[20] Hence, the dependent variable captures as closely as possible the decision by workers and employers that drives immigration.

In the basic gravity model for migration, the source/destination population variables ($Lpopsou_{i,t-1}$/$LpopCH_{t-1}$) measure the capacity to supply/absorb migrants, and the per capita income variables ($Lycapsou_{i,t-1}$/$LycapCH_{t-1}$) capture relative financial incentives for individual migrants with an expected negative/positive impact for source/destination country income. However, because of a high correlation between population and income per capita in Switzerland (0.905; see table 6A.1), the Swiss population variable is eliminated from the specification. To avoid simultaneity problems, the three remaining explanatory variables are measured at the end of the previous period for which the flows are computed.

The literature on international migration identifies many additional factors likely to influence the decision to migrate (see, for example, Massey et al. [1993] for a survey); Monetary and psychological costs have been shown to be important determinants of the decision to migrate (see, for example, Helliwell [1997] and Karemera, Oguledo, and Davis [2000]). A commonly used proxy for monetary cost is distance; the present study tests for the impact of a shared border with Switzerland by using a dummy variable (*Com.Border*), which takes the value 1 for France, Germany, Italy, and Austria and 0 otherwise. Incidentally, these countries also use one of the Swiss national languages; a common language is thought to decrease the cost of migrating. Nonmonetary (cultural and psychological) costs are at the source of the so-called network effect. According to the literature, the search for ways to diminish migration costs materializes in the agglomeration of migrants, or cultural clustering, which has a positive pull effect on future inflows (see, for example, Dodson [2001] and Bartel [1989]).[21] In this case, agglomeration resulted, in part, from special agreements with some source countries and the establishment of recruiting offices in those countries. These factors are taken into

account by the size of the resident population from the source country in the previous period ($Lnetwork_{i,t-1}$), and the effect is expected to be positive.

The present study also considers two additional factors that affect migration flows: immigration policy and skill levels ($X_{i,k}$). In their analysis of immigration flows to the United States, Hatton and Williamson (2002) pay particular attention to institutional and legislative constraints arising from the immigration policies of the destination country. Similarly, this study introduces quotas on new one-year permits to represent the binding constraint ($Lquota_t$). But because the Swiss government determined quotas on the basis of outflow and employers' requests, the overall state of the labor market and lagged unemployment ($UrateCH_{t-1}$) proved to be a better proxy (see Gross [2006b] for details). In addition, the present study splits the overall period into two subperiods (1983 to 1995 and 1995 to 2003) to match the change in access to new permits for nationals of Yugoslavia with the shift to the two-circle policy in 1995.

A second factor relevant to incentives to migrate is skill and occupation characteristics. In the case of migrants to Switzerland, skill levels differ, depending on the country of origin. Statistics on the employed foreign population reveal a consistent correlation between skill level and region of origin. For example, in 2003, 57.9 percent of employed foreigners from Northern and Western Europe had a tertiary education. In comparison, only 11.3 percent of Southern European migrants and 11.6 percent of citizens from the Western Balkans and EU candidates (Turkey and the former Yugoslavia in the present sample) were highly educated (OFS 2004b, table G4). For decades, Switzerland filled its deficit in unskilled workers through immigration, while attracting large foreign direct investment (FDI) with its skilled workforce. The main investing countries were France, Germany, the Netherlands, the United Kingdom, and the United States (which together represent 80.4 percent of the stock of FDI at the end of 2003; BNS [2003, table 2.2.]). Accordingly, the countries from the sample are identified as belonging to the North or South; a dummy (*South*) takes the value 1 for southern countries (Greece, Italy, Portugal, Spain, Turkey, and the former Yugoslavia) and 0 otherwise. The present study tests for the possibility of different elasticities by interacting the main explanatory variables with the dummy variable.

Global Ceiling Only

For the first subperiod, 1981 to 1995, 16 source countries[22] (2 outside Europe) together represent, on average, 83.4 percent of the world inflow to Switzerland and 97.3 percent of European inflow. The shift to the three-circle policy in 1990 is controlled for allowing different elasticities by interacting a dummy (*3-cir.pol.*) with the main explanatory variables. Table 6.5 shows the results of the ordinary least

Table 6.5. Estimation of Inflow of Workers, 1981–95

	1	2	3	4
Inflow of workers	New three-circle policy	South versus North	Border between Switzerland and the EU	Excluding former Yugoslavia[a]
c	−8.51 (.439)	−5.20 (.375)	−5.79 (.307)	−5.77 (.344)
$Lpopsou_{i,t-1}$	.257 (.000)**	.213 (.000)**	.235 (.000)**	.236 (.000)**
$LycapCH_{t-1}$	.538 (.645)	−.092 (.905)	.325 (.672)	.332 (.685)
$Lycapsou_{i,t-1}$	.360 (.022)**	.606 (.118)	.282 (.493)	.274 (.507)
$UrateCH_{-1}$	−.155 (.053)*	−.081 (.035)**	−.072 (.045)**	−.072 (.049)**
$Lnetwork_{i,t-1}$	.442 (.000)**	.566 (.000)**	.482 (.000)**	.480 (.000)**
EU Com. border*	—	—	.257 (.006)**	.263 (.004)**
$Lpopsou_{i,t-1}$**south*	—	−.749 (.000)**	−.802 (.000)**	−.789 (.000)**
$LycapCH_{t-1}$**south*	—	1.98 (.000)**	1.81 (.000)**	1.77 (.001)**
$Lycapsou_{i,t-1}$**south*	—	−1.30 (.002)**	−1.09 (.012)**	−1.07 (.023)**
$UrateCH_{t-1}$**south*	—	−.178 (.016)**	−.183 (.010)**	−.178 (.036)**
$Lnetwork_{i,t-1}$**south*	—	.432 (.000)**	.496 (.000)**	.486 (.000)**
$Lpopsou_{i,t-1}$**3-cir.pol.*	−.099 (.168)	—	—	—
$LycapCH_{t-1}$**3-cir.pol*	.174 (.567)	—	—	—
$Lycapsou_{i,t-1}$**3-cir.pol.*	−.151 (.609)	—	—	—
$UrateCH_{t-1}$**3-cir.pol.*	.075 (.531)	—	—	—
$Lnetwork_{i,t-1}$**3-cir.pol.*	.151 (.162)	—	—	—
R^2 (adj.)	.817	.921	.925	.918
t	5	5	5	5
i	16	16	16	15
n	80	80	80	75
Schwarz Bayes IC	55.676	21.7532	21.327	23.459

Source: Author.

Notes: p-values are in parentheses based on heteroskedastic-consistent standard errors.

a. Excluding Bosnia and Herzegovina, Croatia, FYR Macedonia, and Serbia-Montenegro; Slovenia is classified as a northern country.

*10 percent significance. **5 percent significance.

squares (OLS) estimation on pooled data for various specifications. The present study favors the OLS procedure over panel estimation because of the problems engendered by the high correlation of the population variable with the fixed effect.

Columns 1 and 2 of table 6.5 show that the distinction between immigrants for northern and southern countries has a significant impact on elasticities but that

the move to the three-circle policy has no significant impact in the first five years of implementation. The result is consistent with the above-noted observations about the slow shift in the geographical distribution of source countries. Column 3 shows a fixed effect for countries that have EU membership and a border with Switzerland[23] (France, Germany, and Italy), perhaps because, historically, these countries have been steady sources of migrants.

Northern migrants and southern migrants exhibit distinctly different responses to the main migration factors. In column 3, relative incomes are not significant in the migration decision by northern migrants, but they have the expected sign and are highly significant for southern migrants. Because the geographical distribution of source countries is strongly correlated with education levels, the results suggest that immigration of skilled workers from northern countries occurs independently of income differences between those countries and Switzerland. Northern immigrants are also less sensitive to the presence of a cultural network (that is, the elasticity is half as large as that for southern immigrants). This finding is confirmed by evidence at the regional level presented in OFS (2000): the maximum value for the distribution of the concentration indexes across cantons in 1995 is much lower for German and British migrants (1.79 and 2.62, respectively) than for Italian, Turkish, and Spanish migrants (5.33, 4.49, and 3.31, respectively). Because migration from the North is likely to be linked to FDI, migrants from the North are less likely to make decisions to move on either a financial or a cultural basis than unskilled migrants from the South. Finally, the unemployment rate, which proxies the quota policy based on labor market needs, has much more impact on immigration from the South than from the North. As unskilled immigrants from the South tend to be concentrated in more cyclically sensitive industries, their decision to migrate, as well as the quota, would be more strongly affected by the state of the economy.

To determine whether the process for deciding to migrate to Switzerland is significantly different for migrants from the former Yugoslavia than for migrants from other source countries, the present study excludes the panel of observations representing Yugoslavia from the sample (column 4).[24] A comparison of the results in columns 3 and 4 shows no significant change in the estimated parameters. Overall, this finding suggests that immigrants from southern EU countries (Greece, Italy, Portugal, and Spain) and from southern non-EU countries, including the former Yugoslavia, respond similarly to the main migration drivers in a context of a nondiscriminatory policy with quotas. Note that this finding holds despite war in the region from 1991 to 1995, suggesting that refugees did not, as the Swiss government feared, use economic migration as a channel of escape.[25]

In summary, northern (that is, mostly skilled) immigrants and southern (that is, mostly unskilled) immigrants have significantly different responses to

migration factors. The former Yugoslavia, which supplied mostly unskilled workers, does not differ from other southern source countries, despite its political instability since the late 1980s. But this finding should be considered with caution, in part because of the short time dimension of the panel.

Global Ceiling and Priority for EU Workers

In 1995 immigration from non-EU countries became increasingly restricted. To evaluate whether migration incentives, in particular those of Yugoslav immigrants, changed under Switzerland's new immigration policy, the present study uses the specification for the previous period but adds period-specific event dummies. The new sample consists of 23 countries, which represent on average 72.2 percent of world inflow to Switzerland and 94.3 percent of European inflow. This sample has four more European countries (Hungary, Poland, Russia, and Ukraine) than the previous sample. These countries were added to the present sample, because they send a nonnegligible number of workers to Switzerland. Their inclusion increases the number of degrees of freedom, because the time dimension of the panel is shorter than that for the previous subperiod.

A lack of data prevents extraction of conversions of seasonal permits from the dependent variable. Hence, a dummy (*Conversions Seas.*) is introduced to distinguish countries that have historically sent large number of seasonal workers from those that have not.[26] In June 2002, the period of transition to free labor mobility within EU15 started; therefore, another dummy (*EU free mobility*) is added to account for a possible scale effect. As before, the study estimates the flows from all source countries with the distinction between North and South and then excludes countries that make up the former Yugoslavia. Table 6.6 presents the results. The correlation coefficients and the statistical characteristics are provided in the table 6A.2 and table 6A.3.

As shown in column 1 and as noted above, free mobility generates an immediate fixed effect for EU15 countries, but seasonal conversions inflate the flows. Again, incentives are different for migrants from the North and from the South. Immigrants from southern European countries are more sensitive to financial factors; for them, the network effect is also stronger but with weak significance. Thus, the distinction between the two groups, that is, between skilled workers and unskilled workers, is again warranted under quotas with preferential treatment for EU countries.

When countries born out of the former Yugoslavia are taken out of the sample (column 2), changes are more noticeable than in the earlier period. In particular, the impact of Swiss income per capita almost doubles, implying that migrants from the former Yugoslavia are much less sensitive to Swiss income than their

Table 6.6. Estimation of Inflow of Workers, 1995–2003

	1	2	3
Inflow of workers	South versus North	Excluding former Yugoslavia[a]	Excluding Italy, Portugal, Spain
C	−66.0 (.422)	−29.8 (.718)	−42.3 (.592)
$Lpopsou_{i,t-1}$	.533 (.000)**	.533 (.000)**	.532 (.000)**
$LycapCH_{t-1}$	5.41 (.500)	1.86 (.817)	3.48 (.680)
$Lycapsou_{i,t-1}$	.428 (.039)**	.373 (.087)*	.416 (.051)*
$UrateCH_1$	.483 (.034)**	.411 (.078)*	.431 (.078)*
$Lnetwork_{i,t-1}$	.447 (.000)**	.506 (.000)**	.467 (.000)**
Conversions Seas.	.689 (.001)**	.298 (.073)*	.567 (.003)**
EU free mobility	1.34 (.006)**	1.26 (.010)**	1.23 (.017)**
$Lpopsou_{i,t-1}$*south	−.225 (.087)*	−.860 (.000)**	−.100 (.413)
$LycapCH_{t-1}$*south	1.09 (.000)**	1.94 (.000)**	1.41 (.000)**
$Lycapsou_{i,t-1}$*south	−.984 (.000)**	−1.05 (.000)**	−1.30 (.000)**
$UrateCH_{t-1}$*south	−.091 (.659)	−.058 (.679)	−.112 (.602)
$Lnetwork_{i,t-1}$*south	.137 (.244)	.378 (.001)**	−.079 (.544)
R^2 (adj.)	.874	.805	.886
t	3	3	3
i	23	19	20
n	69	57	60
Schwarz Bayes IC	62.449	48.913	52.047

Source: Author.

Notes: p-values are in parentheses based on heteroskedastic-consistent standard errors.

a. This sample excludes Bosnia and Herzegovina, Croatia, FYR Macedonia, and Serbia Montenegro; Slovenia is classified as a northern country.

*10 percent significance. **5 percent significance.

counterparts from the South. Given that the sample is made of people who have actually migrated, one interpretation is that immigrants from southern European countries put more emphasis on the monetary benefits of migration than immigrants from northern European countries, because many nonmonetary benefits of daily life in their home country have reached the level of those benefits in Switzerland. The attractiveness of financial reward is consistent with the rotation principle. Nationals from the former Yugoslavia may be more sensitive than other foreign nationals to nonpecuniary benefits, including the prospect of permanent residency in Switzerland. This interpretation is consistent with the higher-than-average participation of Yugoslav nationals in the graduation process, as well as with the continuous decrease in the outflow of permanent residents from the

former Yugoslavia, despite improvements in the political situation (see table 6.4). In 2003, the number of acquisitions of Swiss nationality reached an all-time high of almost 12,000, which represented one-third of all naturalizations.[27] Another significant finding is that the network effect plays a lesser role for immigrants from the former Yugoslavia than for immigrants of other countries. This finding is consistent with findings from Switzerland's Statistical Office (OFS 2000), which show a much lower concentration index for the distribution across cantons of Yugoslav nationals (1.75) than the concentration indexes for Italian (5.33), Spanish (3.31), and Turkish (4.49) nationals.

Given both the financial results and the cultural results, it appears that inflows from the former Yugoslavia in the late 1990s responded more like inflows from the North than inflows from the South. The weakening in the impact of both financial effects and cultural effects after 1995 is consistent with Switzerland's discriminatory immigration policy, which allows access to the Swiss labor market only to skilled workers from non-EU countries. The increasing number of skilled workers from the countries from the former Yugoslavia who obtained permanent permits supports this interpretation. The class of managers, intellectuals, scientists, technicians, and administrative employees grew from 16.3 percent of new workers in 2000 to 19.7 percent in 2003.[28]

To provide some support for the validity of the findings for the former Yugoslavia, results are given for a sample that excludes Italy, Portugal, and Spain, the three southern countries that together contribute more foreign workers to Switzerland than Yugoslavia (see column 3). The network effect and the financial incentives do not change with the same magnitude in that case. This finding suggests that the above-noted inferences for Yugoslavia are warranted.

To summarize, Switzerland's immigration policy since 1995 has emphasized immigration from EU15 countries. This policy has been rather successful in changing the geographical distribution of source countries. The migration incentives of Yugoslav nationals shifted according to the policy, which gives preferential treatment to skilled workers.

Conclusion

Since 1970, the goal of immigration policy in Switzerland has been to stabilize the level of the foreign resident population without cutting off employers' access to foreign sources of workers. Until 2002, the government relied on the rotation principle and quotas on the inflow of new work permits. Despite successful implementation of the quotas, the policy became increasingly ineffective in controlling the growth of the foreign resident population. One reason was that migrants' graduation from seasonal to permanent status steadily increased the number of

immigrants not under quota. Other reasons were institutional changes in Switzerland, such as the availability of unemployment insurance, and the convergence of main source countries' costs of living with the Swiss cost of living.

Workers from different source countries reacted differently to incentives. Nationals from the former Yugoslavia have been among the least likely to act in accordance with the rotation principle. They have been more inclined than workers from other countries to settle permanently in Switzerland, thereby invalidating the assumption of the Swiss and Yugoslav governments that migration is temporary. An analysis of migration inflows confirms that after access to work permits became restricted in 1995, financial incentives weakened for Yugoslav immigrants, suggesting that these immigrants began to attach more weight to graduating to permanent residency in Switzerland than to seeking temporary residency in the prospect of increased financial returns. In fact, 81 percent of foreign-born Yugoslavs had been in Switzerland for less than 10 years in 1995, compared with only 38 percent in 2003 (OFS 2004a, table T1117F).

In 1995 the Swiss government changed its immigration policy in an attempt to influence the composition of migrant workers' skills and the geographical distribution of source countries in view of future free mobility for EU/EFTA nationals. As a result, the migration incentives of Yugoslav nationals, who now had only conditional access to work permits, began to reflect those of skilled workers from northern European countries rather than those of unskilled workers from southern European countries. In the years since 1995, it appears that immigration policy in Switzerland has been more successful at modifying the composition of the foreign population's skills than at controlling the foreign population's growth.

Notes

1. European countries define foreigners in terms of nationality, whereas traditional immigration countries define them as born abroad.

2. In this chapter, the former Yugoslavia is considered to have remained a single country throughout 1995 and to have been made up of Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, and Serbia and Montenegro.

3. In 2002 Switzerland signed a free mobility agreement with the European Union that significantly altered the parameters of the policy, as described in this chapter.

4. Asylum seekers, diplomats, and international civil servants and their families are not included in the permanent resident statistics (OFE 2001b). Note that "permanent" does not have the same meaning in Switzerland as in traditional immigration countries such as Canada and the United States.

5. In June 2002, Switzerland began implementing the free mobility agreement with the European Union that led to the development of the country's new immigration legislation.

6. For example, Germany had a similar understanding of the role of foreign workers, as did France concerning workers from former colonies (Blanc-Chaléard 2001).

7. Some groups repeatedly attempted to force the government to curb expansion of the foreign population, in particular by inducing the government to change its policy on quotas (see Gross 2006a).

8. The Federal Legislation on Unemployment Insurance and Support in Case of Bankruptcy was implemented on January 1, 1983 (CH 2003) after seven years of implementation of temporary orders.

9. In 1989, 66 percent of the new migrants entering the labor force were from EU/EFTA (OFE 2001a).

10. EU15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Portugal, Spain, Sweden, United Kingdom. EFTA: Iceland, Lichtenstein, Norway.

11. See Gross (2006a) for more details.

12. From 1979 to 1989, on average 8,400 seasonal permits were converted yearly. Between 1990 and 1994, the average was nearly 15,000; almost as many one-year permits were issued under the quota (OFE 2001b).

13. In 1964, the Italian government signed an agreement allowing its citizens to convert their seasonal permits after five years. In 1972, the period was reduced to four years.

14. Moreover, citizens of Portugal and Spain gained the right to free mobility within the European Union on January 1, 1992. This development may have contributed to the increased number of migrants leaving Switzerland (see Gross and Schmitt 2006).

15. In 1992, the three countries represented 46 percent of the migrant outflow (IMES 2004a).

16. The country composition of EU/EFTA is maintained constant throughout the period, that is, EU/EFTA is made up of the EU15 countries, Iceland, Lichtenstein, and Norway.

17. The figures reflect end-of-December totals from IMES (2004a) and OFE (2001a).

18. Yugoslav nationals represented 33.8 percent of naturalizations in 2003 and 21.3 percent of the foreign population (see tables 6.3 and 6.4).

19. Foot and Milne (1984), Helliwell (1997), and Karemera, Oguledo, and Davis (2000) use gravity models to evaluate the determinants of migration flows regionally or internationally.

20. See this chapter's annex for a detailed description of all the variables.

21. Buckley (1996) and Borjas (1999) show that migrant clusters in the United States may also be the consequence of some institutional specificity, such as availability of state welfare benefits.

22. The countries are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Italy, the Netherlands, Portugal, Spain, Sweden, Turkey, the United Kingdom, the United States, and the former Yugoslavia. For the period 1995–2003, the countries are Austria, Belgium, Bosnia and Herzegovina, Canada, Croatia, Denmark, France, Germany, Greece, Hungary, Italy, FYR Macedonia, the Netherlands, Poland, Portugal, Russia, Serbia-Montenegro, Slovenia, Spain, Sweden, Turkey, Ukraine, the United Kingdom, and the United States. Because observations mostly concern workers, and because the immigration process is driven by demand for labor (that is, the requirement that migrants have a job contract), restricting the sample to these sets of source countries is unlikely to result in a selection bias; the countries represent the vast majority of the world's worker migration.

23. Individually, neither EU membership nor a border with Switzerland has a significant impact (see Gross 2006b).

24. This option is favored over adding country-specific interactive dummies on explanatory variables, because the time dimension of the panels is too small.

25. A dummy variable starting in mid-1991, with the first bombardment in Croatia, and ending in 1995, with the signing of the Dayton Agreement, had no significant effect (see Gross [2006b] for more details).

26. Note that regression results for a dependent variable, including conversions for 1983–95, show no significant changes in elasticities (Gross 2006b).

27. The process for acquiring Swiss citizenship is cumbersome; members of the Yugoslav community face an additional challenge in this process: the difficulty of being recognized as worthy future citizens in some regions of Switzerland. See Gross (2006a, 2006b) for details.

28. This information from the *Registre Central des Etrangers* was provided by the Office Fédéral des Migrations, Berne.

References

Bartel, Ann P. 1989. "Where Do the New U.S. Immigrants Live?" *Journal of Labor Economics* 7: 371–91.

Blanc-Chaléard, Marie-Claude. 2001. *Histoire de l'Immigration*. Paris: Editions La Découverte.

BNS (Banque Nationale Suisse). 2003. *L'Evolution des Investissements directs en 2003*. Zurich: BNS.

Borjas, George J. 1999. "Immigration and Welfare Magnets." *Journal of Labor Economics* 17: 607–37.

Buckley, Francis H. 1996. "The Political Economy of Immigration Policies." *International Review of Law and Economics* 16: 81–99.

CH (Confoederatio Helvetica). 2003. *Loi fédérale sur l'Assurance-Chômage obligatoire et l'Indemnité en Cas d'Insolvabilité, LACI*. [Legislation records] Nr 837.0. June 25, 1982. Bern.

———. 2004a. *Loi fédérale sur le Séjour et l'Etablissement des Etrangers. LSEE*. [Legislation records] Nr 142.20. March 26, 1931. Bern.

———. 2004b. *Ordonnance limitant le Nombre des Etrangers*. [Legislation records] Nr 823.21. October 6, 1986. Bern.

Curtis, Glenn Eldon. 1992. *Yugoslavia: A Country Study.* Area Handbook Series, Federal Research Division, Library of Congress. Washington, DC: Library of Congress.

Dodson III, Marvin E. 2001. "Welfare Generosity and Location Choices among New United States Immigrants." *International Review of Law and Economics* 21: 47–67.

Foot, David K., and William J. Milne. 1984. "Net Migration Estimation in an Extended, Multiregional Gravity Model." *Journal of Regional Science* 24: 199–233.

Gross, Dominique M. 2006a. "Immigration Policy and Foreign Population in Switzerland." Policy Research Paper 3853, World Bank, Washington, DC.

———. 2006b. "Immigration to Switzerland: The Case of the Former Republic of Yugoslavia." Policy Research Paper 3880, World Bank, Washington, DC.

Gross, Dominique M., and Nicolas Schmitt. 2006. "Skilled Immigration Flows and Free Mobility in France and Switzerland." Working Paper Series, Industry Canada, Ottawa.

Hatton, Timothy J., and Jeffrey G. Williamson. 2002. "What Fundamentals Drive World Migration?" Paper 9159, National Bureau of Economic Research, Cambridge, MA.

Helliwell, John F. 1997. "National Borders, Trade and Migration." *Pacific Economic Review* 3 (3): 165–85.

Heston, Alan, Robert Summers, and Bettina Aten. 2002. Penn World Table, versions 5.6 and 6.1. Center for International Comparisons at the University of Pennsylvania, Philadelphia.

Hirter, Hans, Marianne Benteli, Magdalena Bernath, and Elisabeth Ehrensperger. 2002. "Schweizerische Politik 1990 bis 2001. Ein Überblick über die wichtigsten Ereignisse und Entscheidungen." Synthese au Basis des Jahrbuchs 'Schweizerische Politik-Année politique Suisse' im Auftrag der Schweizerischen Bundeskanzlei. Institut für Politikwissenschaft, University of Bern, Bern.

ILO (International Labour Office). 2003. *Key Indicators of the Labour Market, 2001–2002.* Geneva: ILO.

———. 2004. "ILO Migration Survey 2003: Country Summaries." Social Protection Sector, International Migration Programme, ILO, Geneva.

IMES (Office Fédéral de l'Immigration, de l'Intégration et de l'Emigration). 2004a. *Statistique des Etrangers 2003: Résultats rétrospectifs*. Vol. 2. Berne: IMES.

———. 2004b. *Statistique des Etrangers 2003: Effectifs et Mouvements*. Vol. 1. Berne: IMES.

Karemera, David, Victor Iwuagwu Oguledo, and Bobby Davis. 2000. "A Gravity Model Analysis of International Migration to North America." *Applied Economics* 32 (13): 1745–55.

Larsen, Luke J. 2004. "The Foreign-Born Population in the United States: 2003." Current Population Report P50-551, U.S. Census Bureau, Washington, DC.

Massey, Douglas S., Joaquin Arango, Graeme Hugo, Ali Kouaouci, Adela Pellegrino, and J. Edward Taylor. 1993. "Theories of International Migrations: A Review and Appraisal." *Population and Development Review* 19 (3): 431–66.

OFE (Office Fédéral des Etrangers). 2001a. "Les Etrangers en Suisse. Mouvement de la population: Résultats rétrospectifs." *Bulletin d'information statistique* 2B, OFE, Berne.

———. 2001b. "Les Etrangers en Suisse. Effectifs: Résultats rétrospectifs." *Bulletin d'information statistique* 2A, OFE, Berne.

OFR (Office Fédéral des Réfugiés). 2004. "Réglements de Séjour selon le Pays d 'Origine." Etat AUPER2 du 8 mars. Service de la Statistique, Berne.

OFS (Office Fédéral de Statistique). 2000. "Analyse des Mouvements migratoires internes des Etrangers en Suisse 1981–1995." *DEMOS*: *Bulletin d'Information démographique* 3, OFS, Neuchâtel.

———. 2002. "Population: Immigration et Naturalisation." Press release 0351-0209-60, Service d'Information, OFS, Neuchâtel, September 13.

———. 2004a. *La Population étrangère en Suisse.* OFS: Neuchâtel.

———. 2004b. "Vie active et Rémunération du Travail." Press release 0351-0401-00, Service d'Information, OFS, Neuchâtel, February 16.

———. 2005. Encyclopédie statistique de la Suisse. Electronic database, OFS, Neuchâtel.

Piguet, Etienne. 2004. *L'Immigration en Suisse: 50 Ans d'Entrouverture*. Collection Le Savoir Suisse. Lausanne: Presses polytechniques et universitaires romandes.

Piguet, Etienne, and Hans Mahnig. 2000. "Quotas d'Immigration: l'Expérience suisse." *Cahiers de Migrations internationales* 37. International Labour Office, Geneva.

UN (United Nations). 2005. UN Common Database. Department of Economic and Social Affairs, United Nations, New York.

World Bank. 2005. World Development Indicators. Electronic database. World Bank, Washington, DC.

Annex 6.1: Description of Variables

Com.Border: dummy equal to 1 if the country shares a border with Switzerland (Austria, France, Germany, Italy).

Conversions Seas.: dummy equal to 1 for countries with a significant number of conversions and 0 otherwise. Countries are Germany, Italy, Portugal, Spain, and the countries born out of the former Yugoslavia for 1995–96.

EU free mobility: dummy equal to 1 from mid-2002 and 0 otherwise for EU member countries to capture the implementation of free mobility.

$Linfl_{i,t}$: log of total net inflow of migrants to Switzerland (total inflow of permanent residents/family reunions/conversions of seasonal workers) from country i during period t. i = Austria, Belgium, Canada, Denmark, France, Germany, Greece, Italy, the Netherlands, Portugal, Spain, Sweden, Turkey, the United Kingdom, the United States, and the former Yugoslavia. Annual flows are summed over three-year periods from 1981 until 1995 (t = 1 to 5, that is, 81–83, 84–86, 87–89, 90–92, 93–95) (OFS [2005], table T22103AF; OFE [2001a], tables 111.3R and 112.2R).

$Lnetwork_{i,t-1}$: log of foreign permanent population from the same source country i in Switzerland at the beginning of the period (that is, end of previous year) (IMES [2004a]; OFS [2004a]).

$Lpopsou_{i,t-1}(LpopCH_{t-1})$: log of population age 15 to 64 in Switzerland and source countries i, at the beginning of the period (that is, end of previous year) (World Bank 2005).

$Lquota_t$: average quota during period t, t = 1 to 5 (CH 2004b).

$Lycapsou_{i,t-1}$ $(LycapCH_{t-1})$: Sample 1983–95: log of real GDP per capita, 1985 international prices in country i (in Switzerland), at the end of previous year. The values for the former Yugoslavia for 1991 and 1992 are extrapolated using the growth rate of real GDP at constant dollars (Heston, Summers, and Aten 2002; UN 2005). Sample 1995–2003: income per capita purchasing power parity (PPP) in constant 1995 dollars (World Bank 2005). For Serbia and Montenegro, the values are computed from the proportions with FYR Macedonia as in UN (2005).

Non-EU: dummy equal to 1 if the country is not part of the European Union and 0 otherwise. Spain and Portugal entered the European Union in 1986, and Austria entered in 1995.

3-cir.pol: Product of *Non-EU* and a dummy equal to 1 from 1990 to 1995.

South: Sample 1983–95: dummy equal to 1 for southern European countries (Greece, Italy, Portugal, Spain), EU candidates, and the Balkans (Turkey, the former Yugoslavia) whose migrants are in majority unskilled. Sample 1995–2003: dummy equal to 1 for southern European countries (Italy, Portugal, Spain), EU

candidates, and the Balkans (Turkey, Bosnia and Herzegovina, Croatia, FYR Macedonia, Serbia and Montenegro) whose migrants are in majority unskilled.

***UrateCH*$_{t-1}$**: unemployment rate in Switzerland at the beginning of the period, that is, the end of previous year (ILO 2003).

Table 6A.1. Correlation Matrix, 16 Countries, 1981–95

	Linfl$_{i,t}$	*Lpopsou*$_{i,t-1}$	*LpopCH*$_{t-1}$	*Lycapsou*$_{i,t-1}$	*LycapCH*$_{,t-1}$	*UrateCH*$_{t-1}$
Linfl$_{i,t}$	1					
Lpopsou$_{i,t-1}$	.059	1				
LpopCH$_{t-1}$	.634	.033	1			
Lycapsou$_{i,t-1}$	−.104	.150	.150	1		
LycapCH$_{,t-1}$	.102	.030	.905	.153	1	
UrateCH$_{t-1}$	−.013	.024	−.583	.096	.442	1
Lnetwork$_{i,t-1}$	.845	.439	.095	−.334	.083	.080

Source: Author.

Note: The countries in the sample are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Italy, the Netherlands, Portugal, Spain, Sweden, Turkey, the United Kingdom, the United States, and the former Yugoslavia.

Table 6A.2. Correlation Matrix, 23 Countries, 1995–2003

	Linfl$_{i,t}$	*Lpopsou*$_{i,t-1}$	*Lycapsou*$_{i,t-1}$	*LycapCH*$_{,t-1}$	*UrateCH*$_{t-1}$
Linfl$_{i,t}$	1				
Lpopsou$_{i,t-1}$	.546	1			
Lycapsou$_{i,t-1}$	.265	.198	1		
LycapCH$_{,t-1}$	.002	.003	.023	1	
UrateCH$_{t-1}$	.003	−.008	−.084	−.814	1
Lnetwork$_{i,t-1}$	.709	.051	.057	.017	−.026

Source: Author.

Note: The countries in the sample are Austria, Belgium, Bosnia and Herzegovina, Canada, Croatia, Denmark, France, Germany, Greece, Hungary, Italy, FYR Macedonia, the Netherlands, Poland, Portugal, Russia, Serbia and Montenegro, Slovenia, Spain, Sweden, Turkey, Ukraine, the United Kingdom, the United States, and the former Yugoslavia.

Table 6A.3. Characteristics of the Main Variables

	Mean	Maximum	Minimum
	1981–95 (n = 80)		
$Infl_{i,t}$	7,261	26,108	864
$Network_{i,t-1}$	57,787	420,700	1,593
$Popsou_{i,t-1}$ *(,000)*	28,528	167,462	3.32
$Ycapsou_{i,t-1}$	10,853	18,095	2,872
$YcapCH_{t-1}$	15,193	16,299	14,205
$UrateCH_{t-1}$	1.06	2.8	0.2
	1995–2003 (n = 69)		
$Infl_{i,t-1}$	5,258	36,089	98
$Network_{i,t-1}$	52,977	364,011	260
$Popsou_{i,t-1}$ *(,000)*	28,973	207,426	1,302
$Ycapsou_{i,t-1}$	14,904	30,742	1,560
$YcapCH_{t-1}$	25,480	25,803	25,060
$UrateCH_{t-1}$	3.57	4.1	2.7

Source: Author.

7

THE IMPACT OF AN EX-ANTE JOB OFFER REQUIREMENT ON LABOR MIGRATION: THE NEW ZEALAND–TONGAN EXPERIENCE

John Gibson and David McKenzie

There is rising interest in immigration policy around the world, sparked by divergent developed and developing country demographics, increasing globalization, and political debates such as those concerning the large number of illegal immigrant workers in the United States and the unemployment and lack of integration of immigrants in France. The underlying issue in many immigration policy debates is jobs; typical policy questions are how to provide more opportunities for individuals to migrate legally for work and how to ensure that migrants are able to find jobs once they arrive in their new country. The focus on jobs also reflects a desire for migrants to have good settlement outcomes that do not require ongoing taxpayer support from host-country governments.

The two main types of employment-immigration policy regimes used around the world offer differing responses to the above-noted questions. One type of regime is to explicitly select individuals on the basis of skills, work experience, and qualifications and let migrants seek jobs once they have migrated. The "points systems" used by Australia's General Skilled Migration Program and Canada's Skilled Worker Visa typify this regime. The other type of regime is to explicitly require individuals to have a job offer before they are allowed to migrate.

Programs that require employers to sponsor workers (such as the H1-B program in the United States and the Employer Nomination Scheme in Australia) and policies that require a job offer but not employer sponsorship typify this regime. Examples of the latter include the Pacific Access Category (PAC) in New Zealand and some versions of a temporary worker program being proposed in the United States (White House 2004). Job offers are a feature of hybrid regimes, which select individuals on the basis of skills but which also give "points" for having a job offer. For example, under New Zealand's Skilled Migrant Category and the recently announced points scheme in the United Kingdom (BBC 2006), individuals with certain skills can obtain enough points to migrate without having a job offer, whereas those with comparatively few skills generally are required to have a job offer to qualify to migrate.

Despite the importance of employment in the immigration policy debate, few studies have examined in detail the effect of these different policy regimes. The present study considers the operation of one policy that explicitly requires individuals to have a job offer before they migrate: the PAC in New Zealand. The study uses a unique survey of Tongan PAC applicants and nonapplicants to examine the types of individuals the job offer policy selects. The survey queries respondents about the likelihood of their migrating absent restrictions on migration (henceforth referred to as open migration), allowing the authors to determine whether the policy itself has any effect on the types of individuals who migrate. In addition, the study investigates the process by which potential migrants attempt to obtain a job offer and the number of migrants who actually end up working in the job for which they have an offer.

The main finding is that the job offer requirement of the PAC over the 2002–04 period primarily served to select individuals who applied to migrate on the basis of the size of their family network in New Zealand. Researchers such as Munshi (2003) have shown the importance of family networks for obtaining jobs once individuals migrate. Such networks become even more vital when jobs must be obtained before migration. The vast majority of job offers were obtained through existing family members already in New Zealand. Individuals without a family network were less likely to apply for the PAC, but a family network would have no significant effect on the stated desire to migrate if there were open migration.

Changes in the operation of the PAC since October 2004 have accelerated verification of job offers, allowed individuals to apply for the PAC while legally residing in New Zealand on a non-PAC visa, and thrust Immigration New Zealand (which is part of the Department of Labour and is responsible for migration-related services) into the role of helping New Zealand employers directly recruit in the Pacific Islands. Early evidence suggests that these changes in policy are making it easier for individuals to obtain job offers and more likely that individuals work

in offered jobs. Unless host-country governments provide opportunities for migrants to look for jobs prior to migration, the requirement that individuals obtain a direct job offer is likely to serve as a *de facto* family migration policy. This appears to be particularly the case for low- and medium-skilled workers, the group on which job offer requirements are most typically imposed.

This chapter begins by discussing the historical context of Tongan migration to New Zealand and describing the requirements of the PAC. It then presents the survey data used in the present study, as well as analyzes the characteristics of the individuals who migrate through the PAC and compares these to the characteristics of individuals who would choose to move under a policy of open migration. The rest of the chapter examines the process by which potential migrants search for and find job offers and describes the recent changes in the PAC.

The PAC and Tongan Migration to New Zealand

Tonga is an archipelago of islands in the South Pacific, about two-thirds of the way from New Zealand to Hawaii.[1] The population is just over 100,000; another more than 30,000 Tongans live abroad, primarily in New Zealand (39 percent), the United States (39 percent), and Australia (17 percent) (Parsons et al. 2007). In recent years the majority of the migration has been to New Zealand: in 2004/05 New Zealand admitted 1,482 Tongans, the United States, 324, and Australia, 284 (McKenzie, Gibson, and Stillman 2006).

The first notable migrations from Tonga to New Zealand began in the 1960s and 1970s, as Tongans migrated on temporary work permits. After the permits expired, some Tongans stayed on in New Zealand illegally. An amnesty in 1976 granted many of them permanent residence. Migration for work continued in the 1980s, and by 1986 the New Zealand Census counted 7,060 Tongans.[2] The number had grown to 12,972 by the 1991 Census. In 1991 New Zealand introduced a points-based selection system for immigration. Under this system, potential migrants are awarded points for education, skills, and business capital and additional points for a job offer in specific occupations. Few Tongans qualified to migrate under this points system, and so most Tongan migration during the 1990s was under family-sponsored categories: spouse, parent, or child of an existing migrant. For example, in 1997/98 only 29 Tongans were admitted as principal applicants under the general skills points system, compared with 436 under family categories. On average over the five years from 1997/98 to 2001/02, New Zealand admitted just under 900 Tongans a year; 75 percent came through family categories.[3] With this migration through family channels, the Tongan-born population in New Zealand had grown to 17,682 by the 2001 census.

In early 2002, another channel was opened up for immigration to New Zealand: the Pacific Access Category. According to the PAC quota, as many as 250 Tongans can emigrate to New Zealand each year.[4] PAC applicants must be age 18 to 45, meet a minimum level of English language ability, meet health and character requirements, and have an offer of employment in New Zealand. The job offer must be for "ongoing and sustainable employment" and should be a full-time job that pays salary or wages (not a commission or self-employment) and that complies with employment laws in New Zealand.[5]

Applicants register for the PAC by filling out a form within a one-month window each year. Because many more registrations are received than are provided for by the quota, the New Zealand Department of Labour conducts a computer ballot to randomly select 250 registrations. Individuals who are selected in this ballot are then notified and invited to apply for residence within six months. At this stage of the residence application, applicants must provide evidence of the job offer in New Zealand. Once applications are approved, migrants can move to New Zealand as permanent residents and bring their spouse and dependent children with them.

Data from the Pacific Island-New Zealand Migration Survey

This chapter reports results of a survey designed by the authors to examine how the PAC functions in practice. The first wave of data from the Tongan component of the Pacific Island-New Zealand Migration Survey (PINZMS) was collected in 2005.[6] The survey sampled Tongans who registered for the 2002/03 and 2003/04 PAC ballots, along with a group of nonapplicants living in the same villages as the applicants. The applicant group consists of three subsamples: (a) individuals who had their names drawn in the ballot, whose residence applications were approved, and who had migrated to New Zealand; (b) individuals who had their names drawn in the ballot but who had not migrated to New Zealand at the time of the survey (either because their residence application was still being processed or because it had not been approved for reasons such as lack of a suitable job offer); and (c) individuals who applied for the PAC, but whose names were not drawn in the ballot.[7]

Applicants' Motives for Migration

New Zealand's real GDP per capita in 2004 was almost 15 times that of Tonga's, suggesting large potential income gains from migration.[8] However, this difference in per capita income reflects differences in the two countries' level of human

capital, as well as differences in the prices paid for different skills. Using the random ballot feature of the PAC to obtain an experimental estimate of the actual gain in income experienced by PAC applicants, the authors compared migrants to individuals in group c (that is, individuals whose names were not chosen in the lottery) (McKenzie, Gibson, and Stillman 2006).[9] In the short term, migration is estimated to increase income by 263 percent—much less than the gain suggested by GDP per capita differences, but still very sizeable. The possibility of this large gain in income is clearly one important motive for applying to migrate.

Nevertheless, the possibility of earning higher wages in New Zealand is only one of the reasons for migrating. Individuals who had registered for the PAC were asked to rate the importance of different factors in their decision to apply to migrate. Table 7.1 shows that access to better public services in New Zealand and reunion with family members already in New Zealand are more important factors than the chance to earn higher wages. Applicants with children also were keen to migrate so that their children can attend school in New Zealand. Migration theory suggests that another motive to migrate is to earn money to overcome constraints

Table 7.1. Motives for Wanting to Migrate Among Tongan PAC Ballot Entrants

	% saying reason is:		
	Very important	Somewhat important	Somewhat unimportant or very unimportant
Better public services in NZ	76	21	4
To be with family members in NZ	63	27	10
To earn higher wages in NZ	58	39	5
So children can attend NZ school[#]	53 (81)	9 (11)	38 (8)
Better social life	38	53	9
To pay for social responsibilities in home village	13	49	37
To pay for Tongan school fees[#]	7 (8)	49 (40)	44 (52)
Less cultural restrictions	5	49	46
To earn money to build a house in Tonga	5	25	70
As a way of getting into Australia	2	14	83
To earn money to start a business in Tonga	2	7	91

Source: Authors.

Note: Based on responses of 198 Tongan ballot entrants in the Pacific Access Category.

[#]parentheses show results conditional on having a child (119/168 cases).

Table 7.2. Percent with the Following Family Member Living in New Zealand at Time of Application

Father/father-in-law	38
Mother/mother-in-law	36
Brother/brother-in-law	73
Sister/sister-in-law	61
Daughter/son/daughter-in-law/son-in-law	9
Grandparent	10
Aunt/uncle	65
Cousin	61
Nephew/niece	36
None of the above	0
Number of Observations	198

Source: Authors.

Note: Based on responses of 198 Tongan ballot entrants in the Pacific Access Category.

on access to credit in the home country. However, very few applicants reported that they wanted to migrate to earn money to pay for housing improvements or businesses in Tonga.

Sociologists have long emphasized the importance of family ties and networks in the migration decision. Family networks and previous experience in New Zealand seem particularly important for the Tongan PAC applicants. Table 7.2 shows that *all* 198 applicants interviewed had at least one family member (typically, a sibling, aunt, or uncle) in New Zealand. Forty-two percent of the surveyed applicants had visited New Zealand before the introduction of the PAC in 2002, compared with 13 percent of the nonapplicant sample. Given this context it is worth investigating the relative importance of human capital and labor market ability, on the one hand, and family social capital, on the other hand, as determinants of the decision to apply to migrate.

Migrants Selected by the PAC

There are two stages at which the PAC policy can affect who migrates to New Zealand. The first stage of selection occurs when Tongans decide whether to apply for the PAC ballot. The second stage occurs when the Department of Labour determines whether individuals whose names are selected in the ballot have their residence applications approved and these individuals decide whether to migrate. The present study asks what characteristics are associated with selection at each step and how much of the selection is a result of the PAC policy requirements.

To determine which characteristics each step selects, the following two probit equations are estimated:

$$\text{Apply for PAC ballot} = \text{probit (demographics, human capital, social capital)} \quad (1)$$

$$\text{Migrate} \mid \text{Successful ballot} = \text{probit (demographics, human capital, social capital)} \quad (2)$$

Estimation of equation (1) pools the sample of all 18–45 year olds living in households without a PAC applicant with the sample of individuals registering for the PAC ballot. Equation (2) is estimated using only the sample of individuals whose names were drawn in the PAC ballot, thereby allowing the authors to examine selection conditional on application for the PAC.

The demographic characteristics considered are age, sex, martial status, and place of birth. Four measures of human capital are considered: English language fluency (the PAC requires applicants to have a minimum level of English language ability), height, years of education, and income earned in Tonga prior to PAC application. Because the authors are controlling for demographic characteristics and education, the income variable captures whether individuals are paid more than their observed skills predict and, hence, is a measure of unobserved labor market skills. The two measures of social capital are the number of types of family members already in New Zealand[10] and travel (or lack thereof) to New Zealand before the PAC was introduced. Because the reason for travel to New Zealand may have been to visit family members, the estimation is also performed without the travel variable to allow the family network variable to pick up the full effect of family.

Table 7.3 presents the results of this estimation. To compare magnitudes, the table reports the marginal effect of a change from 0 to 1 for dummy variables and the marginal effect multiplied by the standard deviation for continuous variables. So, for example, column 1 shows that being married is associated with a 0.19 lower probability of applying for the PAC, whereas a one standard deviation increase in age increases the probability of applying by 0.12.[11]

Table 7.3 shows that both human capital and family networks help predict whether an individual will apply to migrate. Individuals who have comparatively high education, who have comparatively high income in Tonga, and who are literate in English are significantly more likely to apply for the PAC.[12] So are individuals who have relatively large networks in New Zealand and who have previously been to New Zealand. Perhaps because they have relatively easy access to migration information, individuals who are born on the main island of Tongatapu are more likely than Tongans born on other islands to apply to migrate.

Table 7.3. Who Does the Policy Select to Migrate? Marginal Effects from Probit Estimation of Application and Migration Outcomes

	Application decision		Migration outcome	
	(1)	(2)	(3)	(4)
Male dummy	−0.001 (0.02)	−0.023 (0.34)	0.234 (2.17)*	0.155 (1.49)
Married dummy	−0.188 (2.56)*	−0.158 (2.24)*	0.085 (0.80)	0.173 (1.87)
Age	0.122 (3.13)**	0.150 (3.95)**	−0.097 (1.89)	−0.072 (1.49)
Born on Tongatapu dummy	0.166 (2.57)*	0.189 (3.03)**	−0.159 (1.61)	−0.005 (0.05)
Income in Tonga prior to application	0.113 (3.35)**	0.100 (3.12)**	0.041 (0.98)	0.010 (0.25)
Years of education	0.091 (2.98)**	0.102 (3.03)**	0.152 (1.78)	0.183 (2.35)*
Literate in English dummy	0.478 (3.04)**	0.440 (2.80)**	0.117 (0.46)	−0.033 (0.10)
Height	0.025 (0.68)	0.034 (0.93)	−0.018 (0.27)	0.013 (0.22)
Migrant network in New Zealand	0.075 (2.46)*	0.083 (2.80)**	−0.036 (0.94)	−0.019 (0.46)
In New Zealand before 2002 dummy	0.306 (4.39)**		0.523 (5.40)**	
Pseudo R^2	0.230	0.184	0.288	0.083
Observations	350	350	117	117

Source: Authors.

Note: Robust *z* statistics in parentheses.

*Significant at 5% level. **Significant at 1% level.

Coefficients shown are marginal effects multiplied by the standard deviation in the regressor for continuous variables, and marginal effects of a change from 0 to 1 for dummy variables.

Human capital and family network in New Zealand are largely independent of one another, meaning that these two factors are separate determinants in the migration decision: the correlation of family network with years of education is 0.13 and with the Tongan wage premium is 0.00. Literacy in English has the largest effect on determining application; it raises the probability of application by 0.48. The policy is therefore succeeding in attracting applicants who fulfill the English criteria. Because English literacy is expected to ease individuals' ability to earn and adapt to life in New Zealand, individuals with high English literacy would be expected to be more likely to apply for the PAC than individuals with low English literacy, even if the PAC policy explicitly required no such literacy.

A one standard deviation increase in the number of types of family members in New Zealand raises the probability of PAC application by 0.08, almost as much as the 0.10 increase from a one standard deviation increase in years of education or in Tongan income. The low correlation between the family network and these human capital measures suggests that social capital can substitute almost one-for-one for human capital in determining whether individuals apply to migrate.

Columns 3 and 4 of table 7.3 show that few characteristics are significant for predicting whether an individual whose name is selected in the ballot will have migrated by the time of the survey. Individuals are more likely to migrate if they are male, if they have relatively high education, and if they have previously spent time in New Zealand. English language, income earned in Tonga, and family network, which were all powerful determinants of whether individuals applied for the PAC, have no significant effect on predicting whether individuals with successful ballots will actually migrate. This finding is consistent with evidence in McKenzie, Gibson, and Stillman (2006) that suggests that most of self-selection occurs through the decision to apply for the PAC, rather than through migration conditional on winning the PAC ballot.[13]

The above analysis shows that a number of characteristics are associated with an individual's decision to apply for the PAC. However, because most of these characteristics are also expected to affect labor market outcomes in New Zealand and the ease of adapting to life in New Zealand, they might be expected to determine the migration decision even if the PAC required no job offer. That is, it is quite possible that the costs and benefits of migration, rather than the requirements of the PAC policy, are the main determinants of who applies to migrate through the PAC. It is therefore of direct policy interest to ask whether the job offer and English requirements of the PAC have additional effects on determining who migrates. This question is difficult to answer, because migration is observed only under one policy regime. Nevertheless, the present study provides some suggestive evidence based on responses to the following hypothetical question in the PINZMS: "If New Zealand were to change its laws and it were now possible for anyone from Tonga who wanted to move to New Zealand to do so, what do you think would be the percent chance that you would move to New Zealand within one year of the law taking effect?" This question was asked of PAC applicants, and in households with no applicants, it was asked of the oldest household member age 25 to 35 or the oldest person age 18 to 45 if no family member was age 25 to 35.

In addition, principal PAC applicants who were still in Tonga (either because they had an unsuccessful ballot or because they had a successful ballot and had not yet migrated) and the oldest person age 25 to 35 in households without a PAC applicant[14] were asked the percent chance that they would still be living in Tonga in five years. Eliciting expectations as a percent chance allows quantifiable

Table 7.4. Do PAC Applicants Differ from Nonapplicants in Expected Response to Free Movement?

Respondents were asked: "If New Zealand were to change its laws and make it possible for anyone from Tonga who wanted to move to New Zealand to do so, what is the…"

	PAC applicants	PAC nonapplicants	T-test p-value
Percent chance that would move to New Zealand within 1 year	68.3	68.7	0.90
Percent chance that would be living in Tonga in 5 years	32.0	30.2	0.60
Proportion saying over 75% chance of migrating in a year	0.481	0.483	0.98

Source: Authors.

measures of probabilities to be obtained and facilitates comparisons across individuals (Manski 2004). Such comparisons would be more difficult with Likert scales (for example, a one-to-five score of very likely, likely, and so on). Table 7.4 compares the responses of PAC applicants and nonapplicants.

The first point to note is that the PAC applicants and nonapplicants express very similar desires to migrate; 48 percent of both groups say that the probability that they would migrate within one year of such a law was over 75 percent. On average, both groups thought there was only a 30 percent chance that they would still be in Tonga five years after such a law came into effect.

On the basis of the answer to this question, the authors compare the characteristics of individuals who stated they would be highly likely to migrate under a policy of free movement with the characteristics of the PAC applicants. For most direct comparisons with the PAC application decision, the authors first estimated a probit of whether an individual would have above a 75 percent (roughly the median) chance of moving. They used the regression to examine the direct effect of different characteristics on the reported percent chance of moving. Because only one person per household was asked questions about expectations, the survey sample for those questions was smaller than the sample used to examine selection into the PAC. The sample of nonapplicants is more homogeneous in terms of age than the full sample of 18- to 45-year-old nonapplicants. Therefore, the authors repeated their analysis of the PAC application decision for the smaller sample.

Table 7.5 reports the results of this analysis. Comparison of columns 1 and 2 allows identification of any factors associated with the decision to migrate under the PAC that differ from those associated with a high chance of migrating under

Table 7.5. Does the PAC Select Differently from Open Migration?

	Would move under free migration probit (1)	PAC applicant probit (2)	Percent chance would move under free migration OLS (3)
Income in Tonga	−0.080 (1.21)	0.080 (1.30)	−0.402 (0.27)
Male dummy	−0.036 (0.46)	−0.226 (3.11)**	−1.933 (0.63)
Married dummy	−0.012 (0.14)	−0.079 (0.91)	−0.214 (0.06)
Age	0.034 (0.73)	0.027 (0.61)	1.899 (1.09)
Years of education	−0.005 (0.15)	−0.029 (0.77)	0.438 (0.25)
English dummy	0.341 (1.63)	0.552 (2.46)*	14.479 (2.42)*
Born on Tongatapu dummy	−0.001 (0.02)	0.087 (1.15)	−2.083 (0.70)
Migrant network in New Zealand	−0.007 (0.17)	0.089 (2.55)*	−1.115 (0.84)
Constant			49.178 (3.18)**
Observations	187	187	187

Source: Authors.

Note: Robust z statistics in parentheses.

*Significant at 5% level. **Significant at 1% level.

Coefficients shown are marginal effects multiplied by the standard deviation in the regressor for continuous variables, and marginal effects of a change from 0 to 1 for dummy variables.

OLS = ordinary least squares.

an open migration policy. First, note that several of the characteristics that were significant predictors of PAC application among the full sample of 18- to 45-year-olds are not significant predictors among the smaller and more homogeneous nonapplicant sample. These characteristics include education, Tongan income, and age. Second, note that English literacy is positively associated with the decision to migrate under both policy regimes. The effect is larger under the PAC regime than under the open immigration regime, but not significantly so. English language ability clearly benefits migrants in New Zealand, both in terms of ability to find work and in terms of ease of adjustment to living in New Zealand. Even under an open migration system, migrants would tend to have greater English language ability than nonmigrants.

The two variables that are statistically significant and that differ most between the PAC and an open migration regime are the migrant network in New Zealand and gender. A one standard deviation increase in the size of the network in New Zealand has no predictive power in determining who states that they would be most likely to migrate under open migration, but it increases the probability of PAC application by 0.09. The significance of the male dummy variable in determining PAC application in this table, but not in table 7.3, is purely a mechanical result, arising from the fact that PAC principal applicants were asked the question about expectations but that only the oldest individual within an age range was asked this question in households with no PAC applicants. Because males tend to marry women younger than themselves, they are more likely to be the person asked this question. Thus males accounted for 81 percent of the individuals answering the expectations question in nonapplicant households and only 51 percent of the individuals answering this question among PAC applicants. As a result, when the PAC application decision is examined after the sample is conditioned on answering the expectations question, it appears that males are less likely to apply for the PAC than females. As table 7.3 shows, this is not the case when the full sample of 18- to 45-year-olds is analyzed.

Overall, these results suggest that although Tongans with higher human capital and more connections to New Zealand were more likely to apply to migrate under the PAC than other Tongans, only some of this selection is likely to be the result of the PAC policy. Instead, under the PAC as it operated between 2002 and 2004 (with the requirement of a job offer in New Zealand but without the subsequently introduced job search support), individuals appeared more likely to apply to migrate on the basis of whether they had a large family network in New Zealand. In this sense, the policy effectively worked to extend the range of family members from the narrow set of those who can migrate under family-sponsored categories. The policy was less successful at allowing Tongans with few family connections in New Zealand the chance to migrate. These results are suggestive only, because the analysis considers a subset of the eligible people under the PAC and is based in part on answers to a hypothetical question. To understand further how plausible this analysis is, the requirement of a job offer must be considered. This extended analysis allows further examination of the role of human capital and family connections.

Potential Migrants' Mechanisms for Finding and Obtaining Job Offers

The PAC regime requires individuals with successful ballots to have a job offer for their residence applications to be approved. Before discussing the mechanisms individuals use to obtain this job offer, it is useful to note the types of jobs

typically obtained by the migrants in the survey sample, because job search methods may differ depending on the type of job sought.

PAC migrants in the sample typically work in construction and retail sales, which together account for 55 percent of all principal applicant jobs. As a result, the most common occupations are also found in these industries: sales assistants and packers in retail sales and carpenters, technicians, and welders in construction. These jobs are similar to many of the entry-level positions taken by developing country migrants around the world, so search patterns for these jobs may be indicative of how job offer criteria would be met elsewhere.[15]

The survey asked individuals in Tonga how they tried to obtain the job offer required by the PAC. Table 7.6 shows that PAC ballot entrants from 2002 to 2004 most commonly attempted to find a job offer through siblings and other relatives. Only a small minority used methods such as looking for job listings, using a recruitment agency, or directly traveling to New Zealand.

Table 7.7 shows the methods with which the migrants in New Zealand succeeded in obtaining their job offer. As revealed in table 7.6, the assistance of siblings and other relatives in New Zealand is the most common method. However, 25 percent of job offers are obtained through nonfamily channels through a combination of travel, application for advertised jobs, and use of recruitment agencies.

Almost all (94 percent) of the surveyed migrants obtained their job offer after their name was drawn in the ballot, not before they applied for the PAC. Even

Table 7.6. What Methods Do Applicants Try to Find a Job Offer?

	% applicants trying this:
Asking a brother/sister in NZ	53.0
Asking another relative in NZ	49.2
Asking another village member in NZ	7.6
Searching job listings in a Tongan newspaper	0.0
Searching job listings in a NZ newspaper	2.3
Looking for job listings on the internet	2.3
Sending resume/C.V. to employers	0.0
Asking a travel agent for help finding a job	0.8
Using a recruitment agency to help find a job	0.8
Using an immigration consultant in Tonga	1.5
Using an immigration consultant in NZ	4.5
Traveling to New Zealand on a visitor visa	6.8
Observations	132

Source: Authors.

Table 7.7. What Succeeds? How Did the Migrants Get Their Job Offer?

	% migrants
Brother or Sister in NZ	24.6
Other relative in NZ	49.2
Other village member in NZ	4.6
Applied to advertisement in Tongan newspaper	0.0
Applied to advertisement in NZ newspaper	1.5
Applied to internet advertisement	1.5
Travel agent	3.1
Recruitment agency	4.6
Traveled to NZ	4.6
Other	6.2
Observations	65

Source: Authors.

though job offers were meant to be for one or more years or to be indefinite, the survey reveals that 41 percent of the job offers were for one year or less; 16 percent were for less than six months.[16]

Translation of Job Offers into Jobs

Despite having a job offer, only 39 percent of the Tongans migrating through the PAC before the policy changes in October 2004 actually worked in the job for which they had an offer on arriving in New Zealand. Among those not taking up the job offer, 68 percent stated that the job was not available when they moved to New Zealand. The amount of time between a migrant's obtaining a job offer and actually migrating to New Zealand was likely to be an important factor. After a job offer was filed with the residence application, it typically took three to nine months for applicants to receive a decision on their application; at that time they are given up to one year to move. Although the median time for moving was within one month of receipt of residence approval, the time taken to process the residence application is likely to have led many employers to fill their vacancies with other workers.

The other main reasons for not taking up a job offer were that the offer was in a different part of the country (13 percent), that the job was taken by a family member instead (8 percent), and that a higher-paying job was found (5 percent). Individuals who did not take up their job offer relied heavily on family and friends while looking for another job in New Zealand: 93 percent lived with family or

Table 7.8. How Long Does It Take to Find a Job After Arriving

	% migrants
Less than 2 weeks	22
Between 2 weeks and 1 month	25
Between 1 and 2 months	22
Between 2 and 6 months	12
More than 6 months	3
Still looking for their first job	16
Observations	32

Source: Authors.

Note: (for migrants who don't take up the job their offer is for). For migrants who have been in New Zealand for 2 months or more.

friends while looking for a job, and 77 percent found their first job through a relative in New Zealand.

Many of these migrants who did not take up their job offer found their first job very quickly. Table 7.8 shows that 22 percent found their first job in less than two weeks; 69 percent found their first job within two months.[17] However, 16 percent of those who had been in New Zealand for at least two months at the time of the survey were still looking for their first job. In such cases, personal savings and the help of family and friends are particularly important in helping the migrant to meet living expenses without work income.

Overall this analysis of the process by which potential migrants found job offers supports the view that the job offer requirement of the PAC mainly served to select migrants on the basis of whether they had family members already in New Zealand. Siblings and other relatives are by far the most frequent channel for obtaining job offers. Even if the job offer did not result in a job, migrants were able to rely on relatives to help them find another job and to provide accommodation during the search process. From a policy viewpoint, family networks have the attractive feature of providing a nongovernment insurance and support network, easing concerns that migrants may require government welfare assistance if they are unable to quickly find a job.

Nevertheless, the system has several possible drawbacks. Given the development benefits of remittances and the large income gains arising from migration, equity arguments would suggest that the PAC should provide increased opportunities to Tongan families that currently have no large presence in New Zealand. From the viewpoint of New Zealand policy makers, the job offer requirement did not appear to be selecting individuals with relatively high human capital or individuals who were in occupations particularly in demand in the New Zealand labor market. Furthermore, because in many cases the job offer was not taken up, the

system was not fulfilling the goal of ensuring that all migrants could immediately start work on arrival. Finally, because not all individuals with successful ballots were able to find job offers, administrative inefficiencies were involved in the offer of some of the set number of places to individuals who did not migrate.

Policy Challenges and Changes

The result of difficulties experienced by potential migrants in obtaining job offers was that many of those whose names were drawn in the 2002/03 and 2003/04 ballots did not migrate to New Zealand. Despite the large numbers of people registering for the PAC, the 250 quota was not filled in these years. New Zealand also offers quotas under the PAC for Tuvalu, Kiribati, and Fiji, and a similar scheme for Samoans. Potential migrants' problems obtaining job offers also resulted in the quotas not being filled for these other countries, leading to complaints from several of the Pacific Islands governments involved.[18] The New Zealand government conducted a review of the PAC and announced several major changes to PAC operation to take effect after October 2004.

The main changes in terms of the job offer were an increase in the speed of verifying job offers to within a two-week period, and the development of partnerships with the private and public sectors in New Zealand to help match successful ballots to job vacancies in New Zealand. For example, in the Samoan case, Immigration New Zealand worked with the Department of Corrections (to recruit prison officers for New Zealand), a road works company, and a bus company. Another important change was lowering of the income requirement facing migrants with dependents; the income of the spouse as well as that of the principal applicant can now be used to meet this requirement. This change has resulted in a higher proportion of individuals with successful ballots obtaining residency.[19]

An extension survey of Tongan migrants in New Zealand is being conducted for the purpose of comparing PAC outcomes before and after the October 2004 changes. Early results show that the new policy appears to be working in terms of giving migrants alternatives to family networks for finding jobs and allowing migrants to obtain job offers that translate into actual jobs on the migrants' arrival. Table 7.9 shows that only 36 percent of the newest group of migrants obtained their initial job offer from relatives in New Zealand, compared with 74 percent previously.[20] The difference is made up by job offers obtained through employers on visits to Tonga arranged by Immigration New Zealand; these offers account for 58 percent of offers to Tongans migrating after the October 2004 policy changes.

Compared with pre-October 2004 migrants, migrants who have entered New Zealand since the policy changes also appear to be receiving offers for

Table 7.9. Comparisons of Job Offers and Initial Jobs Before and After Policy Changes

	Prior to October 2004	Post-October 2004
Initial job offer from a relative in New Zealand?	73.9	36.1
Initial job offer from visiting employer arranged by Immigration Service?	0.0	58.3
Initial job offer for longer than one year?	59.4	100.0
Did you work in the initially offered job?	38.5	88.9
Still in first job at time of survey?	50.8	72.2
Observations	65	36

Source: Authors.

Note: (Percent of Migrants from Two Phases of PINZMS in New Zealand). All comparisons between the two columns are statistically significant at $p < 0.05$.

longer-term jobs, which they are more likely to accept and to be working in at the time of the survey. Even when adjusting for shorter time of post-October 2004 migrants in New Zealand at the time of the survey, analysis reveals that these migrants are significantly more likely to be in their first job, which was almost always the offered job used in their residence application.[21]

Conclusion

Several categories of employment migration require individuals to have a job offer before they migrate. The requirement of a job offer is more common for less-skilled individuals than for more-skilled individuals; many receiving countries allow workers with high skill levels to migrate and then look for jobs. Skilled workers in scarce or specialized occupations may be able to obtain job offers while abroad, but less-skilled migrants apparently find it much harder to do so. Analysis of job offers obtained through the PAC in New Zealand shows that before immigration authorities assumed a more active job brokering role, potential migrants relied almost exclusively on relatives abroad to find them a job offer. This reliance effectively led to a *de facto* family migration scheme, limiting the migration possibilities of individuals who have no strong connections to a country.

The likely reason for requiring a job offer is to attempt to ensure that new migrants are able to quickly begin work in their new country and to prevent the problems associated with prolonged unemployment. However, in practice, application-processing delays can keep many migrants from taking the jobs for which they have offers. Nevertheless, the types of occupations in which less-skilled

migrants typically work, such as construction and retail sales, typically have rapid turnover and frequent new hiring. Hence, it appears reasonable to expect migrants to be able to quickly find jobs in these occupations without requiring them to have job offers ex-ante.

If ex-ante job offers are to be used, results of the analysis reported here highlight the need for active efforts to help potential migrants find job offers. The change in policy in New Zealand, which has meant an active role on the part of the receiving country, appears to have worked well for the small number of migrants coming from the Pacific Islands. However, this employment assistance may be hard to provide for large numbers of migrants coming to other countries, especially when migration flows are not part of a receiving government's broad development relationship with the source country. In such cases, receiving-country governments may wish to consider granting travel visas for job search in their country, and sending-country governments may want to take a more active approach in fostering and regulating recruitment, as has the Philippine government.

Notes

1. This section is based on information from the CIA *World Factbook* (http://www.cia.gov/cia/publications/factbook/geos/tn.html), the *Te Ara Encyclopedia of New Zealand* (www.teara.govt.nz/NewZealanders/NewZealandPeoples/Tongans/1/en), and the New Zealand Census (http://www.stats.govt.nz/analytical-reports/pacific-profiles/tongan/default).

2. Unless noted otherwise, the numbers given here refer to individuals born in Tonga and do not include New Zealand-born individuals of Tongan ethnicity.

3. This information comes from the New Zealand Department of Labour's Source R1 database of approved residence applications.

4. New Zealand created similar immigration channels for Kiribati, Tuvalu, and later Fiji. In addition to labor market considerations, these programs reflect broader development relationships between New Zealand and the Pacific Island countries. World Bank (2006) provides the regional context for the link between labor mobility and development in the Pacific.

5. Applicants with dependents must also meet a minimum income requirement.

6. In 2006 the authors began enlarging the survey sample to examine the experience of applicants in the 2004–05 PAC ballot in light of substantial changes in PAC policy and operation since late 2004.

7. See McKenzie, Gibson, and Stillman (2006) for a detailed description of the survey design.

8. The purchasing power parity (PPP) exchange rate is almost exactly equal to the prevailing exchange rate during the time of the survey, so this comparison holds in both absolute and PPP-adjusted terms.

9. This estimation also takes into account those in group (b), who are "noncompliers" with the "treatment" of migration. The ballot outcome is used as an instrument for migration to obtain an estimate of the effect of migration for those who would migrate if selected in the ballot.

10. Individuals were asked yes/no questions about whether they had each type of family member listed in table 7.2. The network variable is constructed by adding up the number of different types. This number will be strongly correlated with the absolute number of relatives, which is not measured. Nor is the number of village members abroad measured. In the Tongan context, the extended family is acknowledged to be the prime source of support abroad and, therefore, it appears to be the most appropriate network measure.

11. The authors also attempted to use a quadratic in age. The coefficients suggested the probability of applying first increases and then decreases with age, but the quadratic term was not significant.

12. This finding may also reflect the fact that there is a fee of 50 Pa'anga to lodge an application for the PAC (25 Pa'anga for subsequent applications).

13. Some individuals may apply to the PAC as a risk-diversification strategy and migrate only if they cannot find a job in Tonga. The authors did not qualitatively observe this effect during their field work, and the evidence from the PAC suggests that the majority of individuals with successful ballots eventually do migrate, even though they have jobs in Tonga.

14. If the household had no member age 25 to 35, this question was asked of the oldest person age 18 to 45.

15. The change in job search patterns following the October 2004 policy changes are examined later in the chapter.

16. The authors were unable to compare the job offers reported in their survey with the offers approved by Immigration New Zealand as part of the residence application to examine why some offers did not seem to meet the requirements.

17. At the time of the survey, New Zealand had the lowest unemployment rate among the member countries of the Organisation for Economic Co-operation and Development, which may have contributed to the speed at which jobs were found.

18. See, for example, Radio New Zealand International (2004).

19. See *Matangi Tonga Online* (2005).

20. These results apply only to the principal applicants. Although one of the policy changes was to allow qualifying job offers from either the principal applicant or his or her spouse, only one-sixth of the new sample of migrants had taken advantage of this change. To maintain comparability with the earlier sample, the analysis is restricted to principal applicants.

21. Specifically, in a probit regression for whether the principal applicant remains in his or her first job at the time of the survey, the significant difference in probabilities between the two samples of Tongan migrants is not changed if number of months in New Zealand is included as a covariate.

References

BBC (British Broadcast Corporation). 2006. "Migration: How Points Would Work." *BBC News,* March 7. http://news.bbc.co.uk/1/hi/uk_politics/4244707.stm.

Manski, Charles. 2004. "Measuring Expectations." *Econometrica* 72 (5): 1329–76.

Matangi Tonga Online. 2005. "NZ Immigration Changes Result in Higher Uptake of Ballot Residency." July 23. http://www.matangitonga.to/article/spnews/nz/ballot2307-5.shtml.

McKenzie, David, John Gibson, and Steven Stillman. 2006. "How Important Is Selection? Experimental versus Nonexperimental Measures of the Income Gains from Migration." Policy Research Working Paper 3906, World Bank, Washington, DC.

Munshi, K. 2003. "Networks in the Modern Economy: Mexican Migrants in the United States Labor Market." *Quarterly Journal of Economics* 118 (2): 549–97.

Parsons, Christopher, Ronald Skeldon, Terrie Walmsley, and L. Alan Winters. 2007. "Quantifying the International Bilateral Movements of Migrants." Policy Research Working Paper 4165. World Bank, Washington, DC.

Radio New Zealand International. 2004. "Tuvalu Premier Criticizes New Zealand Immigration 'Red Tape.' " May 9.

White House. 2004. "President Bush Proposes New Temporary Worker Program." Press Release, January 7.

World Bank. 2006. *At Home and Away: Expanding Job Opportunities for Pacific Islanders through Labour Mobility.* Washington, DC: The World Bank.

8

RETURNS TO OVERSEAS WORK EXPERIENCE: THE CASE OF EGYPT

Jackline Wahba

International migration has increasingly become a pivotal aspect of the current world economy. One of every 35 persons worldwide, almost 3 percent of the world's population, is an international migrant.[1] More and more workers are heading for better opportunities overseas as a result of globalization or political instability. This phenomenon has led to public debates on the costs and benefits of migration.

One overlooked issue is that not all migration is permanent. Many migrants return to their country of origin. In fact, a substantial proportion of migration is temporary in nature; for example, guest and contract workers who are hired for a fixed period return to their country of origin. In other cases, migrants return to their home country as a consequence of factors such as wars or because of political reasons or changes in personal circumstances such as illness and death in the family.

A small body of theoretical literature on return migration examines the phenomenon of migration as part of life-cycle strategy. In this framework, return migration is part of optimal decision making and is related to the savings behavior of migrants, their investment in human capital acquisition while abroad, and the relative wage differential between the host and home countries. One reason for return migration is that the marginal utility of consumption is higher in the home country than in the host country (see Galor and Stark 1991). Another motive for return, developed by Dustmann (1997), is the relatively high return to overseas human capital investments in the host country. This chapter focuses not on the reasons that migrants return but rather on the consequences of temporary migration.

Return migration can affect the economic prospects of the origin countries through at least two main channels. First, while overseas, emigrants may accumulate savings that, given the capital market distortions prevailing in many less developed countries, they might not have reaped without migrating. Second, overseas work may enable emigrants to acquire new skills, enhance human capital accumulation, or both. The first impact of return migration on the home country has attracted some attention recently. A few studies (for example, Mesnard [2004], McCormick and Wahba [2001, 2003], Dustmann and Kirchkamp [2002]) have focused on the occupational choice of returnees and, in particular, on entrepreneurship and self-employment among returnees. Using data from Egypt, McCormick and Wahba (2001) show the effects of overseas savings and length of overseas migration on the probability that returning migrants will become entrepreneurs. McCormick and Wahba (2003) examine entrepreneurship among return migrants, how the locations and characteristics of these migrants' businesses differ from those of other businesses, and their implications for geographical inequality in Egypt. Overall, these studies examine how temporary migration, through savings, provides access to credit that enables returnees to become self-employed and entrepreneurs.

However, the second impact of temporary migration on human capital accumulation has not been widely considered.[2] In particular, an important question not yet addressed is what the returns to overseas work experience are. A handful of studies have examined the returns to returning migrants by comparing the wage premium for these migrants with that for nonmigrants. But these studies have focused on return migration to developed and transitional economies, not on return migration to developing countries, where the consequences may be different. In addition, their findings are mixed. Co, Gang, and Yun (2000) find no significant wage premium for returning men but a positive one for women in Hungary. Barrett and O'Connell (2000) find the opposite for Irish returnees: a positive wage premium for returning men but not for women. Roed (2002) finds a positive premium for return male migrants in Norway. However, de Coulon and Piracha (2005), who study a slightly different issue—namely, the selectivity and performance of Albanian return migrants—find that return migrants are negatively selected and that if the nonmigrants had migrated and returned they would have earned more than twice the wage of return migrants. Lacuesta (2004), who appears to be the only researcher to study returns to overseas work in a developing country, Mexico, finds an 11 percent wage gap between returning migrants and observationally equivalent nonmigrants but argues that this premium is the result of premigration differences in ability and not human capital gains derived from migration.

The aim of this chapter is to examine the extent to which temporary overseas work experience affects human capital and therefore affects wages on migrants' return, because the migrants have acquired new skills overseas that enhance their

human capital. However, it is also possible that return migrants may have a negative wage premium if their skills depreciated as a result of downgrading their occupations while overseas. It may also be that exiting the domestic labor market is punished, because a migrant has to quit a public sector job, or that being overseas for a period slows down the promotion process. In theory, migration is an investment in human capital wherein individuals migrate when the present value of real income in a destination minus the cost of moving exceeds what could be earned at the place of origin. Thus, individuals would be expected to gain from temporary migration; otherwise, they would not incur this investment. However, there may be cases in which those gains do not materialize because, for example, information about the destination is imperfect, adverse shocks affect wages or employment opportunities overseas, or migration is undertaken at the household level and used as a risk diversification strategy.

The case of Egypt is particularly interesting for the following reasons. First, migration is temporary in nature. Therefore, return migration is not necessarily the result of negative selectivity—that is, it is not the case that only those who fail overseas return to their home country. Second, the purpose of migration is employment and not education, as it is for many Irish immigrants (Barrett and O'Connell 2000), for example. Egyptian migrants do not migrate to acquire higher degrees and formal education. Thus, the impact of overseas work experience can be separated from that of acquisition of formal education. Third, return migrants in Egypt tend to be heterogeneous in their educational levels, allowing differentiation between the impact of overseas work experience on both educated and uneducated workers.

In order to examine the extent to which temporary overseas-work experience affects human capital—in particular, wages on return—this chapter estimates the wage differential between the waged employees who are return migrants and those who are nonmigrants, taking into account two potential selection biases due to the migration decision and to the waged employment participation decision. A bivariate probit sample selection model is used. Previous papers have tended to control only for the migration selection and have ignored the potential bias arising from the waged employment participation decision. Co, Gang, and Yun (2000) control for double selection, but they control for labor market participation and not for participation in waged employment—that is, they do not distinguish between self-employment and waged employment. Thus, their analysis is not limited to waged employment but includes self-employment, which may bias the results, because the returns to capital in this case would be part of the estimated wage premium. In addition, they do not separately estimate wages for returnees and nonmigrants. Instead, they include a dummy to capture being a returnee, so they force returns to characteristics and experience to be the same for both migrants and returnees, which might not be the case.

This chapter describes the survey data used in the present analysis and examines the occupations of return migrants before, during, and after migration. It presents the econometric model used in the analysis, discusses the empirical findings, and examines the effect of temporary migration on the wages of returnees. The chapter concludes by summarizing the main findings and discussing the main policy implications of the analysis.

Egyptian Migration and the Data

This section briefly discusses Egyptian migration, especially to the Persian Gulf states, and describes the data used in the empirical analysis.

The Case of Egypt: A Brief Background

Egypt has been a major labor exporter since the early 1970s. About 10 percent of the labor force, made up of educated and uneducated individuals, is working overseas at any point in time. The majority of Egyptian migrants go to the Gulf States and to other Arab countries. After the oil boom of 1973, the Gulf oil-exporting countries found their development plans constrained by labor shortages and began importing large numbers of workers from neighboring countries. At one point, the Gulf States were importing 90 percent of their labor force. Between 1975 and 1995, 5 million foreign workers migrated to the Gulf States (see Girgis 2002). During the 1970s and 1980s, Arab neighboring countries were the main labor exporters to the Gulf Cooperation Council (GCC). Even in the 1980s and 1990s, when Asians replaced Arab workers, Egypt's outflow of workers continued, though at a lower scale. In the mid-1990s, Egyptian workers represented the second highest concentration of migrants, after Indian nationals in Saudi Arabia. Given their high demand for overseas labor and the temporary nature of their contracts, the Gulf States have been a locus of huge inflows of migrants. As a consequence, Egypt has a substantial proportion of return migrants who have worked overseas at one point in time.

The Data

This chapter uses data from two rich surveys: the 1998 Egypt Labor Market Survey (ELMS) and the 1988 Labor Force Sample Survey (LFSS) carried out by the Central Agency of Public Mobilization and Statistics (CAPMAS) in Egypt.[3] The 1988 LFSS was the first survey in Egypt to collect detailed data on employment characteristics, labor mobility, earnings, and other labor market variables. The 1998 ELMS has replicated the design and methodology of the 1988 LFSS to ensure comparability of the two data sets. Thus, this analysis pools data from both data sets.

LFSS 1988 and ELMS 1998 are nationally representative household surveys that gathered data on a wide range of labor market variables at the household and individual level. The 1988 LFSS covered 10,000 households; the 1998 ELMS covered 5,000 households. Each data set is comprised of three questionnaires: the household questionnaire, the individual questionnaire, and the family enterprise questionnaire. Each household has at least one household questionnaire and one individual questionnaire. A family enterprise questionnaire was administered to any household in which any members were self-employed or employers. Data for the household questionnaire were collected from the head of the household and included the roster of household members, each individual's relationship to the head of the household, and demographic characteristics of the household. The individual questionnaire applies to individuals six years old and older. A battery of individual modules was designed to collect data on individual characteristics, employment characteristics, unemployment, mobility and career history, and earnings. Data for the individual questionnaire were collected directly from individuals over 15 years old.

The 1988 LFSS has a module on return migration for which the sample numbers about 1,500. However, the 1998 ELMS has no separate module on return migration. Both surveys have an extensive labor mobility module to elicit information on individuals' employment history, including detailed information on employment status, employment characteristics, and employment locations inside and outside Egypt. This module facilitates construction of a picture of employment before and after migration.[4] In addition, both surveys have earnings modules that collect data on individual earnings of waged workers at the time of the survey.

The analysis in this chapter is restricted to males of working age (15 to 65 years old at the time of the survey). Only return migrants are observed—that is, migrants who are currently overseas are not observed.[5] This is a potential limitation of the analysis, because migration and return migration cannot be separately controlled. However, given that over 90 percent of migration from Egypt is to the Gulf States and is temporary in nature (almost all migrants return), the findings are not sensitive to this control issue. Migration here refers to overseas moves for the sole purpose of work.

Table 8.1 provides descriptive statistics on returnees and nonmigrants for the total sample (labor market participants and nonlabor market participants) and for those who were waged workers, because this group is the focus of interest. There are 1,828 returnees and 21,059 nonmigrants, but only 1,101 returnees, and 8,574 nonmigrants are waged workers. Returnees are noticeably different than nonmigrants in several respects. Returnees are older than nonmigrants: around 6 years older in the full sample and 3 years older in the waged-worker sample. More than three-quarters of returnees are heads of households, compared with less than half of nonmigrants. In addition, return migrants are more educated

Table 8.1. Summary Statistics

Variables	Returning Migrants		Nonmigrants	
	Mean	(Standard deviation)	Mean	(Standard deviation)
All: sample size	**1,828**		**21,059**	
Round = 1998 (percent)	22.43		33.55	
Age (years)	39.09	(9.7)	32.52	(14.34)
Married (percent)	87.09		52.28	
Head of household (percent)	79.10		44.93	
Educational level (percent)				
None	25.82		27.73	
Read and write	16.03		13.63	
Less than intermediate	11.60		24.74	
Intermediate	22.65		20.54	
Higher than intermediate	4.49		3.61	
University and higher	19.42		9.74	
Previous work/residence characteristics (percent)				
Previous lived in urban	58.10		59.53	
Previous waged worker	61.76		20.46	
Previous public sector worker	53.17		12.71	
Previous occupation dummies (percent)				
Technical, scientific, and managerial	18.98		6.25	
Clerical	5.09		3.18	
Sales	4.21		4.5	
Services	4.16		3.13	
Agriculture	23.03		12.22	
Production	28.88		14.31	
Waged workers: sample size	**1,101**		**8,574**	
Real hourly wage (£)	2.40	(2.18)	1.99	(2.02)
Age (years)	38.50	(9.00)	35.57	(12.17)
Head of household (percent)	80.74		59.91	
Married (percent)	87.92		68.05	
Educational level (percent)				
None	18.98		25.50	
Read and write	13.71		15.73	
Less than intermediate	10.00		17.06	
Intermediate	26.70		20.81	
Higher than intermediate	5.36		5.59	
University and higher	25.16		15.32	
Public sector worker (percent)	59.19		53.63	
Labor market experience in Egypt (years)	16.77	(9.77)	18.13	(12.68)

Variables	Returning Migrants		Nonmigrants	
	Mean	(Standard deviation)	Mean	(Standard deviation)
Region of residence (percent)				
Greater Cairo	26.88		25.05	
Alexandria and Suez Canal cities	10.54		12.41	
Lower urban	16.17		13.73	
Upper urban	9.54		13.69	
Lower rural	21.80		20.75	
Upper rural	15.08		14.36	
Round = 1998	23.71		38.83	

Source: Author.

than nonmigrants. Among waged workers, 25 percent of returnees have a university degree, compared with only 15 percent of nonmigrants.

Examination of the real hourly wages of returnees and nonmigrants indicates that there is a wage premium for returnees relative to nonmigrants. Because the focus of this analysis is on whether temporary overseas-work experience affects human capital on migrants' return, it is interesting to examine the occupations of return migrants before, during, and after migration, as shown in table 8.2.

Table 8.3 presents the transition rates for occupational mobility. It seems that almost half of the return migrants, in particular those who were working in agriculture or production before migrating, were engaged in production work overseas. There is no evidence that workers downgraded their occupations while overseas. However, the occupational upgrading that takes place on return is striking. Almost 52 percent of return migrants were engaged in agriculture or production after their return, compared with 62 percent before migration.

Table 8.2. Return Migrants' Occupations
(percent)

	Before migration	Overseas	After migration
Technical, scientific, and managerial	22.5	20.8	24.9
Clerical	6.1	3.4	8.7
Sales	4.9	5.4	8.3
Services	5.0	9.2	6.2
Agriculture	27.5	12.1	23.0
Production	34.0	49.1	28.9

Source: Author.

Table 8.3. Occupation Transition Rates for Returnees
(percent)

	Overseas Occupation						
	Technical, scientific, and managerial	Clerical	Sales	Services	Agriculture	Production	Total
Occupation before migration							
Technical, scientific, and managerial	**83.2**	3.8	2.7	2.7	0.6	7.1	100
Clerical	25.0	**21.7**	14.1	14.1	6.5	18.5	100
Sales	8.1	9.5	**25.7**	14.9	4.1	37.8	100
Services	2.7	1.3	10.7	**37.3**	14.7	33.3	100
Agriculture	1.0	1.0	2.2	7.5	**39.2**	49.3	100
Production	3.1	2.1	3.9	5.1	2.9	***82.9***	100
Total	100	100	100	100	100	100	100
	Occupation on Return						
	Technical, scientific, and managerial	Clerical	Sales	Services	Agriculture	Production	Total
Overseas occupation							
Technical, scientific, and managerial	**81.0**	7.7	4.3	0.9	1.7	4.6	100
Clerical	27.6	**37.9**	13.8	1.7	8.6	10.3	100
Sales	19.6	17.4	**30.4**	8.7	8.7	15.2	100
Services	20.7	14.8	14.8	**17.4**	16.1	16.1	100
Agriculture	3.9	2.4	2.9	7.8	***74.6***	8.3	100
Production	7.5	6.6	7.3	6.0	23.1	***49.5***	100
Total	100	100	100	100	100	100	100

Source: Author.

Table 8.4. Employment Status and Sector Employment of Return Migrants
(percent)

	Before migration	After return
Employment status		
Wage worker	62.0	63.1
Employer	8.2	18.2
Self-employed	7.5	10.1
Unpaid family worker	5.9	3.1
Unemployed	6.6	2.8
Out of the labor force	9.8	2.7
Unknown	n.a.	4.8
Sector of employment		
Public	53.2	39.5
Private	46.8	60.5

Source: Author.

n.a. = not available

Comparison of the employment status of return migrants before and after migration indicates that the proportion of workers who become self-employed or employers increased by around 13 percentage points, as shown in table 8.4.[6] The change in the proportion of waged workers is only 1.1 percentage points. Another main difference in job characteristics of return migrants before migration and after migration is sector of employment: 53 percent were public employees before migration, compared with only 40 percent after return. Return migrants might have had to quit their public sector jobs to migrate or while overseas. Thus, the descriptive statistics suggest that there is a correlation between overseas work experience and occupational mobility. To attribute this occupational mobility or enhanced human capital to migration experience, the present analysis must address potential selectivity issues. The econometric framework used to control for those potential selection biases is presented below.

Econometric Framework

The aim of this chapter is to estimate the impact of overseas work experience on the wages of workers once they return to their home country. Consider the following earnings equation

$$W = \beta X + \alpha D + \xi, \tag{1}$$

where W is the log of real hourly wages, X is a vector of individual characteristics, D is a dummy variable capturing whether an individual has migrated and returned, β and α are coefficient vectors, and ξ is the error term.

In this specification, the impact of overseas work experience is captured only as a shift in the level of wages, and the coefficients are restricted to being the same for both nonmigrants and returnees. However, as shown in table 8.1, return migrants have different characteristics than nonmigrants. Thus, separate wage equations are estimated for both groups as follows:

$$W_{ji} = \beta_j X_{ji} + \varepsilon_{ji} \qquad j = 1 \text{ for returnees and } 2 \text{ for nonmigrants.} \tag{2}$$

However, using ordinary least squares (OLS) to estimate equation (2) separately for nonmigrants and returnees may still be inconsistent. First, there may be a migration selection bias if those who have migrated and returned are not representative of a random sample but instead are self-selected—for example, are more motivated or less risk averse than nonmigrants. Second, there might be a second bias resulting from selection into waged work. Labor participation is a common selection problem in the literature. The labor participation decision is refined by controlling for selection into waged employment where the alternative is not entering the labor market (or being self-employed).

The procedure developed by Heckman (1979) and Lee (1978) corrects for the case when there is only one selectivity bias. To correct for those two potential selection biases, the analysis follows Tunali (1986) in using a double sample selection model. The two choice equations are determined by

$$M_i^* = \gamma_i Z_i' + \mu_i, \tag{3}$$

$$P_i^* = \eta_i H_i' + \nu_i, \tag{4}$$

where M_i^* and P_i^* are latent variables, Z_i and H_i are the vectors of characteristics, γ_i and η_i are the coefficients to be estimated, and μ_i and ν_i are the error terms for migration and waged employment participation, respectively. An individual will migrate and return if the gain from temporary migration exceeds that of staying home. An individual will participate in waged employment if the utility of such employment exceeds that of nonwaged employment. Both these latent variables are unobserved; thus, two index functions are defined as follows:

In the case of migration and return the function is

$$M_i = 1 \quad \textit{if} \quad M_i^* > 0$$
$$M_i = 0 \quad \textit{if} \quad M_i^* \leq 0,$$

where $M_i = 1$ indicates return migration, and $M_i = 0$ indicates no migration. Similarly, for the waged employment decision, the function is

$$P_i = 1 \quad \textit{if} \quad P_i^* > 0$$
$$P_i = 0 \quad \textit{if} \quad P_i^* \leq 0,$$

where $P_i = 1$ indicates waged employment, and $P_i = 0$ indicates nonwaged employment.

This model is estimated using a two-step Heckman approach but with extended correction terms (see, for example, Lee [1978] and Tunali [1986]). In the first step, the two selection equations, equations (3) and (4), are jointly estimated using maximum likelihood bivariate probit estimation. In the second step, the wage equations are estimated through simple OLS, including the correction terms as additional regressors for return migrants and nonmigrants separately. Because the two selection processes may not be independent, bivarite probit is used (see Ham [1982] and Tunali [1986]), but the analysis can test for this interdependence, and the error correlation term is assumed to be $\rho_{\mu\nu} \neq 0$.[7]

Estimating the above two-step model requires some identification assumptions concerning coefficients and the covariance parameters. In addition, if, $\rho_{\mu\nu} \neq 0$, at least one element in Z_i must not be contained in H_i. Moreover, these variables must not be part of X_i. In the case of return migration, identification is achieved by controlling for previous job characteristics and previous urban/rural region of residence. For return migrants, these variables refer to the job characteristics and urban/rural region of residence before migration; for nonmigrants, these variables refer to previous job/residence. The idea here is to capture the conditions of the return migrant's job before the individual migrates. The variables (Z_i) used to explain the probability of migration and return are the individual's age, the individual's educational level, previous occupational dummies, the individual's previous work status and sector, and a dummy for previous residence in an urban area.

In the analysis of waged employment participation, two variables are used for identification purposes: whether the individual is married and whether he is head of the household. Those variables refer to the time of the survey and not to the time of migration. Being married and being a head of household would affect the waged employment participation decision for males, because looking after a family requires a stable source of income through waged employment. Thus, to explain the probability of waged work, the following variables (H_i) are used: the individual's age, educational level, region of residence (to capture the effect of living in rural areas); the year the current job started (to control for labor market conditions[8]); and above-noted instruments (whether the individual is married and whether he is the head of the household).

In the wage equation, a vector X_i is used and is comprised of the waged worker's individual characteristics. Six educational dummies are used: no education (reference group), ability to read and write, less than intermediate education, intermediate education, higher than intermediate education, and university education. Experience in the Egyptian labor market measured in years and its square are used to capture nonlinearity in the effect of experience on wages. Experience is calculated as the difference between the year of the survey and year the individual entered the labor market for the first time; for returnees, any time spent overseas is deducted. In addition,

to control for the sector of employment, a dummy for public sector employment is included, as are regional dummies and a survey dummy for 1998 (round 1998). Analysis of the migration experience for returnees includes migration duration in years and its square to account for potential nonlinearity. A dummy for the most popular migration destination (Saudi Arabia) and a dummy for overseas occupation (if technical or scientific in nature) are used. Finally, duration since return in log years is included. See annex 8A for a detailed description of the variables.

Empirical Findings

First, the analysis considered the wage premium question. The simple OLS estimates confirm a positive wage gap between returnees and nonmigrants, as shown in table 8.5. These results suggest that return migrants earn 6 percent more than nonmigrants. However, these OLS estimates are biased, because they do not control for the potential double selection discussed above.

Table 8.5. OLS Estimates of Log Real Hourly Wages

Variable	Coefficient	Robust t-statistics
Return migrant dummy	0.062	3.15
Labor market experience in Egypt	0.047	24.02
Labor market experience in Egypt squared	−0.001	−15.89
Educational level (reference: no education)		
Read and write	−0.006	−0.30
Less than intermediate	0.082	3.87
Intermediate	0.286	13.40
Higher than intermediate	0.368	11.66
University and higher	0.639	25.39
Sector of employment		
Public sector worker	−0.147	−9.84
Region of residence (reference: greater Cairo)		
Alexandria and Suez Canal cities	−0.014	−0.63
Lower urban	−0.152	−7.32
Upper urban	−0.186	−8.73
Lower rural	−0.267	−14.21
Upper rural	−0.283	−14.28
Round 1998	−0.334	−25.38
Constant	0.102	3.83
Sample size		9658
F-statistics		181.73
Adj. R-squared		0.235

Source: Author.

Table 8.6 provides the estimates of the bivarite probit model (the first stage of the bivarite probit sample selection model). The first selection equation is the probability of having been overseas, and the second is the probability of being a waged worker. The correlation coefficient between these two decisions (rho) is significant—that is, the probability of migration and that of participation in waged employment are not independent and thus provide support for using bivarite probit estimation for the first stage. In addition, the correlation is negative, suggesting a trade-off between these two decisions.

Consider the temporary migration choice. The probability of having been overseas seems to be influenced by several factors. First, the probability of temporary migration increases with age. However, there is no linear relationship between the probability of return migration and education. Yet, individuals with a university education are the most likely to have migrated and returned. In the case of Egypt, return migration is more likely among rural dwellers than among urban dwellers. Interestingly, those who migrate and return are more likely to have been waged workers than to have been nonwaged workers (self-employed, unemployed, or nonlabor participants). Public sector workers are more likely to migrate and return than private sector workers. Finally, the occupational background of the worker affects the probability of migration; production and agricultural workers have the highest such probability.

The second decision, the probability of being waged worker, also seems to be influenced by individual and regional characteristics. Age has a negative impact on the probability of an individual being a waged worker. Education plays a significant role in that decision. Individuals with a higher-than-intermediate education and university graduates are more likely to be waged workers compared with others. Dwellers in the greater Cairo area are more likely to be waged workers than dwellers outside that area. The year the individual started his current job has a significant impact on whether he chose waged employment. Head-of-household status and marital status are used as instruments to capture the probability that an individual is a waged worker, and the findings suggest that both are significant; being married and being the head of a household have a positive impact on the probability of an individual's being a waged worker.

In the second step of the analysis, wage equations for return migrants and nonmigrants are estimated (see table 8.7) using the bivarite probit results in table 8.6 to construct the selection correction terms. First, the findings indicate a negative selection bias for return migration—that is, ignoring selectivity would overestimate the wage differential effect. Second, the waged employment participation selection is also negative but is only significant for nonmigrants. This finding suggests that both temporary migration and waged participation choices would bias the results if the analysis did not control for them. Thus, estimates of wages correct for both selectivity biases.

Table 8.6. Bivariate Probit Sample Selection Model—Stage 1: Total Sample

	Bivariate Probit (FIML)			
	Probability of having been overseas		Probability of being a waged worker	
Variable	Coefficient	t-statistics	Coefficient	t-statistics
Constant	−2.390	−57.96	−0.884	−90.44
Round 1998	−0.377	−13.01	−0.047	−7.61
Age	0.008	9.90	−0.014	−39.27
Educational level (reference: no education)				
Read and write	0.050	1.29	0.197	23.63
Less than intermediate	0.025	0.63	−0.092	−14.22
Intermediate	0.527	13.63	0.281	38.01
Higher than intermediate	0.438	6.50	0.611	41.33
University and higher	0.656	14.24	0.631	56.96
Previous work/residence characteristics				
Lived in urban	−0.140	−5.12		
Wage worker	0.596	22.04		
Public sector worker	0.774	24.17		
Previous occupation dummies (reference: technical and scientific)				
Managerial	0.854	−6.09		
Clerical	0.363	−5.82		
Sales	0.285	4.89		
Services	0.076	1.12		
Agriculture	0.706	20.05		
Production	0.545	15.06		
Region of residence (reference: greater Cairo)				
Alexandria and Suez Canal cities			−0.117	−12.55
Lower urban			−0.279	−31.82
Upper urban			−0.204	−25.48
Lower rural			−0.368	−50.31
Upper rural			−0.250	−29.11
Head			0.298	31.77
Married			0.558	61.98
Year started current job dummies			Yes	
Rho	−0.199	−12.50		
Sample size			22887	
Log likelihood function			−18309.2	

Source: Author.

Note: Robust t-statistics.

Table 8.7. Bivariate Probit Sample Selection Model—Stage 2: Waged Workers

Variable	OLS: Estimates of Log Real Hourly Wages					
	Nonmigrants		Returnees		Returnees	
	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics
Constant	0.202	1.88	0.156	0.55	0.590	2.06
Round 1998	−0.346	−25.30	−0.441	−9.41	−0.544	−8.64
Age	0.010	6.75	0.021	6.02	n.a.	n.a.
Educational level (reference: no education)						
Read and write	0.074	3.76	0.005	0.07	0.012	0.17
Less than intermediate	0.187	8.86	0.175	2.14	0.174	2.11
Intermediate	0.359	15.76	0.303	4.14	0.304	4.06
Higher than intermediate	0.428	12.37	0.349	3.24	0.374	3.51
University and higher	0.709	23.71	0.615	6.83	0.595	6.20
Region of residence (reference: greater Cairo)						
Alexandria and Suez Canal cities	−0.006	−0.27	0.126	2.09	0.110	1.81
Lower urban	−0.116	−5.38	−0.093	−1.70	−0.107	−1.90
Upper urban	−0.156	−7.09	−0.097	−1.60	−0.120	−1.95
Lower rural	−0.179	−8.91	−0.185	−3.44	−0.208	−3.77
Upper rural	−0.190	−9.35	−0.317	−5.39	−0.333	−5.58
Labor market experience in Egypt	0.037	15.06	0.031	4.61	0.036	5.10
Labor market experience in Egypt squared (/100)	−0.001	−11.75	−0.001	−4.13	−0.0005	−2.89
Sector of employment						
Public	−0.255	−15.85	−0.330	−6.93	−0.318	−6.37

(*Table continues on the following page.*)

Table 8.7. (Continued)

Variable	OLS: Estimates of Log Real Hourly Wages					
	Nonmigrants		Returnees		Returnees	
	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics
Migration characteristics						
Migration duration					0.038	2.85
Migration duration squared					−0.001	−1.35
Years back (log)					0.113	2.95
Dummy for Saudi Arabia					−0.001	−0.26
Occupation overseas (technical and scientific)					0.185	2.95
Selection terms						
Lambda A	−0.267	−2.97	−0.173	−0.78	−0.327	−1.41
Lambda B	−0.336	−2.61	−0.850	−1.94	−0.689	−1.52
Correlation with selection equation 3	−0.199	−10.87	−0.199	−12.5	−0.191	−12.10
Correlation with selection equation 4	−1.129	−51.76	−1.145	−18.29	−0.115	−18.14
Sample size	8565		1093		1093	
Adj R-Squared	0.188		0.344		0.297	

Source: Author.

Note: n.a. = not applicable; Robust t-statistics.

Several factors affect wages of both returnees and nonmigrants. First, as expected, there is a positive relationship between age and individual earnings. Second, there is a positive relationship between education and wages. However, the marginal returns to formal education seem to be slightly higher for nonmigrants. Experience in the Egyptian labor market also affects wages and is also slightly higher for nonmigrants. This finding suggests that the marginal return to formal education and to local labor market experience is slightly higher for nonmigrants than for returnees. However, for return migrants, the gains from overseas-work experience captured by the migration duration outweigh that slight shortfall in returns to education and local labor market experience. Regional location matters for wages as well. Both nonmigrants and returnees experience a wage premium associated with residing in greater Cairo. Finally, working in the public sector has a bigger negative impact on wages of returnees than on wages of nonmigrants. This finding may suggest a penalty associated with migration for public sector employees.

The last two columns of table 8.7 control for the migration experience. Migration duration has a positive but nonlinear relationship with earnings. The length of time since the migration experience also has a positive impact on wages of returnees. Overseas occupation matters; in particular, those who were involved in technical and scientific occupations overseas are more likely to experience a wage premium relative to those who were engaged in other occupations. On the other hand, the destination of migrants has no significant effect on the earnings of migrants once they return home, though it is worth noting that the majority of the sample of return migrants has been to neighboring Arab countries.

Effect of Overseas Temporary Migration

To better quantify the impact of overseas work experience, the analysis first predicted average log real hourly wages. As shown in table 8.8, on average, returnees earn 38 percent more than nonmigrants. Highly educated returnees (university

Table 8.8. Predicted Average Log Real Hourly Wages

	All	Highly educated	Uneducated
Return migrants	0.634	1.079	0.502
Nonmigrants	0.460	0.904	0.350
Wage gap between return migrants and nonmigrants	0.174	0.175	0.152
Percent wage gap between return migrants and nonmigrants	38	19	43

Source: Author.

Note: "Highly educated" refers to individuals with university degrees; "uneducated" refers to individuals with no education.

Table 8.9. Predicted Log Real Hourly Wages by Educational Level

	Return migrants	Nonmigrants
No education	0.591	0.434
Ability to read and write	0.598	0.508
Less-than-intermediate education	0.750	0.621
Intermediate education	0.859	0.788
Higher-than-intermediate education	0.929	0.860
University education	1.120	0.927

Source: Author.

Note: These predicted log real hourly wages are for an individual with the following characteristics: 35 years of age, male, waged worker in the private sector, residing in greater Cairo.

graduates) earn on average 19 percent more than nonmigrants. Indeed, the wage premium is even higher for the uneducated returnees, who earn on average 43 percent more than nonmigrants. This evidence highlights the importance of temporary migration for human capital.

Table 8.9 presents the predicted log wages by educational level for individuals with similar characteristics—that is, a 35-year-old, waged worker in the private sector, residing in greater Cairo. An uneducated return migrant with those characteristics would earn 36 percent more than an uneducated nonmigrant, whereas a highly educated returnee would earn 21 percent more than a highly educated nonmigrant with similar characteristics. Thus, returnees have a wage premium compared with nonmigrants with similar characteristics.

The analysis further examines the impact of temporary migration by looking at the effect of the length of migration. As shown in table 8.7, one year of overseas migration increases wages of returnees by 3.8 percent. However, the effect of migration duration on wages is not linear—that is, additional years overseas increase the wage premium on a migrant's return but at a diminishing rate. Table 8.10 shows that, after 10 years of migration, the wage premium starts to

Table 8.10. Effect of Migration Duration on Predicted Average Log Real Hourly Wages of Return Migrants by Educational Level

Migration duration	Highly educated	Uneducated
1 to 4 years	1.145	0.557
5 to 9 years	1.285	0.694
10 or more years	1.371	0.781

Source: Author.

Note: "Highly educated" refers to individuals with university degrees; "uneducated" refers to individuals with no education.

Table 8.11. Effect of Overseas Occupation on Predicted Log Real Hourly Wages of Highly Educated Return Migrants

Overseas occupation	Predicted log real hourly wages
Scientific and technical	1.347
Managerial	1.771
Clerical	1.278
Sales	1.276
Services	1.233
Agriculture	1.196
Production	1.305

Source: Author.

Note: These predicted log real hourly wages are for an individual with the following characteristics: 40 years of age, male, waged worker in the private sector, residing in greater Cairo.

fall. This pattern is observed for both educated and uneducated return migrants.

Finally, it is worth noting that overseas occupation has a differential impact on return migrants' human capital enhancement. Examination of identical individuals with similar characteristics (highly educated, 40 years old, private-sector waged worker who resides in greater Cairo) except for overseas occupations illustrates this point. As table 8.11 shows, those who were engaged in managerial occupations overseas experienced the highest wage premium on return, followed by those in scientific and technical occupations.

Thus, the evidence suggests that overseas work experience results in a positive wage premium. In addition, the gains from overseas migration and employment reflected in a positive wage premium are experienced by both highly educated returnees and uneducated returnees.

Conclusions

This chapter examines returns to overseas work experience and shows the extent to which temporary migration affects human capital by affecting wages of migrants on their return. When estimating wages of return migrants and nonmigrants, the analysis controls for potential selectivity biases arising from the migration choice and from the waged employment participation decision. The findings, which are based on evidence from Egypt, suggest that, after controlling for those two selectivity biases, temporary migration results in a wage premium on migrants' return. On average, return migrants earn around 38 percent more than nonmigrants.

This chapter highlights the consequences of overseas work employment on human capital in developing countries. Previous work has examined the impact of

temporary migration on savings and the release of credit constraints for entrepreneurship. Other studies have focused on financial flows in the form of remittances that accrue to sending countries as a consequence of migration. This analysis complements this literature by emphasizing the impact of temporary migration on human capital in general and on wage premiums in particular. It is important to note that the findings in this chapter underestimate the total effect of temporary migration by focusing only on waged employment. From a policy perspective, the findings underscore the positive impact of temporary migration on the home country. Indeed, temporary migration could be managed to provide a win-win situation wherein the host country benefits from importing needed labor for a period of time and the home country benefits from the enhanced human capital of its labor on workers' return.

Notes

1. One in every 40 persons in 1960 and 1 in every 48 persons in the early twentieth century were international migrants. See United Nations (2004).

2. Few papers examine the effect of temporary migration on human capital and growth but from a theoretical perspective, for example, see Dos Santos and Postel-Vinay (2003, 2006).

3. Previous studies on return migration in Egypt—McCormick and Wahba (2001, 2003)—have used only LFSS 1988.

4. The data used in this analysis are unique. Other analyses, such as that in Co, Gang, and Yun (2000), could not control for employment characteristics before migration.

5. This limitation is typical of most survey data. Future household surveys need to collect information from household members about relatives overseas.

6. McCormick and Wahba (2001) focus on the entrepreneurial activity of returnees, but they look only at the 1988 sample.

7. See annex 8B for further details.

8. Dummies for the year in which the individual started his current job (as an employer or as a waged, self-employed, or unpaid worker) were used in this regression. A zero was used when an individual was not working.

References

Barrett, A., and J. O'Connell. 2000. "Is There a Wage Premium for Returning Irish Migrants?" Discussion Paper 2508, Centre for Economic Policy Research, London.

Co, C., I. Gang, and M.-S. Yun. 2000. "Returns to Returning." *Journal of Population Economics* 13: 57–79.

de Coulon, A., and M. Piracha. 2005. "Self-Selection and the Performance of Return Migrants: The Source Country Perspective." *Journal of Population Economics* 18: 779–807.

Dos Santos, M., and F. Postel-Vinay. 2003. "Migration as a Source of Growth: The Perspective of a Developing Country." *Journal of Population Economics* 16 (1): 161–75.

———. 2006. "The Impact of Temporary Migration on Human Capital Accumulation and Economic Development." *Brussels Economic Review* (special issue on skilled migration): 47 (1): 77–88.

Dustmann, C. 1997. "Return Migration, Savings and Uncertainty." *Journal of Development Economics* 52: 295–316.

Dustmann, C., and O. Kirchkamp. 2002. "The Optimal Migration Duration and Activity Choice after Remigration." *Journal of Development Economics* 67: 351–72.

Galor, O., and O. Stark. 1991. "The Probability of Return Migration, Migrants' Work Effort, and Migrants' Performance." *Journal of Development Economics* 35: 399–405.

Girgis, M. 2002. "Would Nationals and Asians Replace Arab Workers in the GCC?" Paper presented at the Fourth Mediterranean Forum, Amman, Jordan, October.

Ham, J. C. 1982. "Estimation of a Labor Supply Model with Censoring Due to Unemployment and Underemployment." *The Review of Economic Studies* 49: 335–45.

Heckman, J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica* 47: 153–62.

Lacuesta, A. 2004. "Emigration and Human Capital: Who Leaves, Who Comes Back and What Difference Does it Make?" Mimeo, University of Chicago, Chicago.

Lee, L.-F. 1978. "Unionism and Wage Rates: A Simultaneous Equations Model with Qualitative and Limited Dependent Variables." *International Economic Review* 19: 415–33.

McCormick, B., and J. Wahba. 2001. "Overseas Work Experience, Savings and Entrepreneurship amongst Return Migrants to LDCs." *The Scottish Journal of Political Economy* 48: 164–78.

———. 2003. "Return International Migration and Geographical Inequality: The Case of Egypt." *Journal of African Economies* 12: 500–32.

Mesnard, A. 2004. "Temporary Migration and Capital Market Imperfections." *Oxford Economic Papers* 56: 242–62.

Roed, M. 2002. "The Return to Return Migration." Mimeo, Institute for Social Research, Oslo.

Tunali, I. 1986. "A General Structure for Models of Double-Selection and an Application to a Joint Migration/Earnings Process with Remigration." *Research in Labor Economics* 8: 235–83.

United Nations. 2004. "World Economic and Social Survey 2004." Report ST/ESA/291/Add.1. Department of Economic and Social Affairs, United Nations, New York.

Annex 8A: Data

Table 8A.1

Variable	Definition
Individual characteristics	
Age	Age in years at the time of survey
Married	Marital status at the time of survey
Head	Head of household at the time of survey
Round = 1998	Dummy = 1 for the 1998 round and 0 for the 1988 round
Educational level (reference group: no education)	
Read and write	Dummy = 1 if the individual can read and write
Less than intermediate	Dummy = 1 if the individual has less than intermediate education (6 years of education)
Intermediate	Dummy = 1 if the individual has intermediate education (9 years of education)
Higher than intermediate	Dummy = 1 if the individual has a higher-than-intermediate education (12 years of education)
University	Dummy = 1 if the individual has university education (16 years of education).
Current employment characteristics (at the time of survey)	
Public sector worker	Dummy = 1 for public sector employment
Labor market experience in Egypt	Years of experience in the Egyptian labor market.
Year started current job dummies	Dummies for year started current job
Migration characteristics	
Migration duration	Migration duration in years
Migration duration squared	Migration duration squared
Years back (log)	Log years since return
Dummy for Saudi Arabia	Dummy = 1 if Saudi Arabia has been the migrant's country of destination
Occupation overseas (technical, scientific, and mangerial)	Dummy = 1 if occupation overseas was technical, scientific, or managerial

Variable	Definition
Region of residence (reference: greater Cairo)	
Alexandria and Suez Canal cities	Alexandria and Suez Canal cities dummy
Lower urban	Lower urban dummy
Upper urban	Upper urban dummy
Lower rural	Lower rural dummy
Upper rural	Upper rural dummy
Previous work/residence characteristics	
Lived in urban	Previous residence: urban dummy
Waged worker	Previous work status: waged worker dummy
Public sector worker	Previous sector of employment: public sector dummy
Previous occupation dummies	
Technical, scientific, and managerial	Previous occupation: technical, scientific, and managerial dummy
Clerical	Previous occupation: clerical dummy
Sales	Previous occupation: sales dummy
Services	Previous occupation: services dummy
Agriculture	Previous occupation: agriculture dummy
Production	Previous occupation: production dummy
Dependent variables	
Log real hourly wage	Log hourly wages (in 1998 prices)
Been overseas	A dummy = 1 if the individual migrated overseas and returned
Waged worker	A dummy = 1 if the individual is a waged worker at the time of the survey

Source: Author.

Annex 8B: Technical

Because the two selection processes may not be independent, the error terms of equations 2, 3, and 4 (ε_i, μ, ν) are jointly normally distributed with a mean zero and covariance matrix

$$\sum_i = \begin{bmatrix} \sigma_{jj}^2 & \sigma_{jji\nu} & \sigma_{jj\mu} \\ & \sigma_{\nu}^2 & \sigma_{\nu\mu} \\ & & \sigma_{\mu}^2 \end{bmatrix},$$

where σ_{ν}^2 and σ_{μ}^2 are normalized to unity for identification purposes following Tunali (1986). Maximum likelihood of the bivariate probit leads to four sample selection correction terms:

$$\hat{\lambda}_{i,m1} = \phi(Z_i'\hat{\gamma})\Phi\left[\frac{H_i'\hat{\eta} - \rho Z_i'\hat{\gamma}}{(1-\rho^2)^{1/2}}\right] \times F(H_i'\hat{\eta}, Z_i'\hat{\gamma}, \rho)^{-1} \tag{5}$$

$$\hat{\lambda}_{i,p1} = \phi(H_i'\hat{\eta})\Phi\left[\frac{Z_i'\hat{\gamma} - \rho H_i'\hat{\eta}}{(1-\rho^2)^{1/2}}\right] \times F(H_i'\hat{\eta}, Z_i'\hat{\gamma}, \rho)^{-1} \tag{6}$$

$$\hat{\lambda}_{i,m2} = \phi(Z_i'\hat{\gamma})\Phi\left[-\frac{H_i'\hat{\eta} - \rho Z_i'\hat{\gamma}}{(1-\rho^2)^{1/2}}\right] \times F(-H_i'\hat{\eta}, Z_i'\hat{\gamma}, -\rho)^{-1} \tag{7}$$

$$\hat{\lambda}_{i,p2} = \phi(H_i'\hat{\eta})\Phi\left[-\frac{Z_i'\hat{\gamma} - \rho H_i'\hat{\eta}}{(1-\rho^2)^{1/2}}\right] \times F(-H_i'\hat{\eta}, Z_i'\hat{\gamma}, -\rho)^{-1} \tag{8}$$

where $\rho = \rho_{\mu\nu}$. Again, ϕ and Φ are the univariate standard normal density and distribution functions, respectively, and F is the bivariate standard normal distribution function. Now the wage equations for returnees and nonmigrants, respectively, can be rewritten as follows:

$$E(W_{l,i}|X_i', M_i = 1, P_i = 1) = X'_{l,i}\beta_1 + \sigma_{11}\rho_{1\mu}\hat{\lambda}_{i,m1} + \sigma_{11}\rho_{1\nu}\hat{\lambda}_{i,p1} \tag{9}$$

$$E(W_{2,i}|X_i', M_i = 0, P_i = 1) = X_{2,i}'\beta_2 + \sigma_{22}\rho_{2\mu}\hat{\lambda}_{i,m2} + \sigma_{22}\rho_{2\nu}\hat{\lambda}_{i,p2} \tag{10}$$

9

FOREIGN-BORN MIGRATION TO AND FROM NORWAY

Bernt Bratsberg, Oddbjørn Raaum, and Kjetil Sørlie

Not all immigrants settle in their host country for life. A growing body of empirical evidence from a number of destination countries shows that large numbers of international migrants either return to their source country or migrate to a third country; see, for example, Warren and Peck (1980) and Van Hook et al. (2006) for evidence from the United States; Dustmann (2003) and Constant and Massey (2003) for Germany; Edin, LaLonde, and Åslund (2000) and Nekby (2006) for Sweden; Jensen and Pedersen (2005) for Denmark; and Tysse and Keilmann (1998) for a prior study from Norway.[1] These studies find that out-migration typically takes place within a few years of immigrants' arrival in the host country, and the evidence points to considerable variation in out-migration behavior across immigrant groups.

The fact that many immigrants leave their host country has important implications. First, out-migration will have direct consequences for immigration policy. For example, in response to the aging of the native population, immigrant-receiving nations generally have political willingness to relax current restrictions on labor immigration from the developing world. If policy is to be designed with a certain target for a stable size of the foreign-born workforce, it needs to account for subsequent out-migration. Put differently, immigration policy may control gross immigrant flows but not net immigration, which also depends on outflows of the foreign born. Second, knowledge about which groups are more likely to stay and which are more likely to leave is crucial for shaping effective policy. For

example, recruitment strategies to attract desirable foreign labor migrants, such as particular occupational groups, will typically involve significant costs of language training and occupational qualification and certification. Such investments might have low returns if they are targeted at groups with high propensities to out-migrate. Third, any nonrandom characteristic of the out-migration decision may lead to biased assessment of the economic and social integration of immigrants in the host country. To illustrate, the observation that employment rates within immigrant groups improve over time may be interpreted as evidence of effective labor market integration. However, the observed pattern would also arise if those immigrants with the worst employment prospects systematically leave the country. In such a case, selective out-migration behavior would create the impression of overall economic integration, even when there is no actual improvement in the economic status of the individual immigrant over time.

A confounding shortcoming of many empirical studies of return and repeat migration decisions in the immigrant population is that of inadequate data. In fact, many studies do not directly observe out-migration behavior. Instead, a common strategy is to infer that immigrants have left the country when they "disappear" from the data. In studies based on longitudinal micro data, such as Borjas (1989), out-migration behavior cannot be distinguished from other sources of data attrition. A similar concern applies to studies, such as Van Hook et al. (2006), that take advantage of the household panel dimension of matched current population surveys. Other studies seek to quantify out-migration through "residual methods." For example, one approach compares administrative records of immigrant arrivals with survey data of the stock of immigrants in the host country (Jasso and Rosenzweig 1982; Borjas and Bratsberg 1996). Clearly, such studies are sensitive to mortality and surveys' inclusion of nonimmigrants and illegal immigrants. Another residual approach is to gauge out-migration by comparing the relative changes in the size of immigrant groups by observable characteristics, such as age and educational attainment, in consecutive surveys or censuses (that is, synthetic panels) (Warren and Peck 1980; Lam 1994). Finally, in studies where out-migration is actually recorded, panels are typically relatively short (Edin, LaLonde, and Åslund 2000; Jensen and Pedersen 2005) or consist of small samples of particular populations (Reagan and Olsen 2000).

The present study examines trends in immigration and out-migration behavior on the basis of unique longitudinal migration data that cover almost four decades. The data include all immigrant arrivals in Norway between 1967 and 2003. A recent study drawing on similar administrative data from Sweden is that of Nekby (2006). In the United States, the governmental program that tracked the emigration of the foreign-born population was terminated in 1957 (U.S. Bureau of the Census 1960). The Norwegian migration records give the dates of immigration and subsequent out-migration, permitting a careful study of the timing of out-migration events.

The present research characterizes such out-migration patterns for male and female immigrants and for different immigrant groups on the basis of the country of origin. For a subset of the sample period, the data records provide information on class of admission, allowing for analyses of links between admission class and out-migration behavior. The longitudinal records also provide information on destination country as well as reimmigration events to Norway. Thus, the data allow study of both onward migration behavior and reimmigration flows—two forms of migration that, because of lack of data, typically are excluded from empirical studies of international migration flows and, therefore, remain poorly understood.

Data

The present study draws on comprehensive individual records of migrations taken from the Norwegian population register. The broad database contains a record for every move across the border of a Norwegian municipality since 1964. These records have been linked together to form individual migration histories for residents of Norway (Sørlie 1998). This study merges the migration records with individual demographic characteristics, such as date of birth, gender, and country of birth, taken from the population register. From these data, the migration histories of individuals born abroad with two foreign-born parents (that is, immigrants) are extracted.

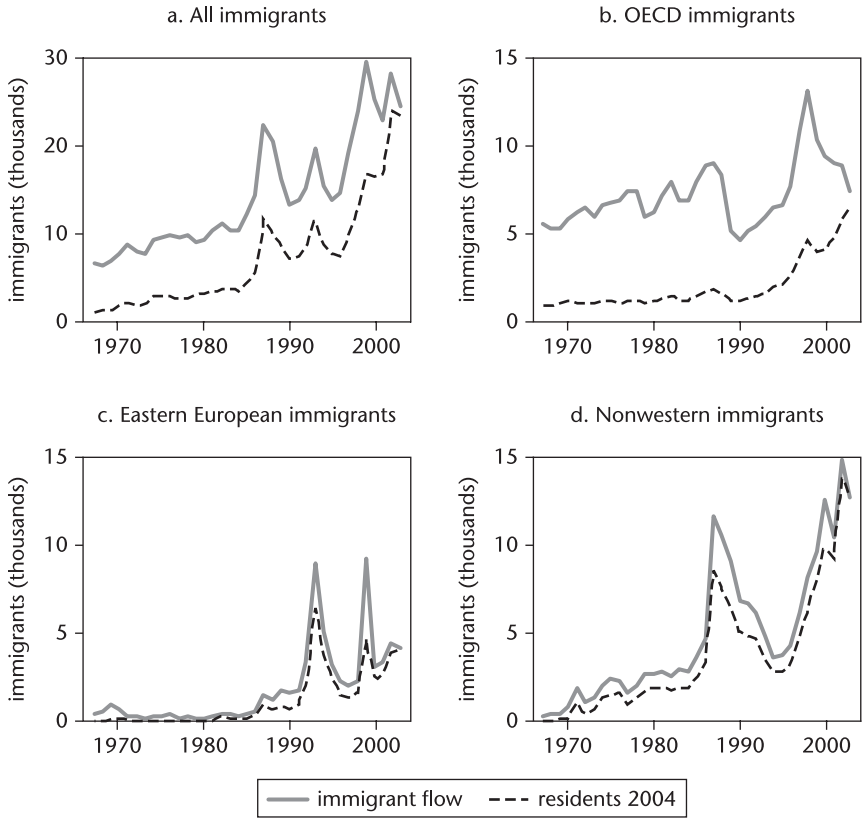
By rule, immigrants must file a migration form whenever their intended stay in Norway exceeds six months. Likewise, residents are required to file a migration form when they intend to stay abroad for at least six months. Because the migration form is a prerequisite for issuance of a personal identification number (which in turn is required to open a bank account and, in most cases, to receive a paycheck, to enroll a child in school, or to receive public transfers such as the comprehensive child allowance) immigrants have a strong incentive to file the immigration form. The study data are likely to include most immigrant arrivals in Norway.

The data may, however, fail to capture certain moves out of the country. Assessments of out-migration behavior may therefore contain a bias in the direction of understating out-migration propensities. When authorities, based on other sources, discover that individuals have left the country, they file an administrative out-migration form. Because such registry necessarily takes place after the actual date of the move, the present study runs the risk of overstating the duration of stays in Norway. It is difficult to assess the magnitude of such bias, but the number of out-migration records with a missing destination country provides an upper bound. In the data, 7.7 percent of out-migration records lack this information. Further, the immigrant class of admission is available only for those who arrived between 1988 and the summer of 1994. Therefore, the analyses of out-migration patterns by admission class are based on smaller subsets of the underlying data.

Immigrant and Out-migrant Flows, 1967–2003

The empirical analysis begins with a description of trends in immigration to Norway. Figure 9.1 illustrates immigrant flows over a 36-year period. Immigrants are defined as foreign-born persons of foreign-born parents. Panel A displays the trends for all immigrants; the solid line measures annual immigrant arrivals, and the dotted line measures the numbers from the original immigrant cohort

Figure 9.1. Immigration to Norway, 1967–2003



Source: Authors.

Note: "Residents 2004" include those from the original immigrant cohort who remained (alive) in Norway as of January 1, 2004. "OECD Immigrants" cover immigration flows from Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States; "Eastern Europe" covers flows from Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Moldova, Romania, Russian Federation, Serbia and Montenegro, Slovakia, Slovenia, former Yugoslav Republic of Macedonia, and Ukraine.

resident in Norway at the start of 2004. As the figure shows, immigration to Norway has fluctuated over time but has grown over the whole time period. The immigrant flow in 2003 consisted of 26,000 persons, compared with about 7,000 in 1967. Up until the mid-1980s, Norway experienced a steady, but moderate, increase in immigration from about 7,000 to slightly above 10,000 per year. The plot shows marked spikes in immigration in the late 1980s, in 1993, 1999–2000, and 2002. A closer inspection of the underlying data shows that the peaks are closely related to admissions of asylum seekers and refugees from places of political and military unrest elsewhere in the world, such as the Islamic Republic of Iran, Chile, and Sri Lanka (1987/88); Bosnia (1993); Kosovo (1998/99); Iraq (2000, 2002); and Somalia (2002).

Panels B, C, and D of figure 9.1 show the immigrant sample split by major region of origin: "OECD" (Organisation for Economic Co-operation and Development), which includes rich Western European countries plus Australia, Canada, Japan, New Zealand, and the United States (that is, pre-1990 OECD member states minus Turkey); Eastern Europe; and other "nonwestern" countries. The panels show that the rise in immigration since the mid-1980s primarily has been driven by increased flows of residents from Eastern Europe and other nonwestern countries. Thus, OECD countries were increasingly less represented in the country-of-origin mix over the sample period. The spikes in the inflow curves for Eastern European and other nonwestern immigrants further demonstrate the growing importance of asylee and refugee admissions in Norwegian immigration policy. For example, the two peaks in the Eastern European chart correspond with refugee arrivals during conflicts in the former Yugoslavia, Bosnia and Herzegovina in 1993–94 and Kosovo in 1998–99. The peaks in the OECD series during the 1980s and 1990s reflect particularly large movements from the neighboring countries of Denmark (1980s) and Sweden (late 1990s) and coincide with periods of strong economic growth in Norway and sluggish growth in the neighboring countries. Although nonwestern immigration patterns appear partly driven by conflict in the source country, Norwegian business cycles appear to have a strong influence on flows from OECD countries.

In figure 9.1, out-migration behavior is illustrated by the difference between the solid and dotted lines; the latter show the number from the original immigrant cohort remaining in Norway at the onset of 2004. (That is, the residual between the solid and dotted lines consists of out-migrants, plus those who died while in Norway, minus those among the out-migrants who later reimmigrated and stayed in Norway until 2004.) A small minority of the early immigrants remained in Norway in 2004, but the two lines converge over time for two reasons. One is that more immigrants move out as time passes. The second reason is the decreasing fraction of OECD immigrants in country-of-origin mix; these immigrants have

the highest out-migration propensities and thus contribute to a higher proportion of out-migrants among the early-entry cohorts.

Table 9.1 provides further background on migration patterns by region of origin and gender. More than 500,000 immigrants arrived in Norway during the 36-year period, and 51 percent of them were residents by the end of 2003. A minor

Table 9.1. Immigration to Norway, 1967–2003

	All countries	OECD	Eastern Europe	Nonwestern countries
All immigrants	525,272	267,352	71,410	186,510
Residency status in 2004:				
In Norway (%)	51.0	28.5	66.5	77.2
Dead (%)	1.6	1.8	1.5	1.3
Abroad (%)	47.5	69.7	32.0	21.5
At least one out-migration (%)	52.0	74.5	35.8	25.9
Among out-migrants:				
Moved to home country (%)	78.3	84.0	72.4	58.1
Moved to third country (%)	14.0	11.3	15.0	24.4
Unknown destination (%)	7.7	4.7	12.6	17.4
Reimmigrated to Norway (%)	14.6	13.2	14.7	20.7
Male immigrants	269,542	136,955	32,985	99,602
Residency status in 2004:				
In Norway (%)	49.6	29.3	61.6	73.7
Dead (%)	1.9	2.2	1.8	1.6
Abroad (%)	48.5	68.6	36.7	24.7
At least one out-migration (%)	53.0	73.6	40.7	28.9
Among out-migrants:				
Moved to home country (%)	76.3	82.4	71.5	53.4
Moved to third country (%)	14.5	12.0	14.7	23.2
Unknown destination (%)	9.1	5.6	13.7	19.4
Reimmigrated to Norway (%)	15.0	14.0	14.4	18.5
Female immigrants	255,730	130,397	38,425	86,908
Residency status in 2004:				
In Norway (%)	52.3	27.7	70.7	81.1
Dead (%)	1.3	1.5	1.3	1.0
Abroad (%)	46.4	70.8	28.1	17.9
At least one out-migration (%)	50.9	75.5	31.6	22.4
Among out-migrants:				
Moved to home country (%)	80.6	85.6	73.4	59.3
Moved to third country (%)	13.3	10.5	15.2	26.2
Unknown destination (%)	6.1	3.8	11.4	14.5
Reimmigrated to Norway (%)	14.3	12.3	15.0	23.9

Source: Authors.

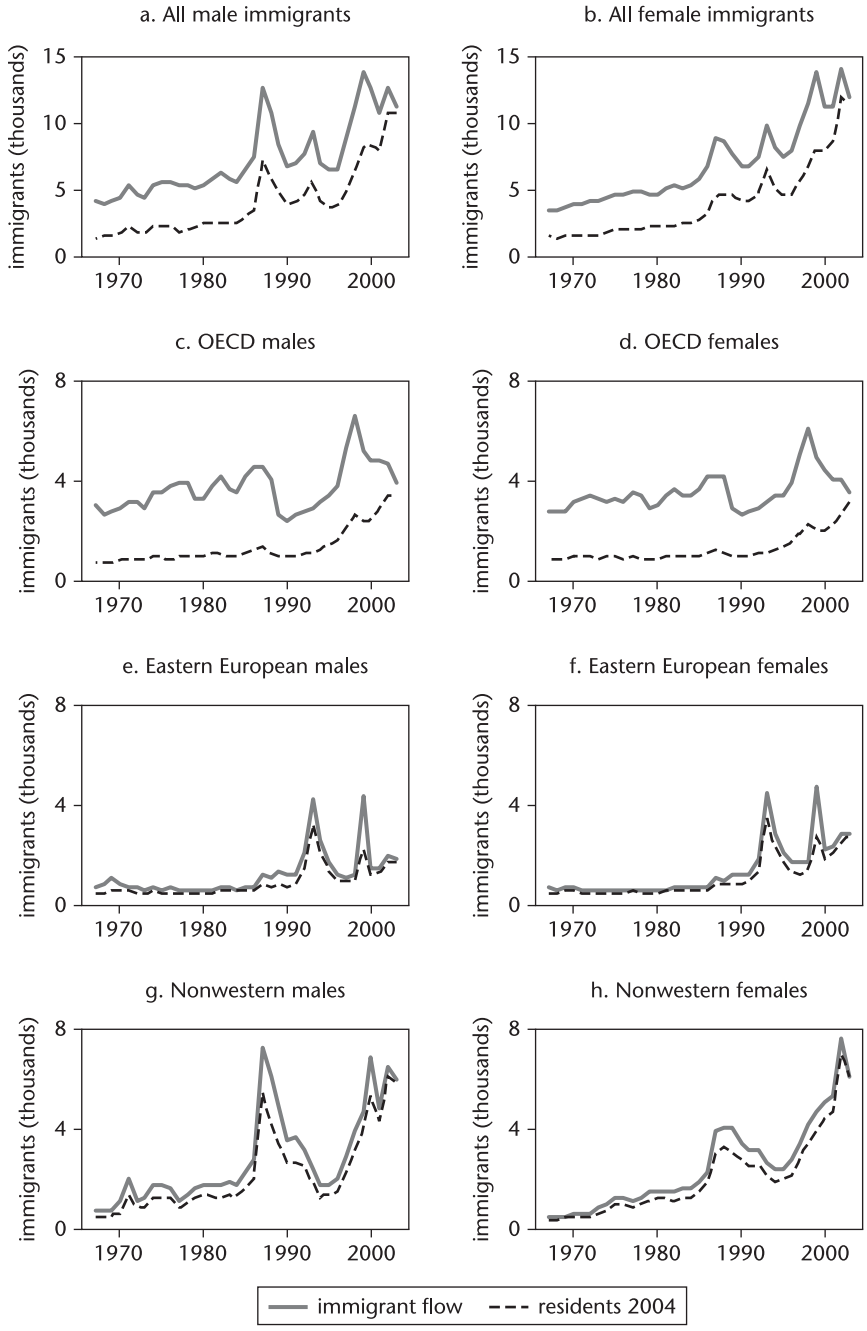
Note: Mortality rates are conditional on residency in Norway at the time of death. Reimmigration to Norway is conditional on at least one registered out-migration event.

fraction died (while in Norway) during the sample period, and 47.5 percent resided abroad. Because some of the immigrants who left Norway later reimmigrated, the percentage with at least one out-migration spell is somewhat higher (52.0 percent) than the fraction residing abroad. Three of four OECD immigrants had moved out of Norway, and only 28.5 percent were residents in 2004. The table suggests that out-migration is less prevalent among Eastern European (66.5 percent residents in 2004) and other nonwestern immigrants (77.2 percent residents). The majority of the immigrants who left Norway returned to their home country (that is, country of birth). OECD immigrants were much more likely to return home than Eastern European and other nonwestern immigrants. About 15 percent of the out-migrating immigrants later returned to Norway; the nonwestern immigrant group was more likely than the OECD group to come back to Norway.

The gender mix of immigrants over the 36-year period is fairly balanced, with slightly more men than women. As depicted in figure 9.2, the peaks and troughs of male and female immigration flows follow remarkably similar patterns. The largest differences in male and female immigration arise in the bottom panels of figure; for nonwestern immigrants, the marked spike in refugee admissions during the 1980s is much more pronounced for males. At the same time, the overall positive trend in immigration is strongest for females: although males dominated the immigrant flow every year up until 1992, female flows have exceeded male flows in 9 of the last 11 years of the sample period. Females constitute the majority of Eastern European immigrants, whereas males are overrepresented in the other two country-of-origin groups. Women are more likely to be residents in 2004, a pattern driven foremost by substantial gender differences in residency rates among nonwestern immigrants. As shown below, this pattern is the result of gender differences in cohort composition and class of admission, as women are overrepresented in recent arrival cohorts and among immigrants admitted on the basis of family reunification.

Table 9.2 offers greater detail on the patterns of out-migration behavior for the 10 countries of origin making up the largest OECD and nonwestern national groups in the data. As the table shows, out-migration rates vary substantially across the sample of source countries, from 84 percent among immigrants from the United States to 9 percent among those from Vietnam. Some of the variation in out-migration rates can be attributed to differences in year of immigration, but the table suggests systematic differences in out-migration behavior by the home country's economic development and distance from Norway. The table also reveals important differences across immigrant groups in the propensity of out-migrants to move back to the source country. The great majority of out-migrants from the neighboring Nordic countries returned home, but at least 30 percent of the

Figure 9.2. Immigrant Flows to Norway, by Gender



Source: Authors.

Table 9.2. Out-migration Patterns for Immigrants from Selected Source Countries, 1967–2003

	Immigrant count	Mean year of immigration	At least one out-migration (%)	Among Out-migrants			
				Moved to home country (%)	Moved to third country (%)	Unknown destination (%)	Remigrated to Norway (%)
Denmark							
All	53,599	1985	80.2	93.1	5.5	1.4	14.1
Males	23,729	1986	75.2	91.2	7.3	1.5	16.6
Females	29,870	1984	84.2	94.4	4.3	1.3	12.4
Sweden							
All	49,900	1991	65.3	93.0	6.2	0.8	14.1
Males	24,880	1991	65.8	93.1	6.1	0.9	14.4
Females	25,020	1991	64.8	92.9	6.4	0.8	13.9
United Kingdom							
All	36,590	1983	79.7	76.9	12.8	10.3	13.6
Males	22,358	1984	78.4	76.2	12.1	11.7	15.6
Females	14,232	1982	82.7	78.0	13.9	8.1	10.5
United States							
All	34,692	1982	84.2	79.2	13.9	6.9	8.8
Males	17,910	1982	84.4	78.7	14.0	7.3	8.9
Females	16,782	1982	83.9	79.7	13.9	6.5	8.8
Pakistan							
All	18,106	1985	28.9	73.6	12.0	14.4	51.9
Males	9,863	1984	29.5	68.9	13.3	17.8	45.3
Females	8,243	1987	28.2	79.5	10.4	10.1	60.2

(*Table continues on the following page.*)

Table 9.2. (Continued)

	Immigrant count	Mean year of immigration	At least one out-migration (%)	Among Out-migrants			
				Moved to home country (%)	Moved to third country (%)	Unknown destination (%)	Remigrated to Norway (%)
Iraq							
All	16,509	1998	10.9	55.9	18.4	25.8	9.2
Males	10,372	1998	14.1	58.8	14.3	26.9	6.6
Females	6,137	1998	5.3	42.6	36.5	20.9	20.6
Iran							
All	13,173	1992	16.5	38.9	39.9	21.2	17.8
Males	7,610	1992	17.8	36.1	42.2	21.7	18.2
Females	5,564	1993	14.8	43.6	36.1	20.3	17.1
Somalia							
All	13,435	1997	13.4	35.4	29.8	34.9	14.2
Males	7,581	1997	14.9	35.2	28.8	36.1	13.4
Females	5,854	1997	11.4	35.7	31.5	32.8	15.5
Vietnam							
All	13,000	1987	9.4	20.9	66.6	12.5	19.0
Males	6,493	1986	9.3	20.4	65.3	14.3	18.6
Females	6,507	1989	9.6	21.3	67.9	10.8	19.4
Turkey							
All	11,453	1988	28.9	64.8	21.7	13.5	27.8
Males	6,964	1987	33.3	63.0	21.4	15.7	25.0
Females	4,489	1989	22.0	69.0	22.5	8.5	34.5

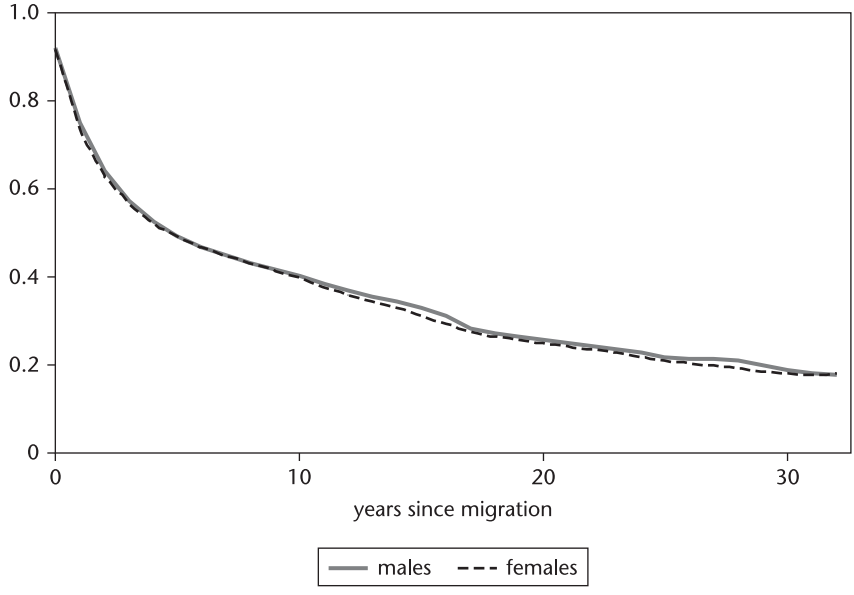
Source: Authors.

immigrants from Somalia who left Norway, 40 percent of those from Iran, and two-thirds from Vietnam migrated to a third country. Among Somali onward migrants, nearly one-half listed Sweden or the United Kingdom as the destination country; among Iranians, Sweden (30 percent), the United States (20 percent), and the United Kingdom (10 percent) were the most frequent destination countries; and among the Vietnamese onward migrants, almost 40 percent moved to the United States. Finally, table 9.2 shows significant variation in the propensity of out-migrants to reimmigrate to Norway. For example, more than one-half of the Pakistani natives who left Norway later reimmigrated during the sample period. Differences in migration patterns by country of origin are addressed in an examination of the determinants of the size of migration flows presented near the end of this chapter.

Time of Out-migration

Figure 9.3 focuses on migration spells and on residency from the point of arrival by relating continued residency and (implied) out-migration to years since arrival in Norway. The figure traces the fraction of immigrants remaining in Norway,

Figure 9.3. Fraction of Immigrants Remaining in Norway, by Gender



Source: Authors.

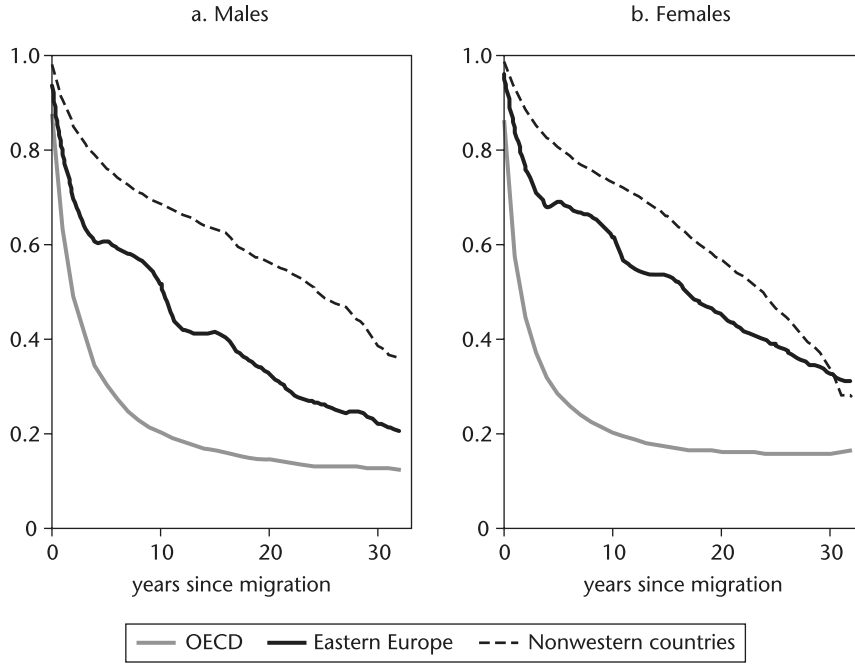
Note: Immigration period 1967–2003.

by years since immigration, separately for females and males; however, the gender-specific curves are for practical purposes identical. Immigrants with censored spells (that is, residents by the end of 2003) are included, but they do not contribute to the statistics for years since immigration that exceed their maximum possible value. As the figure shows, only about 40 percent of immigrants remained residents after 10 years, and less than 20 percent were still living in Norway (without an out-migration event) after 30 years. As indicated by the convexity of the curves, the out-migration rate—that is, the probability that an individual leaves Norway during a calendar year, given residency at the beginning of the year—declines sharply over the first 10 years. This finding may reflect causal duration dependence, but heterogeneity with respect to immigration motives, intentions, and plans is also likely to generate a pattern of declining out-migration rates. As time goes by, immigrants with a short perspective on their stay in Norway will have left the country, and those who planned to stay for a longer period will dominate the remaining stock of immigrants. Such heterogeneity shows up even more clearly in figure 9.4 and in table 9.3, where out-migration patterns are split by region of origin and class of admission.

The overview in tables 9.1 and 9.2 suggested that out-migration patterns differ by country of origin, a point made in prior studies. Figure 9.4 splits continued residency rates by the three major regions of origin; panel A depicts the region-specific patterns for male immigrants and panel B, the patterns for females. The three regions differ with respect to geographical and cultural distance to Norway, level of economic development, and admission regulations for potential immigrants to Norway. As the figure shows, the profiles vary considerably by region of origin. Only 20 percent of the OECD immigrants remained in Norway after 10 years, but about half of Eastern European and more than 70 percent of other nonwestern immigrants stayed at least 10 years. With respect to Eastern European and other nonwestern immigrants groups, the panels indicate a lower out-migration propensity for females than for males. Thus, the very small gender differences in the aggregated curves in figure 9.3 mask some gender variation in out-migration behavior within country-of-origin groups.

The region-of-origin differences in out-migration behavior implied by the profiles in figure 9.4 presumably reflect heterogeneity in motives and plans for the stay in Norway. Such factors are highly correlated with the type of admission that forms the juridical basis for entry to Norway. Data for the present study include information about grounds for admission for cohorts arriving between 1988 and 1994, and table 9.3 lists key migration statistics by admission class for these entry cohorts. Note that class of admission is not applicable to the majority of immigrants from the OECD area, as these immigrants legally qualify for stay in the Nordic countries without restriction (for example, because of the common

Figure 9.4. Fraction of Immigrants Remaining in Norway, by Gender and Region of Origin



Source: Authors.

Note: Immigration period 1967–2002.

Nordic labor market). The group of non-OECD immigrants is dominated by refugees and asylum seekers, as well as by persons admitted on the basis of family reunification. Labor migrants with work permits and students constitute fairly small admission classes among nonwestern immigrant groups.

Table 9.3 shows that out-migration behavior differs substantially by admission class. Fully 85 percent of people reunited with a primary refugee remained in Norway by the end of the sample period. (Because the table considers a few specific immigrant cohorts, mean year of arrival is about the same—1990 or 1991—for all the admission classes listed.) Among the primary refugees and individuals given political asylum, about two-thirds remained in Norway, perhaps reflecting relatively weak family ties or other personal characteristics that make some group members more mobile. Immigrants admitted with a work permit and students are more likely to leave than individuals given political asylum. By the end of the sample period, less than one-half of the non-OECD immigrants who entered with a work permit remained residents. The large majority of students in

Table 9.3. Out-migration Patterns by Class of Admission, Non-OECD Immigrants

Class of admission	Immigrant count	At least one out-migration (%)	Among Out-migrants			
			Moved to home country (%)	Moved to third country (%)	Unknown destination (%)	Remigrated to Norway (%)
Total						
All	69,870	31.1	62.2	18.7	19.2	15.2
Males	36,734	34.6	62.3	16.1	21.6	13.2
Females	33,136	27.3	62.1	22.2	15.7	17.9
Refugee/ political asylee						
All	34,239	31.9	61.7	14.9	23.3	13.3
Males	22,211	34.0	61.5	13.6	24.9	12.5
Females	12,028	27.9	62.2	18.0	19.8	15.0
Refugee family reunification						
All	13,771	15.0	58.6	30.6	10.8	24.8
Males	4,903	15.0	58.0	29.2	12.8	26.7
Females	8,868	15.1	58.9	31.4	9.7	23.8
Work permit						
All	2,108	55.1	53.4	26.9	19.7	11.1
Males	1,650	57.8	53.0	26.5	20.5	10.2
Females	458	45.6	55.5	28.2	16.3	15.3
Student visa						
All	3,734	75.0	75.8	7.8	16.4	7.9
Males	2,041	79.4	78.3	6.4	15.4	5.2
Females	1,693	69.6	72.4	9.8	17.8	11.5
Family reunification						
All	12,474	24.8	61.3	24.9	13.8	22.5
Males	4,296	23.1	60.5	22.6	16.9	22.6
Females	8,178	25.7	61.7	25.9	12.4	22.5
Other						
All	841	37.5	60.0	18.4	21.6	20.6
Males	341	43.7	57.0	17.4	25.5	22.1
Females	500	33.2	62.7	19.3	18.1	19.3
N/A						
All	2,703	51.8	53.5	31.3	15.2	16.1
Males	1,292	54.8	54.0	28.5	17.5	14.0
Females	1,411	49.0	53.1	34.2	12.7	18.2

Source: Authors.

Note: N/A = Not available. Sample consists of immigrants from outside the OECD area who arrived in Norway between 1988 and 1994; 1994 data exclude arrivals during the second half of the year because of missing admission codes. Out-migration figures refer to out-migration by the end of 2003.

the immigrant cohort had left the country, but 25 percent remained residents as of 2004, despite strict immigration legislation making it difficult to stay in Norway on graduation. A final pattern to emerge from the table is that variation in migration patterns across admission classes is stronger than variation by gender. The gender differences in out-migration rates for the non-OECD groups implied by figure 9.3 thus appear to be largely caused by gender patterns in admission criteria. In particular, females are more likely than males to be admitted on the basis of family reunification. As table 9.3 reveals, reunified family members have lower out-migration propensities than other immigrant groups. In summary, figure 9.4 and table 9.3 illustrate the considerable heterogeneity that exists in out-migration behavior; this heterogeneity presumably is present even within groups that are observationally identical.

Repatriation of Refugees: The Diverging Experiences of Refugees from Bosnia and Kosovo

The global number of refugees from war and armed conflict rose dramatically from about 2 million in the early 1970s to almost 18 million in 1992, after which it declined to an estimated 8.4 million in 2005 (UNHCR 2006). Following the trends in the global refugee population, the number of political asylum seekers in industrialized countries also increased dramatically until 1992. Since that time, the number temporarily declined in the mid-1990s and grew toward the end of decade, particularly in Europe (Hatton and Williamson 2004). In Norway, the annual number of asylum seekers has fluctuated between 1,500 and 5,400 over the past two decades, but with a marked spike of 13,000 applicants in 1993 and annual volumes between 10,000 and 18,000 in the years 1999 to 2003 (UDI 2006).

In conjunction with the United Nations High Commissioner for Refugees (UNHCR), Norway has set annual quotas for resettled refugees. During the 1990s, collective protection of refugee groups was granted on two occasions: during the crises in Bosnia and Herzegovina in 1993 and Kosovo in 1999. Approximately 13,000 Bosnians and 8,000 Kosovars were given collective protection under those policy regimes (SOPEMI 2001). In principle, collective protection is temporary and is granted with the expectation that refugees return to their home country when conditions are deemed safe for return. But the prolonged crisis in Bosnia led to low return rates. Like many other refugee-receiving countries, Norway faced the dilemma of temporary protection; by late 1996, it made an important policy adjustment whereby it promised permanent residence permits to most Bosnians in Norway (Brekke 2001). With the experience of the Bosnian refugees in mind, the Norwegian government quickly invoked several measures to ensure repatriation of refugees from Kosovo when their protection was lifted.

Table 9.4. Out-migration Patterns among Refugees from Bosnia and Kosovo

	Immigrant count	Mean year of immigration	At least one out-migration (%)	Among Out-migrants			
				Moved to home country (%)	Moved to third country (%)	Unknown destination (%)	Remigrated to Norway (%)
Bosnia							
All	13,864	1993	23.7	71.4	16.6	12.0	18.7
Males	6,987	1993	24.2	71.2	15.7	13.1	18.7
Females	6,877	1993	23.0	71.6	17.5	10.9	18.6
Kosovo							
All	6,468	1998	62.9	85.2	1.4	13.4	11.1
Males	3,334	1998	62.9	83.3	1.3	15.4	11.6
Females	3,134	1998	62.9	87.2	1.4	11.4	10.5

Source: Authors.

Note: Refugees from the Bosnia conflict are defined as those born in Bosnia or the former Yugoslavia and who arrived in Norway between 1993 and 1995; refugees from the Kosovo conflict are defined as those born in the former Yugoslavia and who arrived in 1998 or 1999. Out-migration figures refer to out-migration by the end of 2003.

Among the measures were cash benefits of NOK 15,000 (approximately US $2,200) to each voluntary returnee.

This section examines and contrasts the return propensities of the two refugee cohorts from Bosnia and Kosovo. Table 9.4 depicts the out-migration patterns for the two refugee cohorts. The figures refer to individuals born in Bosnia or the former Yugoslavia who arrived in Norway between 1993 and 1995 ("Bosnia") and those born in the former Yugoslavia who arrived in 1998 or 1999 ("Kosovo"). In total, the samples consist of 13,864 Bosnians and 6,468 Kosovars. The table shows large differences in the return behavior of the two groups. Less than 24 percent of the refugees from Bosnia had left Norway by 2004, more than 10 years after arrival. In comparison, 63 percent of the Kosovars left Norway within four years of arrival. Interestingly, differences in employment experiences in Norway cannot explain the widely divergent out-migration patterns of the two refugee cohorts. In fact, the Bosnian refugees happened to arrive in Norway in the middle of one of the strongest economic downturns since World War II (the unemployment rate peaked at 6.1 percent in 1993), whereas the Kosovar refugees arrived at the peak of an economic expansion. Instead, changes in refugee policy and differences in economic and political conditions at home appear to be more plausible explanations of the out-migration patterns of the two cohorts. Despite the fact that the Dayton Peace Accord was signed in December 1995, the collective protection of Bosnian refugees was not lifted until the end of 1998. Meanwhile, Norwegian authorities

had granted permanent residence permits to Bosnians who had resided at least four years in Norway. In comparison, the Kosovo crisis was relatively short lived; the collective protection of Kosovars was lifted in August 1999, only four months after its implementation.

Economic Fundamentals and Migration Flows

Economic theory holds that migration decisions involve a comparison of wage levels at the source and the destination, as well as migration costs which may be of both monetary and psychic nature (Sjaastad 1962; Borjas 1987, 1989). High wages at the destination stimulate migration, whereas high wages at the source and migration costs discourage moves. In the empirical literature, wage levels in source and destination countries are typically proxied by the (natural logarithm of) per capita GDP in the respective countries, and migration costs by the distance between the two countries. Many empirical studies report evidence that the size of international flows of—legal as well as illegal—immigrants increases with the difference between the per capita GDP of the destination country and that of the source country and decreases with the increasing distance between these countries (Bratsberg 1995; Greenwood and McDowell 1991; Clark, Hatton, and Williamson 2004). Moreover, studies typically find that international migrants avoid areas of political unrest and war (Hatton and Williamson 2004).

This section analyzes the empirical relations between the various migrant flows of the foreign born to and from Norway on the one hand and the economic fundamentals of the migration decision on the other hand. For this purpose, the analysis aggregates each flow by source country and year and examines how the likelihood that persons from country j migrate in year t is influenced by, for example, the level of economic development in the source country. The baseline empirical model is given by

$$\begin{aligned} p_{jt} = \Phi(&\beta_0 + \beta_1 \ln GDP_{jt} + \beta_2 \ln DIST_j + \beta_3 \ln GDP_{jt} \cdot \ln DIST_j \\ &+ \beta_4 \ln GDP_{NOR,t} + \beta_5 CONFLICT_{jt} + \beta_6 WAR_{jt} + u_{jt}), \end{aligned} \tag{1}$$

where p_{jt} denotes the fraction of the population at risk that moves in year t. Below, the analysis alternatively estimates models in which p measures (1) the emigration rate from the source country to Norway (that is, the fraction of the source-country population that moves to Norway in a given year), (2) the out-migration rate from Norway (that is, the fraction of the immigrant stock from the source country that resides in Norway at the beginning of the year but leaves Norway during the year), (3) the proportion of individuals who leave Norway to move to a third country rather than to their source country, and (4) the ratio of those reimmigrating to Norway relative to the flow of immigrants who left Norway

over the last four years. The analysis estimates the model for all migrants, and, to examine whether there are gender differences in the migration decision related to economic fundamentals, estimates the model separately for male and female migrants.

In the specification of the empirical model, GDP_{jt} and $GDP_{NOR,t}$ denote the per capita GDPs of the source country and Norway, respectively; and $DIST_j$ denotes the distance between the capitals of the two countries, measured in thousands of kilometers.[2] Given that the GDP measures proxy for wage levels in the two economies, a negative value for the coefficient of home GDP (β_1) and a positive value for that of Norway's GDP (β_4) would be expected in analyses of migration flows from the source country to Norway. Conversely, in analyses of return flows from Norway to the source country, the opposite coefficient pattern—a positive coefficient on home GDP and a negative coefficient on GDP of Norway—would be expected. If longer distances entail higher migration costs, the coefficient on the distance variable (β_2) would be expected to be negative in analyses of both immigration and return migration flows. The specification includes an interaction term between GDP and distance. This interaction might capture fading of the negative effect of distance with the source country's level of economic development, perhaps because migration costs become a less important component of the migration decision as the wealth of the source country increases. Alternatively, an interaction effect might result if the migration incentive embodied in wage differentials lessens with distance, perhaps because of weaker signals or greater uncertainty regarding labor market outcomes at the destination.

The model includes two indicator variables for political conflict in the source country; these variables are collected from Gleditsch et al. (2002) and Strand et al. (2005). The variable $CONFLICT_{jt}$ measures whether the source country is the location of an intermediate conflict in year t, and the variable WAR_{jt} is set to unity if the country is the location of a war. The two variables are mutually exclusive and differ in the intensity of the conflict; the former indicates that the number of battle-related deaths is between 25 and 1,000 per year, and the latter variable indicates that the death toll is at least 1,000 per year.

The empirical analyses estimate the model with two alternative specifications of the error term, one with and one without a source-country-fixed component. In models without fixed-country effects, estimation largely draws on cross-sectional variation in the data, that is, on variation in the dependent and explanatory variables across countries, whereas estimation in the fixed-effects model will rely only on longitudinal variation within countries. (For this reason, the coefficient of distance is not identified in the fixed-effects model.) In a simple gravity model of migration, such as equation (1), the specification would not be expected to fully capture all factors influencing the size of international migration

movements. Hence, the error term may contain important omitted variables. Such omitted variables may in turn be correlated with included regressors, rendering traditional least-squares estimators biased. The key advantage of panel data is that fixed-effects estimation allows the analysis to account for (time-invariant) unobserved factors. Differences in coefficient estimates based on models with and without fixed effects will typically reflect correlations between the included regressors and unobserved factors that influence migration between the source country and Norway. When such differences in estimates arise, results from the fixed-effects model are preferred. Finally, the empirical model is specified as a probit equation in which $\Phi(\cdot)$ denotes the cumulative normal distribution function. With count data at hand, the appropriate estimation method is the grouped probit estimator (Maddala 1983).[3]

Table 9.5 lists descriptive statistics for the regression sample. The underlying data cover 33 years (the period 1970–2003) and migrant flows from up to 197 source countries. Because key variables are not always available for the whole period for each source country, and because the grouped probit estimator excludes data points where the observed migration rate is zero, the regression samples typically consist of fewer observations than the theoretical maximum.

Immigrant Flows

The analyses begin with regressions of the annual flows of immigrants from the source country to Norway. Because such flows typically are very small relative to the size of the home population, the migration rate will in practice be an extremely small number (making the linear probability model an inappropriate estimator). Table 9.6 lists results.

As predicted by theory, wage levels in Norway and at home influence the size of the immigrant flow. An increase in Norway's per capita GDP attracts immigrants, whereas economic development at home reduces the emigrant flow. With a single exception, these fundamental empirical patterns are robust—whether estimation is based on variation in the full sample or on longitudinal variation within countries (as in the fixed-effects model in column 2) or whether the analysis distinguishes between male and female migrant flows (see columns 3–6). The negative effect of home-country GDP is strongest for nearby countries and fades with distance from Norway, as indicated by the positive coefficient of the interaction term between GDP and distance. According to coefficients estimates, the home GDP effect remains negative throughout the broad range of the data. For example, the ratio between the main effect of GDP and the coefficient of the interaction term in column (1) is $0.1463/0.0745 = 1.96$, which is well above the mean value of the log distance variable. According to the fixed-effects estimate in column (2), the

Table 9.5. Descriptive Statistics, Annual Migration Flows Data

	Mean	Standard deviation	Minimum	Maximum
Annual immigrant flow by source country	109.1	321.7	0	6,163
Male immigrant flow	55.8	171.9	0	3,519
Female immigrant flow	55.3	157.4	0	2,983
Annual out-migrant flow by source country	58.1	197.6	0	3,024
Male out-migrant flow	30.3	98.2	0	1,424
Female out-migrant flow	27.8	102.0	0	1,625
Annual migrant flow to third country	8.3	20.6	0	251
Male migrants to third country	4.4	11.2	0	121
Female migrants to third country	3.9	9.7	0	130
Annual flow of reimmigrants from source country	9.2	29.9	0	348
Male reimmigrants	4.9	15.9	0	196
Female reimmigrants	4.3	14.6	0	184
Population of source country (millions)	36.1	120.0	.01	1,280
Immigrant stock at beginning of year (by country)	934.9	2401.6	0	20,386
Male immigrant stock	462.9	1166.9	0	9,020
Female immigrant stock	471.9	1271.5	0	11,366
ln (per capita GDP) home	7.472	1.535	3.916	11.197
Ln distance (in thousands of kilometers)	1.578	.795	−.879	2.871
ln (per capita GDP) Norway	10.185	.282	9.581	10.550
Intermediate armed conflict in source country	.072	.259	0	1
War in source country	.076	.113	0	1

Source: Authors. Conflict indicators are collected from Gleditsch et al. (2002) and Strand et al. (2005).

Note: The sample covers migrant flows from 197 source countries over the 1970–2003 period, making up a total sample with valid data of 4,592 observations. Population and GDP figures are collected from World Bank (2006). "Intermediate conflict" and "war" indicate that the source country is the location of an armed conflict with a total conflict history of more than 1,000 battle-related deaths. The two variables are mutually exclusive; "war" denotes the greater intensity of conflict (that is, at least 1,000 battle-related deaths per year).

home GDP effect falls to zero at a value of log distance of 1.63, which is only slightly greater than the mean value in the sample. (In fact, the turning value corresponds to the distance from Norway to Central Africa or Pakistan.) But for the vast majority of countries sending immigrants to Norway, even the fixed-effects estimate of home GDP is negative. (When log distance is weighted by the relative size of immigrant flows, the mean value is 0.74.)

Table 9.6. Determinants of Immigration Flows, Grouped Probit Regressions

	All immigrants		Males		Females	
	(1)	(2)	(3)	(4)	(5)	(6)
ln (per capita GDP) Home	−.1463*** (.0096)	−.2393*** (.0314)	−.1550*** (.0107)	−.1909*** (.0352)	−.1319*** (.0095)	−.1578*** (.0316)
ln (distance)	−.7229*** (.0433)		−.7532*** (.0489)		−.6764*** (.0424)	
ln (per capita GDP) Home*ln(distance)	.0745*** (.0051)	.1466*** (.0156)	.0771*** (.0057)	.1163*** (.0174)	.0701*** (.0050)	.1303*** (.0155)
ln (per capita GDP) Norway	.0467** (.0194)	.1231*** (.0117)	−.0115 (.0214)	.0531*** (.0133)	.0896*** (.0201)	.1151*** (.0122)
Armed conflict	.1340*** (.0142)	−.0015 (.0069)	.1488*** (.0155)	.0197*** (.0075)	.0984 (.0142)	−.0278*** (.0069)
War	.2022*** (.0144)	−.0269*** (.0077)	.2003*** (.0164)	−.0108 (.0085)	.1954*** (.0150)	−.0398*** (.0077)
Immigrant stock/ population (1,000s)	.8902*** (.0230)	.2382*** (.0431)	.9009*** (.0254)	.1737*** (.0484)	.8128*** (.0225)	.2486*** (.0451)
Constant	−3.5755*** (.2256)		−2.8685*** (.2493)		−4.1388*** (.2337)	
R^2	.377	.889	.350	.878	.382	.902
Country-fixed effects	No	Yes	No	Yes	No	Yes
Observations	4,232	4,232	3,887	3,887	3,709	3,709

Source: Authors.

Note: The dependent variable is the count of immigrants out of the home country population. Standard errors are reported in parentheses. The regression sample covers immigrant flows from 195 countries over the 1970–2003 period. Zero-count flows are dropped from grouped probit regressions. For definitions of conflict variables, see the note to table 9.5.

*Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

The coefficient of log distance is negative, showing that international migrant flows decline with the distance between countries. Given the positive coefficient of the interaction term between distance and home GDP, the dampening effect of distance becomes less important the richer the source country becomes. But again, the coefficient of the interaction term is small relative to that of log distance, and the estimated effect of distance remains negative through the broad range of the data.

According to the estimates from models without country-fixed effects in columns (1), (3), and (5), emigrant flows to Norway increase when there is an armed conflict in the source country—and more so the greater the intensity of the conflict. These results fit with an economic understanding of international migration when economic conditions at home deteriorate and, they fit with a legal understanding, because the Norwegian immigration authority is more likely to admit asylum seekers and refugees during periods of armed conflict. Indeed, as the analysis in table 9.3 showed, admissions of refugees and their families have dominated recent immigration from the non-OECD area. But, surprisingly, the estimated effect of political unrest becomes much smaller and, for females, becomes negative in the fixed-effects model. Taking the estimates at face value, the evidence could be interpreted in one or both of two ways. First, people are more likely to leave war-prone areas than peaceful areas, but emigrant flows are larger just before the outbreak of war. Second, slowly evolving international refugee movements and processing time in the Norwegian refugee admission system combine to produce the timing effect that admissions increase in the aftermath of a conflict. To illustrate, arrivals of asylum seekers from Afghanistan peaked in 2003, two years after the fall of the Taliban regime and long after the UNHCR started repatriation of Afghanis from refugee camps in Pakistan (UDI 2006).

Finally, to capture network effects, the empirical model includes a variable constructed as the immigrant stock at the end of the previous year divided by the source country population (in thousands). The presence of friends and relatives in Norway is expected to reduce migration costs, and the lagged immigrant stock variable might proxy for such migration networks. Inclusion of the lagged variable is not unproblematic, however, as it is likely to be correlated with the error term and therefore to be endogenous in the model. Such correlation may explain the pattern of estimates in table 9.6; the coefficient of the immigrant stock variable is highly sensitive to whether the empirical model includes country-fixed effects. Nonetheless, even in the fixed-effects model, the coefficient estimate is positive, consistent with the interpretation that networks reduce the cost of international migration.

The estimates in table 9.6 do not suggest important gender differences related to the economic fundamentals of the source country, but certain differences arise in

the coefficient estimates of GDP in Norway and the measures of political unrest. Perhaps surprisingly, female immigration flows appear more responsive than male flows to changes in economic conditions in Norway. Moreover, the nonintuitive timing effect of refugee arrivals in the fixed-effects model pertains to females; male admissions increase during periods of intermediate armed conflict, but female admissions decline. The finding may reflect the greater tendency of female refugees to be admitted on the grounds of family reunification, and the fact that males are more likely to be primary refugees with an earlier arrival date in Norway.

Out-migrant Flows

The analysis now turns to the likelihood that immigrants in Norway out-migrate and leave the country. In the theoretical formulation of Borjas and Bratsberg (1996)—see also Dustmann (2000)—those most likely to out-migrate are those who were "marginal" immigrants. Whether out-migration is part of a planned two-step migration decision or motivated by failed expectations in the host country, out-migrants tend to be those individuals whose original migration decision was most marginal in favor of moving. As such, the decision to move again is influenced by factors similar to those motivating the original migration decision: theory predicts that the better the economic conditions in the host country, the less likely immigrants are to out-migrate, and the more economic conditions improve at home, the more likely immigrants are to move again. As in the case of the original migration decision, the more costly the move, the less likely out-migration is to take place.

Table 9.7 lists results from grouped probit regressions of the propensity of immigrants in Norway to out-migrate. As predicted by theory, the better the economic conditions in Norway, the less likely immigrants are to move again. This effect is particularly large for male immigrants—the likelihood that female immigrants leave the country appears less responsive to per capita GDP in Norway than the likelihood that male immigrants leave the country (see the estimates in column 3–6), although even in the female sample the coefficient estimate is significantly negative. Taken together, the greater responsiveness of male out-migration (table 9.7) and female immigration (table 9.6) to economic fluctuations in Norway can be understood in terms linked with family migration decisions: during economic upturns, male primary migrants are more likely than female migrants to settle in Norway and become reunited with their family. Tied migrant movements will thus be particularly sensitive to economic conditions in the destination country.

At first glance, the evidence with respect to home-country GDP appears a bit mixed. According to estimates from models without country-fixed effects, there is an unambiguous positive relation as improved conditions at home induce more

Table 9.7. Determinants of Out-migration Flows, Grouped Probit Regressions

	All out-migrants		Males		Females	
	(1)	(2)	(3)	(4)	(5)	(6)
ln (per capita GDP) Home	.0868*** (.0066)	.3525*** (.0363)	.1041*** (.0076)	.3203*** (.0388)	.0749*** (.0072)	.3402*** (.0435)
ln (distance)	−.1335*** (.0395)		−.0477 (.0454)		−.1771*** (.0433)	
ln (per capita GDP) Home*ln (distance)	.0161*** (.0041)	−.2806*** (.0180)	.0090* (.0047)	−.2183*** (.0201)	.0191*** (.0045)	−.3223*** (.0205)
ln (per capita GDP) Norway	−.1495*** (.0193)	−.2132*** (.0244)	−.2565*** (.0224)	−.3291*** (.0257)	−.0790*** (.0208)	−.0830*** (.0298)
Armed conflict	−.0934*** (.0145)	−.0591*** (.0142)	−.0748*** (.0158)	−.0654*** (.0149)	−.1329*** (.0165)	−.0503*** (.0176)
War	−.1023*** (.0226)	−.0552*** (.0175)	−.1046*** (.0245)	−.0612*** (.0180)	−.1075*** (.0266)	−.0339 (.0218)
Constant	−.6159*** (.2073)		.3704 (.2394)		−1.2587*** (.2238)	
R^2	.275	.734	.270	.752	.259	.695
Country-fixed effects	No	Yes	No	Yes	No	Yes
Observations	3,639	3,639	3,330	3,330	3,009	3,009

Source: Authors.

Note: The dependent variable is the count of out-migrants from the country-of-origin stock of immigrants in Norway at the beginning of the year. Standard errors are reported in parentheses. The regression sample covers flows of out-migrants from 178 countries over the 1970–2003 period. Zero-count flows are excluded from the regressions.

*Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

immigrants to leave Norway. In the fixed-effects regressions, the effect of home GDP is large and positive for countries near Norway, but the coefficient of the interaction term with distance is relatively large, and the effect of home GDP declines to zero when the distance from Norway is about that to Northern Africa and the Middle East.

In the out-migration regressions, the evidence shows that armed conflicts deter migrant flows. This result is robust whether or not the estimation model includes fixed effects and whether or not migration flows are separately considered for men and women. When the home country is the location of an armed conflict or a war, fewer immigrants leave Norway.

Third-Country Migrant Flows

The longitudinal migration records allow examination of the destinations—whether to home countries or to a third country—of immigrants who leave Norway. (Third-country moves are admittedly measured with some imprecision, as 7.7 percent of the out-migration records lack information on destination country. In the analyses, these unknown moves are treated as return moves to the home country, but no qualitative conclusions are affected if moves with an unknown destination are instead excluded from the analyses' samples.) In the data used in the present study, the source countries with the highest third-country migration rates are Vietnam, Malaysia, and Syria. In all of these countries, more than half of those who left Norway during the sample period chose not to return home. The most popular third-country destinations are Sweden, the United Kingdom, and the United States. Approximately 45 percent of all onward migrants listed one of those three countries as their destination. Interestingly, the 45 percent statistic is roughly constant across the three main source-country categories—OECD, Eastern Europe, and nonwestern countries.

This section addresses the empirical links between choice of third-country destination and the economic migration fundamentals. It considers the choice of destination given that the immigrant has decided to leave Norway, and it estimates the conditional probability that out-migrants choose not to return home. Because this setup assumes that the decision to leave Norway already has been made, a simpler version of the empirical specification is used, per capita GDP in Norway is excluded, and the interaction term between home-country GDP and distance is dropped from the empirical model. Table 9.8 lists results.

As the table reveals, the richer the source country, the less likely out-migrants are to move to a third country, and the farther away the source country from Norway, the more likely out-migrants are to opt for a third country. These results reinforce the above-noted evidence that migrants consider wage levels at the destination

Table 9.8. Determinants of Migration Flows to Third Countries, Grouped Probit Regressions

	All migrants		Males		Females	
	(1)	(2)	(3)	(4)	(5)	(6)
ln (per capita GDP) Home	−.1289*** (.0078)	−.2309*** (.0342)	−.1132*** (.0087)	−.2432*** (.0389)	−.1487*** (.0093)	−.2295*** (.0398)
ln (distance)	.1871*** (.0108)		.1760*** (.0125)		.1975*** (.0433)	
Armed conflict	−.0509* (.0292)	−.0110 (.0297)	−.0690** (.0323)	−.0396 (.0323)	−.0475 (.0345)	.0196 (.0364)
War	−.1021** (.0486)	.0918** (.0431)	−.1228** (.0538)	.0699 (.0477)	−.0753 (.0576)	.1254** (.0521)
Constant	.1893** (.0760)		.0796 (.0843)		.3745*** (.0904)	
R^2	.343	.619	.282	.561	.382	.668
Country-fixed effects	No	Yes	No	Yes	No	Yes
Observations	2,489	2,489	2,125	2,125	1,900	1,900

Source: Authors.

Note: The dependent variable is the count of migrants moving to a third country from the country-of-origin specific out-migration flow from Norway during the year Standard errors are reported in parentheses. The regression sample covers flows of migrants to third countries from 147 source countries over the 1970–2003 period. Zero-count flows are excluded from the regressions.

*Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

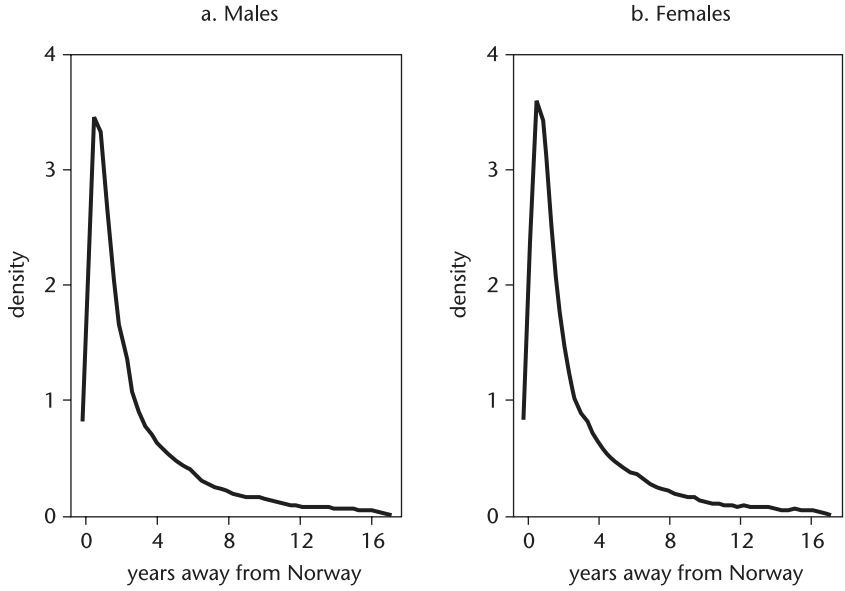
when they form migration decisions and that long distances discourage moves. The latter result is consistent with the finding of DaVanzo (1983) for internal migrants in the United States. DaVanzo reports that the likelihood of onward moves increases with the distance of the first move and offers an alternative interpretation to that of migration costs, namely, that the longer the distance, the less reliable the information on which the original migration decision may be based. (DaVanzo considers the unconditional probability that someone in the migrant stock moves onward, but the positive coefficient of distance to the source reported here is unchanged if the dependent variable is instead specified as the unconditional probability that an immigrant leaves Norway for a third country.) Finally, in table 9.8 the sign of coefficients of the conflict variables depends on whether the empirical model includes fixed source-country effects. Results from models without fixed effects yield the seemingly odd pattern that immigrants who out-migrate tend to return home to war-prone countries. The result may reflect (forced) repatriation of refugees. The fixed-effects models, on the other hand, show that such return moves tend not to take place during periods of war. When there is an ongoing war in the source country, those who leave Norway are more likely to move onward to a third country.

Reimmigration Flows

The final migration flow considered is that of former out-migrants who return to Norway. Table 9.1 showed that almost 15 percent of the immigrants who left Norway during the 1967–2002 period later reimmigrated to Norway. Figure 9.5 shows plots of the kernel density functions for the length of the stay away from Norway for male and female reimmigrants. (Not depicted are administrative records of zero-month stays, which make up 6.6 percent of the reimmigration events, and a few stays exceeding 17 years, which make up less than 2 percent of all reimmigration events.) The plots show skewed density functions; most of the stays away from Norway are of relatively short duration. In fact, about 40 percent of individuals who reimmigrated returned to Norway within one year, and 60 percent returned within two years.

Table 9.9 presents regression results for the conditional probability of reimmigration. The dependent variable is specified as the count of immigrants making their second migration to Norway relative to the count of first-time out-migrants over the last four years. (About 1 percent of the total sample of out-migrants—0.5 percent of all immigrants—is recorded with more than two moves to Norway, but here only the second immigration event is considered. The incidence of multiple moves appears slightly higher for males than for females, particularly among immigrants originating in OECD countries.)

Figure 9.5. Kernel Density Plots of Duration until Reimmigration



Source: Authors.

Two results stand out in the table. First, the poorer the source country, the more likely immigrants who have left Norway are to reimmigrate to Norway. Whether the analysis considers estimates from the cross-sectional or the longitudinal models, or for males or females, the probability of reimmigration declines significantly with the source country's per capita GDP. The better the economic conditions at home, the fewer the number of out-migrants who may find it profitable to undertake a second migration to Norway. Alternatively, the result may reflect a greater tendency of immigrants from poor countries to make planned short-term moves back to source country compared with immigrants from wealthy countries; this comparative tendency may be related to differences in consumption cost levels.

Second, the coefficients of the conflict variables that appear in the fixed-effects regressions are positive. When a war breaks out in the source country, former immigrants to Norway are more likely to reemigrate. Because of lack of data on international multiple migration movements, the flows of people remigrating to immigrant-receiving countries remain little studied and poorly understood. The results in table 9.9 provide suggestive evidence that the process of reimmigration is influenced by the factors affecting other migration flows. The decision to reimmigrate appears particularly sensitive to economic and political developments in the source country.

Table 9.9. Determinants of Reimmigration Flows, Grouped Probit Regressions

	All immigrants		Males		Females	
	(1)	(2)	(3)	(4)	(5)	(6)
ln (per capita GDP) Home	−.0717*** (.0074)	−.1729*** (.0485)	−.0620*** (.0091)	−.1951*** (.0572)	−.0886*** (.0088)	−.1571*** (.0591)
ln (distance)	.2471*** (.0453)		.2208*** (.0563)		.3800*** (.0549)	
ln (per capita GDP) Home*ln (distance)	−.0221*** (.0046)	−.0156 (.0206)	−.0266*** (.0057)	−.0319 (.0254)	−.0411*** (.0056)	−.0240 (.0239)
ln (per capita GDP) Norway	.0070 (.0176)	.0676** (.0311)	.0067 (.0207)	.1063*** (.0363)	.0054 (.0203)	.0104 (.0383)
Armed conflict	.0277* (.0145)	.0436*** (.0168)	.0332** (.0161)	.0473** (.0197)	−.0225 (.0197)	.0357* (.0208)
War	−.0361 (.0259)	.0826*** (.0234)	−.0280 (.0291)	.1083*** (.0263)	−.0644* (.0343)	.0555* (.0302)
Constant	−1.0933*** (.2160)		−1.1502*** (.2143)		−.9241*** (.2150)	
R^2	.255	.489	.177	.436	.338	.556
Country-fixed effects	No	Yes	No	Yes	No	Yes
Observations	2,497	2,497	2,086	2,086	1,877	1,877

Source: Authors.

Note: The dependent variable is the count of reimmigrants from the country-of-origin specific flow of out-migrants from Norway over the previous four years. Standard errors are reported in parentheses. The regression sample covers flows of reimmigrants from 149 source countries over the 1970–2003 period. Note that zero-count flows are excluded from the regressions.

*Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

Conclusions

This chapter used individual longitudinal migration records to study migration of foreign-born persons to and from Norway over the 1967–2003 period. During that period, more than 500,000 immigrants arrived in Norway; about 50 percent of these individuals remained in the country at the beginning of 2004. The patterns of out-migration behavior vary significantly by country of origin. Immigrants from the OECD area tend to stay for short periods only; out-migration rates are much lower for immigrants from Eastern Europe and in particular for immigrants from other nonwestern source countries.

The variation in patterns of out-migration by source country is closely related to the class of admission and the basis for immigration to Norway. Among immigrants from Eastern Europe and other nonwestern states, very few immigrants admitted on the grounds of family reunification out-migrate. More than 10 years after arrival, only 15 percent of such immigrants have left the country. Primary refugees are more likely to out-migrate or move onward to a third country; 10 years after entry, fewer than 70 percent remain in Norway. Immigrants admitted with work visas have the highest propensities to out-migrate; about 50 percent leave within 10 years of arrival. Most immigrants from the OECD area arrive for reasons of work, but a few immigrate on the basis of family reunification. Most foreign students end up leaving Norway, but far from all do. Despite legislation restricting continued stay in Norway on graduation, more than 25 percent remain in the country for more than 10 years after entry.

Not all immigrants who leave Norway move back home. At least 14 percent of out-migrants over the sample period chose to move onward to a third country. The propensity to prefer a third destination country is greatest among immigrants from less developed countries. The most popular third-country destinations are Sweden, the United Kingdom, and the United States. For many immigrants, the stay in Norway may represent one step toward a preferred destination country. Finally, a large number of out-migrants later reimmigrate to Norway.

Recent studies have emphasized the role of gender in migration (Donato et al. 2006), and there is evidence that migration decisions of women are motivated by factors different than those of men (Cerrutti and Massey 2001). When the present analysis contrasts the out-migration patterns of female immigrants with those of male immigrants, gender differences typically conform to the interpretation that males are the primary migrants and that females are more likely to be admitted on the basis of family reunification. This pattern is strongest for immigrants from less developed nations.

The underlying panel of migration records allows examination of the variation in migration flows by source country. Empirical analyses of annual immigration, out-migration, third-country migration, and reimmigration flows, show that

these flows are affected by economic conditions in Norway and by economic and political conditions in the source country in a pattern that is consistent with economic theory. The long panels permit estimation accounting for unobserved source-country effects. Accounting for unobserved factors turns out to be important, as estimates of several key effects of economic fundamentals and political unrest on the migration decision are sensitive to whether the empirical model includes country-fixed effects.

Notes

1. SOPEMI (2003) tabulates outflows of the foreign-born population from a few additional OECD countries, but does not relate these outflows to the original inflow by year of entry. Nonetheless, the outflow figures suggest sizable out-migration rates among immigrants in all of the included countries.

2. Data on per capita GDP and source-country population come from World Bank (2006).

3. Note that the grouped probit estimator will drop observations for which the observed migration rate is zero (as the probability of such an event in a normal distribution is zero, and hence the inverse cumulative standard normal is minus infinity). To examine whether such exclusion of data points leads to sample selectivity bias, the analysis has reestimated all empirical models, replacing zero-count flows with a flow of one person. This experiment led to no appreciable differences in coefficient estimates compared with those reported below.

References

Borjas, George J. 1987. "Self-Selection and the Earnings of Immigrants." *American Economic Review* 77: 531–53.

———. 1989. "Immigrant and Emigrant Earnings: A Longitudinal Study." *Economic Inquiry* 27: 21–37.

Borjas, George J., and Bernt Bratsberg. 1996. "Who Leaves? The Outmigration of the Foreign-Born." *The Review of Economics and Statistics* 78 (1): 165–76.

Bratsberg, Bernt. 1995. "Legal versus Illegal U.S. Immigration and Source Country Characteristics." *Southern Economic Journal* 61 (3): 715–27.

Brekke, Jan-Paul. 2001. "The Dilemmas of Temporary Protection—The Norwegian Experience." *Policy Studies* 22 (1): 5–18.

Cerrutti, Marcela, and Douglas S. Massey. 2001. "On the Auspices of Female Migration from Mexico to the United States." *Demography* 38 (2): 187–200.

Clark, Ximena, Timothy J. Hatton, and Jeffery G. Williamson. 2004. "Explaining U.S. Immigration 1971–98." Policy Research Working Paper 3252, World Bank, Washington, DC.

Constant, Amalie, and Douglas S. Massey. 2003. "Self-Selection, Earnings, and Out-Migration: A Longitudinal Study of Immigrants to Germany." *Journal of Population Economics* 16: 631–53.

DaVanzo, Julie. 1983. "Repeat Migration in the United States: Who Moves Back and Who Moves On." *The Review of Economics and Statistics* 65 (4): 552–59.

Donato, Katharine M., Donna, Gabaccia, Jennifer, Holdaway, Martin, Manalansan, and Patricia R. Pessar. 2006. "A Glass Half Full? Gender in Migration Studies." *International Migration Review* 40 (1): 3–26.

Dustmann, Christian. 2000. "Temporary Migration and Economic Assimilation." *Swedish Economic Policy Review* 7: 213–44.

———. 2003. "Return Migration, Wage Differentials, and the Optimal Migration Duration." *European Economic Review* 47: 353–69.

Edin, Per-Anders, Robert J. LaLonde, and Olof Åslund. 2000. "Emigration of Immigrants and Measures of Immigrant Assimilation: Evidence from Sweden." *Swedish Economic Policy Review* 7: 163–204.

Gleditsch, Nils Petter, Peter Wallensteen, Mikael Erikson, Margarate Sollenberg, and Håvard Strand. 2002. "Armed Conflict 1946–2001: A New Dataset." *Journal of Peace Research* 39 (5): 615–37.

Greenwood, Michael J., and John McDowell. 1991. "Differential Economic Opportunity, Transferability of Skills, and Immigration to the United States and Canada." *The Review of Economics and Statistics* 73 (4): 612–13.

Hatton, Timothy J., and Jeffery G. Williamson. 2002. "What Fundamentals Drive World Migration?" Working Paper 9159, National Bureau of Economic Research, Cambridge, MA.

———. 2004. "Refugees, Asylum Seekers and Policy in Europe." Working Paper 10680, National Bureau of Economic Research, Cambridge, MA.

Jasso, G., and M. Rosenzweig. 1982. "Estimating the Emigration Rates of Legal Immigrants Using Administrative and Survey Data: The 1971 Cohort of Immigrants to the United States." *Demography* 19: 279–90.

Jensen, Peter, and Peder J. Pedersen. 2005. "To Stay or Not to Stay? Out-Migration of Immigrants from Denmark." Department of Economics, Aarhus School of Business, Aarhus, Denmark.

Lam, Kit-Chun. 1994. "Outmigration of Foreign-Born Members in Canada." *The Canadian Journal of Economics* 27 (2): 352–70.

Maddala, G.S. 1983. *Limited-Dependent and Qualitative Variables in Econometrics.* Cambridge: Cambridge University Press.

Nekby, Lena. 2006. "The Emigration of Immigrants, Return vs. Onward Migration: Evidence from Sweden." *Journal of Population Economics* 19: 197–226.

Reagan, Patricia B, and Randall J. Olsen. 2000. "You Can Go Home Again: Evidence from Longitudinal Data." *Demography* 37 (3): 339–50.

Sjaastad, Larry A. 1962. "The Costs and Returns of Human Migration." *The Journal of Political Economy* 70: 80–93.

SOPEMI (Système d'Observation Permanente sur les Migrations). 2001. *Trends in International Migration 2001.* Paris: Organisation for Economic Co-operation and Development.

———. 2003. *Trends in International Migration 2003*. Paris: Organisation for Economic Co-operation and Development.

Strand, Håvard, Joachim Carlsen, Nils Petter Gleditsch, Håvard Hegre, Christin Ormhaug, and Lars Wilhelmsen. 2005. "Armed Conflict Dataset Codebook." Oslo: International Peace Research Institute. http://www.prio.no/cscw/armedconflict.

Sørlie, Kjetil. 1998. "Bosetting, sysselsetting og flytting i livsløpsperspektiv." *Søkelys på arbeidsmarkedet* 1998:1.

Tysse, Tone I., and Nico Keilmann. 1998. *Utvandring blant innvandrere: 1975–1995.* Statistisk sentralbyrå rapport 98/15.

UDI (Utlendingsdirektoratet: The Norwegian Directorate of Immigration). 2006. *Numbers and Facts 2005* (*Tal og fakta 2005*). Oslo: The Norwegian Directorate of Immigration. http://www.udi.no.

UNHCR (United Nations High Commissioner for Refugees). 2006. *2005 Global Refugee Trends*. Geneva: UNHCR. http://www.unhcr.org/cgi-bin/texis/vtx/statistics

U.S. Bureau of the Census. 1960. *Historical Statistics of the United States.* Washington DC: Government Printing Office.

Van Hook, Jennifer, Weiwei Zhang, Frank D. Bean, and Jeffrey S. Passel. 2006. "Foreign-Born Emigration: A New Approach and Estimates Based on Matched CPS Files." *Demography* 43 (2): 361–82.

Warren, Robert, and Jennifer M. Peck. 1980. "Foreign-Born Emigration from the United States: 1960 to 1970." *Demography* 17 (1): 71–84.

World Bank. 2006. World Development Indicators. Washington, DC.

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