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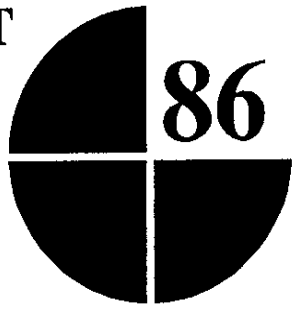

THE EFFECTS OF INTERNATIONAL REMITTANCES ON POVERTY, INEQUALITY, AND DEVELOPMENT IN RURAL EGYPT

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CONTENTS

TABLES

FOREWORD

Many low-income people, especially those from poor rural areas, seek to improve their lives by migrating in search of work and income, increasingly moving across national borders and farther afield. In recent years, the remittances they earn have come to have an important effect on the economies of many developing countries, profoundly affecting poverty, income distribution, and rural economic development in the villages from which they migrated.

The results of this study complement the findings of other IFPRI studies on poverty alleviation, income sources, and rural development. The study uses primary household data from a small area of rural Egypt in an innovative way to address such vital questions as who migrates, how remittances affect poverty and income inequality in the receiving villages, and how spending by returning migrants facilitates local development. The finding of this study that the rural poor, who actively participate in international migration, tend to invest their remittance earnings rather than spending on own or family consumption has broad implications for policy planning of countries that send many migrants abroad.

Just Faaland

Washington, D.C.
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However, perhaps the most important acknowledgment should go to the inhabitants of the surveyed households in Minya Governorate. Without the assistance and cooperation of these villagers, this report would have never seen the light of day.

1

SUMMARY

International remittances—the money and goods transmitted to households back home by people working away from their origin communities—can have a profound effect on poverty, income distribution, and development in rural areas of Third World countries. This study examines the effects of international remittances on rural Egypt, where international migration has been extensive in recent years. It is based on a household survey conducted in 1986/87 in three villages in Minya Governorate, a rural province about 250 kilometers south of Cairo.

The survey included two rounds of random interviewing in different census blocks in the villages. In the first round, data were collected on the socioeconomic characteristics and migration experiences of 1,000 households, and in the second round, detailed information was collected on the expenditure behavior of 75 returned (once-abroad) migrant and 75 nonmigrant households.

The rate of international migration in the survey area is high: 339 out of 1,000 surveyed households sent someone to work abroad in the 10 years prior to the survey (1976-86). Of these 339 migrant households, 235 households had a migrant who had returned from abroad and 104 had a migrant who was still working abroad. Most of the migrants went to work in one of the neighboring Arab oil countries—Iraq, Kuwait, Libya, or Saudi Arabia.

International remittances are defined here as all transfers of money and goods from international workers. Travel and basic subsistence costs (for food and housing) abroad are excluded. These remittances play an important role in the economies of the surveyed households, accounting for 12.5 percent of total actual gross income of the 1,000 households and for 30.4 percent of total actual gross income of the 339 households with migrants, including both once-abroad and still-abroad migrants.

The study examines the social and economic determinants of international migration within the context of migration and human capital models of development. These models suggest that younger and better-educated people choose to migrate because earning possibilities differ in spatially separated labor markets. In analyzing why certain workers migrate, variables such as age, marital status, employment, education, age of household head, amount of land farmed, and predicted per capita household income (excluding remittances) are considered. The variables marital status, employment (agricultural laborer), and education (above elementary) are positively related to the decision to work abroad, whereas the influence of all the other variables is negative.

In evaluating the impact of international remittances on poverty and income distribution, the study uses predicted income equations to estimate the changes that occur between two situations: excluding remittances, where the remittances of the 104 households with a still-abroad migrant are excluded, and including remittances, where the remittances of these still-abroad migrants are included.

Using this framework, the study finds that international remittances have a small but positive effect on poverty. The results indicate that the number of households living in poverty declines by 9.8 percent when predicted per capita household income (estimated

household income divided by the number of family members) includes remittances from the 104 still-abroad migrant households. Similarly, Sen's index of poverty suggests that poverty falls by 12 percent when predicted per capita household income includes remittances.

These changes in poverty are a reflection of the small—but proportionate—number of poor households actually receiving international remittances. According to the data, 28 of 268 households (10.4 percent) classified as "poor" when remittances are excluded receive remittances. In the sample as a whole, exactly the same proportion of households—10.4 percent—receive remittances. Clearly, poor households can and do produce international migrants.

Although international remittances have a positive effect on poverty, they have a *negative* effect on income distribution. When remittances are included in predicted per capita household income, inequality increases. The reasons for this paradoxical outcome are several. When remittances are included, the lowest income quintile produces its proportionate share of still-abroad migrants, but the second and third income quintiles do not. Moreover, when remittances are included, the two top income quintiles produce more than a proportionate share of still-abroad migrants. It is these variations in the number of migrants produced by different income groups—and not differences in either migrant earnings abroad or marginal propensities to remit—that cause international remittances to have a negative effect on rural income distribution.

It should, however, be emphasized that adverse effects on income distribution are not inevitable. The effect of remittances on income distribution was negative because at the time of the survey most of the still-abroad migrants were from the upper-income groups. Among the once-abroad category of migrants, however, just as many migrants came from poor and lower-middle-income households as came from upper-income households. Had the households sending migrants abroad been evenly distributed at the time of the survey, it is likely that the impact of remittances on rural income distribution would also have been more equitable.

In evaluating the economic uses of international remittances, the study compares the expenditure patterns of 75 once-abroad migrant and 75 nonmigrant households. Contrary to popular belief, the data show that once-abroad migrants do not devote large shares of their remittance earnings to personal consumption (food, clothing, schooling, medical, pilgrimage, and marriage expenses). Using expenditure data and controlling for level of expenditure, marginal budget shares devoted to consumption are higher for nonmigrant households in all but one quintile. Migrant households tend to view their remittance earnings as a temporary income stream not to be spent on newly desired consumer goods.

Once-abroad migrant households tend to spend the bulk of their remittance earnings on housing. Fully 53.9 percent of actual remittance expenditures on nonrecurring items went to the construction or repair of houses. In the classification system used in this analysis, which divides expenditure into consumption, durables, and investment, expenditures on housing dominate the category of durables (housing and household goods).

Once-abroad migrant households also have a higher marginal propensity than nonmigrants to allocate expenditures to investments such as land, agricultural equipment, vehicles, and small businesses. This finding contradicts the widespread belief that migrants do not invest their remittance earnings. Controlling for level of expenditure, marginal budget shares to investment are consistently higher for once-abroad migrants than for nonmigrants. Most of this investment goes to land. Approximately 73 percent

of total per capita expenditure on investment by once-abroad migrant households goes to the purchase of agricultural land or to land for building. From the standpoint of the migrant, land represents a good investment because the value of land tends to keep pace with the rate of inflation.

2

RESEARCH ISSUES, APPROACH, AND METHODOLOGY

Remittances and the Local Economy

International remittances refer to money and goods that are transmitted to households back home by people working away from their origin communities. In many cases, such resource transfers can have a profound impact on poverty, income distribution, and economic development in rural areas of the Third World (Stark 1980; Cox and Jimenez 1990). In developing countries, most poor people live and work in the countryside. Rural incomes tend to be lower than incomes earned in either the urban sector or abroad. It is this disparity between rural incomes and expected incomes elsewhere that causes rural residents to migrate—either to urban areas or abroad.

From the standpoint of poverty and equity concerns, the main question regarding international remittances is who migrates. Are migrants drawn primarily from upper or lower rural income groups? If migrants are drawn from wealthier rural groups, this may have important negative effects on income distribution and political stability in the countryside. For example, a sharp increase in rural income inequalities may shorten the life of an unpopular ruling elite.

From the standpoint of economic development, the question of who migrates needs to be coupled with another issue: how do migrants use their monies? Do international migrants channel their remittances into productive investments in their rural communities, or do they use such monies to underwrite the consumption of newly desired consumer goods? Stated more baldly, do international remittances help provide the investment needed to facilitate development, or do they merely foster new patterns of dependency on "status-oriented" consumer goods?[1]

Despite the importance of these issues, there is still no general agreement about the effects of worker remittances on Third World rural areas. Even when these remittances are quite large—as they often are for international migrants working in Europe or the Middle East—there is no consensus on the effects of these earnings on rural poverty, income distribution, and development.

Two main methodological problems account for this lack of consensus on remittances: the use of local-level data collection techniques that preclude making unambiguous empirical judgments about the impact of remittances, and the reluctance or inability to use predicted income functions to accurately estimate income before and after migration.

This study attempts to overcome these and similar problems by proposing a framework and techniques for analyzing the first-order effects of remittances on one rural Third World area. The area under analysis represents a useful case study because

[1]The allocation of remittances between investment and consumption will, of course, be influenced by the private rates of return on such investments. See Chapter 6.

in recent years large numbers of rural Egyptians have gone to work abroad. According to official sources, at the time of the study (1986/87) about 3 million Egyptians (17 percent of the total labor force) were working abroad. Many of these Egyptians went to work in Arab oil-rich countries such as Iraq, Kuwait, and Saudi Arabia.

Official remittances from Egyptian migrant workers increased from essentially zero in 1971 to US$3 billion in 1985/86 (Table 1). This figure probably underestimates the tremendous rate of increase in international remittances in Egypt, inasmuch as a large amount of such income (possibly US$1 billion) enters the country in a way that is not counted. Throughout the 1980s international remittances (official and unofficial) represented the single most important source of foreign exchange in Egypt.

In more recent years, and especially since the 1991 Persian Gulf crisis, news reports have suggested that the number of Egyptians working abroad, especially in Iraq and Kuwait, has fallen.[2] However, as these two oil-rich countries begin the long process of reconstruction, the demand for Egyptian migrants is likely to reach new historic levels. This situation, coupled with the opening of new employment opportunities in Saudi Arabia, is likely to keep Egypt a major labor exporter well into the next century. Indeed, the figures in Table 1 show that between 1985/86 and 1988/89 official worker remittances flowing into Egypt actually *increased* to US$3.5 billion.

There are, unfortunately, no data available concerning the proportion of these international remittances that has gone to rural—as opposed to urban—Egyptian households. However, according to one government study, about 40 percent of the Egyptian labor force is engaged in agriculture (Egypt, Central Agency for Public Mobilization and Statistics 1979). If it is assumed that 40 percent of all Egyptians working abroad also come from the agricultural sector, and that their total overseas earnings are either proportional or slightly less than proportional to their numbers, it seems reasonable to conclude that at the time of this study rural Egyptians were remitting between US$600 million and US$1,200 million a year.

Study Area and Sampling

Data for the study came from a household survey conducted by the author between September of 1986 and May of 1987 in rural Egypt. The survey included three villages in Minya Governorate, a rural province about 250 kilometers south of Cairo. Given the lack of existing information about the role of remittances in rural life, these villages were *not* selected on the basis of purported migration characteristics[3] or on any other basis that might lead one to consider them "representative" of rural Egypt as a whole. The villages were chosen because they were the ones that the author had studied in 1978–80 (Adams 1986). Although the results of this study are not generalizable for rural Egypt as a whole, they are indicative of the effects of international remittances in one specific rural Egyptian locale.

The survey area is located far from major urban areas; it is largely rural and agricultural. According to survey data, approximately 46 percent of the male work force

[2]See, for example, the *New York Times*, September 4, 1990.

[3]In fact, when the author announced his desire to study international remittances in these three villages, several local informants advised him "to go elsewhere" because they felt that there "were so few migrants" in this area!

Table 1—Sources of foreign exchange in Egypt, 1971-1988/89

Source	1971	1975	1980	1985/86	1988/89
			(US$ million)		
International remittances[a]	0	400	2,700	3,000	3,500
Petroleum exports	0	200	3,000	2,200	1,200
Other exports	900	1,400	1,100	1,200	1,500
Suez canal	0	100	700	1,000	1,300
Tourism	100	400	700	800	2,000
Other receipts	100	300	1,200	2,200	3,200
Total	1,100	2,800	9,400	10,400	12,700

Sources: Data from annual reports of the Central Bank of Egypt, in David W. Carr, "The Possibility of Rapid Adjustment to Severe Budget-Deficit and Other Economic Problems in Egypt," *Journal of Developing Areas* 24 (January 1990): Table 1.

[a]International remittance figures include both monetary transfers to banks and exchange imports of Egyptians working abroad. As noted in the text, these official remittance figures probably underestimate the actual level of remittances entering Egypt in any given year.

are peasant farmers (see Table 2). Most of these farmers rent or own small plots of land, which average about 0.90 feddan (1 feddan = 1.038 acre). Smaller percentages of the male labor force in the area are employed as government employees (17 percent), artisans (7 percent), or agricultural laborers (7 percent).

The survey included two rounds of interviewing. In the first round, 1,000 households in the three villages were interviewed to collect basic socioeconomic data on each household member including age, education, primary and secondary occupations, and contribution of each member to gross household income. Data were also gathered on household landowning status, rental income, and the presence of any household member who had worked abroad at any time during the 10-year period 1976–86.

On the basis of the first round of the survey, the 1,000 households are divided into three groups: nonmigrant (661 households), once-abroad migrant (235), and still-abroad migrant (104). Each group is then stratified (from high to low) on the basis of actual gross household income. For nonmigrant and once-abroad migrant households, actual gross household income is calculated as the sum of all individual incomes; if individual incomes were earned in agriculture, they include an imputation for home-consumed goods. For still-abroad migrant households, actual gross household income includes the sum of all individual incomes plus remittances of still-abroad migrants valued as follows.

For each still-abroad migrant, total income abroad equals the monthly income earned abroad multiplied by the total number of months abroad. Remittances are then calculated as

$$\begin{aligned} \text{Remittances} = {} & (\text{Total income abroad}) \\ & - [(\text{Travel costs abroad}) \\ & + (\text{Housing costs abroad}) \\ & + (\text{Food costs abroad})]. \end{aligned} \tag{1}$$

Remittances include both money and goods earned by the still-abroad migrant. A portion has, of course, already been sent home by the still-abroad migrant; in the static assumptions of this study, the remainder is also treated as having been sent home. Since

Table 2—Summary of characteristics of all households and migrant households, 1986/87 survey

All households	
Number of households	1,000
Mean family size	6.8
Total number of males 18 years or older	1,859
Mean land farmed (rented and owned) (feddans)[a]	0.9
Occupational status of all males over 18 years (percent)	
Farmer/peasant	46.3
Government worker	17.0
Artisan	6.9
Merchant	5.2
Agricultural laborer	6.9
Professional	2.6
Private sector worker	1.0
Student	6.8
Unemployed	5.2
Retired	2.0
Actual mean gross income per month (including remittances) of all households in LE[b]	225.9
Share of international remittances in total actual gross household income (percent)	12.5
All migrant households	
Number of households with migrants ever abroad	339
Number of households with migrants still abroad	104
Number of total individual migrants	363
Mean age of all migrants (years)[c]	33.3
Marital status of all migrants (married = 100, unmarried = 0)	78.8
Mean land farmed (rented and owned) of all migrant households (feddans)[a]	0.7
Average time spent abroad (years)	2.1
Occupational status in Egypt of all migrants (percent)	
Farmer/peasant	49.0
Government worker	18.4
Artisan	9.4
Merchant	4.4
Agricultural laborer	15.4
Professional	2.2
Private sector worker	None
Student	0.3
Unemployed	0.6
Retired	0.3
Actual mean gross income per month (including remittances) of all migrant households in LE[b]	273.0
Share of international remittances in total actual gross household income of households with migrants (percent)	30.4

Source: Richard H. Adams, Jr., "Worker Remittances and Inequality in Rural Egypt," *Economic Development and Cultural Change* 38 (October 1989): Table 1.

[a]1 feddan = 1.038 acres

[b]LE 1 = US$0.73.

[c]This indicates the age of migrants at the time of migration.

savings held abroad by still-abroad migrants are minimal, these are also included in remittances.

In the second round of the survey, 150 of the original 1,000 households were selected for interviewing: 75 from the income-stratified group of nonmigrant households and 75 from the income-stratified group of once-abroad migrant households.[4] None of the

[4]For details on how the 150 households in round 2 were selected, see footnote 36 in Chapter 6.

households in the still-abroad migrant group were chosen for interviewing in the second round because it seemed desirable to question migrants themselves regarding remittance expenditures. The goal here was to select two comparable groups of income-stratified migrant and nonmigrant households so that the main difference between them was that of receiving remittances or not.

Two aspects of these household surveys need to be noted. First, according to social tradition in this area of rural Egypt, it is considered "shameful" for women to work outside of the household. Few females are thus engaged in outside remunerative employment, and those who are, are reluctant to admit it. In the survey this led to an underreporting of the female contribution to gross household income, a problem not unknown to surveys in other Third World countries. Second, in order to enhance data accuracy, several checks were done in the field. After they were collected, all data—and especially those on migration, occupation, income, and landholding—were reviewed by local leaders in each of the three villages. These checks helped pinpoint discrepancies and omissions in the data, problems that were then corrected by a return visit to the household in question.

Methodology

Because of the tremendous volume of international remittances in rural Egypt, this study examines only the impact of *international* (and not internal) remittances on poverty, income distribution, and development. Although migrants from any given rural area may well be working in Egyptian cities such as Cairo and Alexandria, at present the largest income gains are made by those villagers who go to work abroad. Moreover, this study focuses on the direct, first-order effects of remittances. This means that the study largely ignores the second- and third-order effects of remittances on employment, wages, and production.[5] Given the confusion that surrounds evaluating the first-order effects of remittances, it seemed advisable to limit the scope of the analysis.

The study examines three separate relationships. Since the analysis of each of these relationships uses a different subset of the sample population, it is useful to set out the general features of the three econometric models.

The first model specifies the socioeconomic determinants of international migration. It includes data on all males over 18 years of age in the sample (N=1,859). The dependent variable is a dichotomous variable (migrant/nonmigrant), hypothesized as a function of the following variables:

$$\text{Migrant/Nonmigrant} = f(\text{Age, Marital status, Employment, Education, Age of household head, Land farmed, Males over 13 years in household, Predicted household income, Agriculturalists in village, Distance of village}). \quad (2)$$

The second model analyzes the first-order effects of remittances on poverty and income distribution. In this model selected parameters of nonmigrant households are used to predict (that is, estimate) the incomes, excluding remittances, of all once-abroad and still-abroad migrant households in round 1. Then, to be consistent in the treatment

[5]Unfortunately, few works analyze the second- and third-order effects of remittances on employment and production. Notable exceptions are Taylor (1986) and Stahl and Habib (1989).

of incomes, incomes are also predicted including remittances. Because of methodological problems associated with evaluating at what point in time the 235 households with a once-abroad migrant received their remittances, the overseas earnings of these once-abroad migrants are *not* included here. The following equations are used:

Predicted income (excluding remittances) = f (Land, Education, Household size, Males over 13 years in household), and (3)

Predicted income (including remittances) = f (Land, Education, Household size, Males over 13 years in household, Migration dummy). (4)

The third model analyzes the economic uses of remittances by using data from round 2 to compare the expenditure patterns of 75 nonmigrant households with those of 75 once-abroad households. In this analysis the expenditure patterns of still-abroad households are *not* considered, since it seemed best to interview migrants in person regarding how they spent their remittances. In this model the expenditure patterns of nonmigrant and once-abroad migrant households are compared using the equation,

Consumption/expenditure = f (Expenditure, Household size, Months abroad, Migration dummy). (5)

This overview of methodology is intended to be general. Additional variables used in each model will be discussed more specifically when the regression equations are presented.

3

WHO GOES TO WORK ABROAD?

The impact of international remittances on the rural economy depends on answers to three questions. Who goes to work abroad? How much do different income groups of migrants earn abroad? And what is their propensity to remit?

Of these questions, the first is the most basic. Analyzing the structure of migration provides the means for evaluating the effects on the rural economy of both the earnings of migrants and their propensity to remit. This chapter therefore focuses on the structure of international migration by analyzing its social and economic determinants within the context of migration and human capital models of development. Issues relating to migrant earnings and propensities to remit will be analyzed in Chapter 4.

One widely accepted theory of migration in developing countries comes from the Harris and Todaro (1970) hypothesis that individual migration decisions are based on differential expected incomes. According to this model, people choose to migrate because earning possibilities differ in spatially separated labor markets. In recent years various studies have attempted to empirically test the relevance of the Harris and Todaro model. These efforts can be broadly classified in two ways.

First, some economists have tried to explain migration by focusing on the "pull" of differential wage rates in various regions of a developing country (House and Rempel 1980; Falaris 1979; Carvajal and Geithman 1974). In these analyses the rate of internal migration within a country is typically related to aggregate characteristics of areas of origin (rural) and destination (urban), variables such as average wage, education, and employment rates. These studies encounter several problems,[6] most notably that of data aggregation. Whereas the explanatory variables in these studies relate to the total population of a particular region, Harris and Todaro recognize that migration is an individual decision made on the basis of the income that a worker expects to receive given his or her specific human capital characteristics, such as education, age, and skills. The use of aggregate census data thus tends to mask—and even obscure—critical parts of the migration decisionmaking process.

Second, in an attempt to give renewed attention to the "push" factors involved in migration, some economic demographers have begun to focus on origin areas. Whereas past efforts to test migration models have relied mainly on data gathered in destination areas, in the last five years new efforts have been directed to collecting and analyzing data gathered in rural origin areas (Bilsborrow et al. 1987; Brown and Goetz 1987; Findley 1987). Such studies have tried to relate migration to a host of individual-, household-, and community-level variables such as education, employment, family size, land farmed, and distance from urban areas. Although illuminating, these origin-level studies all fail to analyze what might be considered the *key* economic variable in any migration decision, namely, income or earnings. Without information on income in either the area of origin or destination, these studies cannot be used to test the purely economic rationale behind individual migration decisions.

[6]For a more complete list of such problems, see DaVanzo (1981, 98-100).

To overcome problems encountered in these earlier studies, a new framework is proposed here for analyzing the economic and demographic determinants of migration. First, predicted income functions are used to establish income before migration (income excluding remittances). Predicted income is then incorporated into a migration model as an individual rather than an aggregate variable, thus shedding light on the economic motivations for migration. Second, data from origin areas, collected in rural Egypt, are used to specify and estimate a model of migration that includes individual, household, and community variables. By using origin-area data on such variables as age, education, and employment, the study seeks to advance understanding of the human capital components of migration.

After summarizing the statistics from the survey and comparing characteristics of migrant and nonmigrant households, this chapter presents the predicted income functions used for identifying origin income. Finally, it specifies and estimates the migration model and presents the results.

Descriptive Statistics on and Characteristics of Migrants

Of the 1,000 households surveyed, 339 households, or 33.9 percent, reported that a household member had gone to work abroad during the 10 years prior to the survey (Table 2). Because this survey focused on migration, the recorded rate of international migration is much higher than that reported by other studies in rural Egypt to which migration data were incidental.[7] Of the 339 migrant households, 235 households had migrants who had returned home and 104 households had migrants still working abroad.

All of the international migrants in the sample were male; not a single female migrant was recorded. The overwhelming majority went to work in a neighboring Arab oil country. Seventy-four percent went to Iraq because at the time of the study Iraq did not impose any visa or work restrictions on Egyptian laborers. During the period of this study international migration from rural Egypt was essentially a supply-side phenomenon. This means that virtually any Egyptian villager who could meet the travel costs—about 500 Egyptian pounds (LE) (US$365)—and opportunity costs of international migration could, in effect, migrate. After a month or two of searching for work in Iraq, migrants could usually find an unskilled position in construction or agriculture. Smaller numbers went to Kuwait, Libya, or Saudi Arabia.

Because the volume of international migration is so high in the 1,000 households surveyed, remittances play a critical role in their economies. The share of remittances in total actual gross household income for all 1,000 households is 12.5 percent (Table 2). For migrant households, such remittances account for 30.4 percent of total actual gross income. These figures are not surprising. At the time of the survey, a village migrant working abroad in an Arab oil country could easily gross three-to-four times more per month than he could working in rural Egypt. During 1986/87 the mean monthly wage for a landless agricultural worker in the study area was LE 90 (US$65). Working abroad, that same worker could earn an average gross monthly wage of LE 350 (US$255).

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[7]In his village study in Asyut Governorate, Hopkins (1983, 1987) found that 10 percent of households had a history of working abroad. In another study of three villages in the Egyptian Delta, Commander and Hadhoud (1986, 163) reported that 7-10 percent of households had an international migrant.

Table 3—Selected characteristics of migrant and nonmigrant households, 1986/87 survey

Item	Nonmigrant Households (N = 661)	Migrant Households[a] (N = 339)	t-Statistic (Two-Tailed)
Mean household size	6.55	7.38	4.03**
Mean number of males over 13 years old in household	2.11	2.57	5.34**
Mean number of females over 13 years old in household	1.91	2.04	1.88*
Mean education of males over 18 years old in household (one if preparatory school or higher, zero otherwise)	0.18	0.23	2.28**
Mean land farmed[b] (feddans)[c]	1.07	0.72	-1.91*

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
[a]Includes households with either once-abroad or still-abroad migrants.
[b]Includes land rented and owned.
[c]1 feddan = 1.038 acres.
*Difference between households is significant at the .10 level.
**Difference between households is significant at the .05 level.

Selected characteristics of migrant and nonmigrant households are compared in Table 3. Households with migrants are significantly larger on average (7.38 persons) than households without migrants (6.55 persons), and they have significantly more males over 13 years of age (2.57 compared with 2.11).

Households with migrants also farm significantly less land (rented and owned)[8] than households without migrants. This suggests that migrant households are poorer. Although this point will be investigated in more detail later, it is important to pinpoint here the relationship between land and income. In the Egyptian countryside land generates only about half of total income.[9] This means that in any given village there are many Egyptians who do not need land to survive because they are employed outside of agriculture as government workers, artisans, and merchants. For example, only 43 percent of the households in this sample are primarily engaged in agriculture; agricultural income provides only 55 percent of total actual gross household income. Therefore, land represents an important income-generating asset in the Egyptian countryside, but it is not the only asset.

The age distribution of males over 18 years old in the sample shows that the highest percentage of migrants is concentrated in the 21-30 age category (Table 4). The mean age of migrants is lower than that of nonmigrants (31.3 versus 37.6 years), and this difference is significantly different from zero at the 5 percent level. These results are consistent with the findings of other researchers in Egypt (Fergany 1984; Khafagi 1983). They are also consistent with the hypothesis of migration theory that predicts that, in

[8]In rural Egypt, government regulations regarding land tenancy are so structured that a tenant possessing a valid, written rental contract virtually "owns" the land that he rents (Adams 1986, 90).

[9]In their 1977 study of 1,000 rural Egyptian households, Radwan and Lee found that "only 50 percent of total household income is derived from agriculture" (1986, 31).

Table 4—Distribution by age of males over 18 years old, migrants and nonmigrants, 1986/87 survey

Age[a]	Percent of Individual Migrants[b] (N = 363)	Percent of Individual Nonmigrants (N = 1,496)
Under 20	8.0	17.3
21-30	47.9	27.1
31-40	26.4	17.3
41-50	14.0	15.1
51-60	2.8	13.3
Over 60	0.8	9.9
Total	100.0	100.0
Mean age (years)	31.3	37.6

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Notes: N = 1,859. These figures are for individual migrants, not households.
[a]Indicates the ages of migrants at the time of migration.
[b]Includes both once-abroad and still-abroad migrants.

general, age will be inversely correlated with migration, since younger migrants enjoy greater lifetime returns to migration and lower relocation costs.

When the educational statuses of males over 18 years of age in the sample are compared (Table 5), the results are surprising because they do not indicate the degree of educational selectivity that is predicted by the human capital model of migration. According to that model, educated people are more likely to migrate. However, the data here suggest that at the lower levels of education, there is very little difference between migrant and nonmigrant groups. Whereas 74.9 percent of the migrants are illiterate or can only read and write simple phrases, 77.6 percent of nonmigrants also fall in this

Table 5—Distribution by education of males over 18 years old, migrants and nonmigrants, 1986/87 survey

Educational Level[a]	Percent of Individual Migrants[b] (N = 363)	Percent of Individual Nonmigrants (N = 1,496)
Illiterate	58.1	59.6
Read/write	16.8	18.0
Elementary school	0.6	1.0
Preparatory school	0.8	1.4
High school	20.7	14.4
University	1.9	4.9
Other	1.1	0.6
Total	100.0	100.0

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Notes: N = 1,859. These figures are for individuals, not households. Numbers may not add to totals due to rounding.
[a]Indicates the educational level of migrants at the time of migration.
[b]Includes once-abroad and still-abroad migrants.

category. Only at the higher levels of education—especially at the high school level—are there more migrants than nonmigrants—20.7 percent of the migrants have received a high school education compared with only 14.4 percent of nonmigrants.

Although it is difficult to explain the lack of educational selectivity shown in Table 5, it is possible to identify some reasons why high school graduates are more likely to migrate. In the Egyptian countryside the private sector is quite weak, which means that most educated people seek work with the government. But they must often wait four to five years after graduation to be assigned to a government post, so many of them choose to work abroad in the interim. A careful examination of Table 5, however, suggests that it is mainly high-school-educated males who exercise this overseas work option: the percentage of university-educated migrants (1.9 percent) is smaller than that for similarly educated nonmigrants (4.9 percent).

The premigration occupational distribution of males over 18 years of age in Table 6 is again not wholly consistent with migration theory. While that theory hypothesizes the migration of the more skilled, the data in Table 6 indicate little evidence of occupational selectivity. For instance, whereas 49 percent of all migrants work as farmers/peasants, 45.7 percent of nonmigrants fall into this category. Of all the occupational groups listed in Table 6, only one— agricultural laborers—produces a disproportionately high share of migrants. However, agricultural laborers are generally among the *least* skilled: 78 percent of agricultural laborers in the sample are illiterate. This finding is thus quite paradoxical in that it suggests that less education is actually associated with more migration. Such an outcome is the opposite of what one would expect from migration and human capital theory and will be investigated more fully below.

The distribution of landholdings between the two groups of households is generally similar (Table 7). For example, the percentage of migrant households that are landless (60.5 percent) is close to the percentage of nonmigrant households in this category (56.4

Table 6—Distribution by occupation of males over 18 years old, migrants and nonmigrants, 1986/87 survey

Occupation[a]	Percent of Individual Migrants[b] (N = 363)	Percent of Individual Nonmigrants (N = 1,496)
Farmer/peasant	49.0	45.7
Government worker	18.5	16.6
Agricultural laborer	15.4	4.8
Artisan	9.4	6.4
Merchant	4.4	5.4
Professional	2.2	2.7
Private-sector worker	. . .	1.3
Unemployed	0.6	6.4
Student	0.3	8.4
Retired	0.3	2.4
Total	100.0	100.0

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.

Notes: N = 1,859. These figures are for individuals, not households. Numbers may not add to totals due to rounding.

[a]Indicates the occupations of migrants at the time of migration.

[b]Includes once-abroad and still abroad migrants.

Table 7—Distribution of landholdings among migrant and nonmigrant households, 1986/87

Size of Landholding[a]	Percent of Individual Migrants[b] (N = 339)	Percent of Individual Nonmigrants (N = 661)
(feddans)		
0	60.5	56.4
< 1	15.6	18.2
1 – < 2	14.7	12.9
2 – < 3	3.8	6.2
3 – < 5	3.8	3.8
5 – < 10	0.9	1.2
≥ 10	0.6	1.4
Total	100.0	100.0

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.

Notes: 1 feddan = 1.038 acres. Numbers may not add to totals due to rounding.

[a]Landholdings include land rented and owned.

[b]Includes households with either once-abroad or still-abroad migrants.

percent). This small difference between households in the lowest (landless) category can be attributed to two important factors. First, as noted above, many rural Egyptian households do not need land to survive because they are employed outside of agriculture. Thus, many of the "landless" households in Table 7 are in fact employed in nonagricultural activities such as government work and private business. Second, landless agricultural households should no longer be viewed as the poorest in rural Egypt. In recent years the international migration of villagers—and especially the migration of agricultural laborers—has helped boost the wages of those belonging to the landless category. (See the Appendix for more discussion of this issue.)

Economic Characteristics of Migrants: Estimating Predicted Income Functions

To pinpoint the economic status of international migrants, it would be easiest to analyze the actual income data collected on migrant and nonmigrant households. This appears to be the procedure followed by other analysts of migration in rural Egypt (Khafagi 1983; El-Dib, Ismael, and Gad 1984). However, this procedure cannot be followed here because 104 of the 339 migrant households still have a migrant working abroad. Thus, in attempting to determine income without remittances for all households, it is not known what the per capita incomes of these 104 households would have been had these migrants stayed home. It therefore becomes necessary to predict the per capita incomes of all migrant households, both once abroad and still abroad, excluding remittances. Then, to be consistent in the treatment of incomes, it is necessary to predict the per capita incomes of all households including remittances.

In pursuit of these ends, the following procedure is used. First, the parameters predicting per capita income per household excluding remittances (PREX) are estimated from the 661 households that have not sent a migrant abroad. These parameters are then

applied to once-abroad and still-abroad migrant households in order to predict the incomes of these households without remittances.[10] The equation used is

$$PREX = LND + EDUC + HS + PROMALE13, \quad (6)$$

where

LND	= size of land farmed (rented and owned) by a household,
EDUC	= mean education of male household members over 18 years of age (one if preparatory school or higher, zero otherwise),
HS	= household size, and
PROMALE13	= males over 13 years as a proportion of household size.

In order to predict per capita incomes *with* remittances for the once-abroad and still-abroad migrant households, equation (6) is revised to include migration dummy variables. The dependent variable in the revised equation is per capita household income including remittances (PRIN). The revised equation can be written as

$$PRIN = LND + EDUC + HS + PROMALE13 + MIG1 + MIG2, \quad (7)$$

where MIG1 is households with migrants who were once abroad and MIG2 is households with migrants who are still abroad. In equation (7), PRIN for nonmigrant households is calculated by setting MIG1 and MIG2 to zero.

In equations (6) and (7), the variable for household size (HS) captures the effect of family size on household income. This variable includes migrants when the equations are applied to once-abroad and still-abroad migrant households. In these equations, it is hypothesized that LND and EDUC are positively correlated with per capita household income, whereas PROMALE13 is entered in the equations to capture the effect of the number of males on household income. The two migration dummy variables—MIG1 and MIG2—capture the impact of migration on incomes when remittances are included.

Table 8 summarizes the parameter results obtained from using equation (6) to estimate predicted per capita household income excluding remittances. All of the coefficients in Table 8 are significantly different from zero at the 5 percent level.

Table 9 reports the results obtained when equation (7) is applied to all 1,000 households, excluding remittances. It is designed to check the parameter findings reported in Table 8, which are shown to be robust. The high R^2 (0.999) in Table 9 should be disregarded because the purpose of the equation is heuristic rather than predictive. All of the coefficients in Table 9 are in the same direction and of the same magnitude as those in the preceding table, and four of the six coefficients are significantly different from zero at the 5 percent level.

[10]This method of predicting the incomes of the three sets of households assumes that the only way in which nonmigrant households differ from once-abroad and still-abroad migrant households is that migrant households had or still have a migrant. Nonmigrant and migrant households are not assumed to differ in any entrepreneurial or other sense that might affect their income in a manner apart from the relationships captured by the variables used in the predicted income equations.

Table 8—Regression to estimate predicted per capita household income (excluding remittances)

Variable	Regression Coefficient	t-Ratio
Land farmed (rented and owned) (LND)	5.540	19.713**
Mean education of male household members over 18 years (EDUC) (one if preparatory school or higher, zero otherwise)	-7.076	-3.283**
Household size (HS)	-2.355	-9.124**
Males in household over 13 years as proportion of household size (PROMALE13)	44.878	9.748**
Constant	29.406	11.214**
$R^2 = 0.469$		

Notes: Regression is based on 661 nonmigrant households. The parameters are used to estimate predicted per capita income (excluding remittances) for once-abroad and still-abroad migrant households. The dependent variable is per capita household income excluding remittances (PREX).
**Difference is significant at the .05 level.

Taken together, Tables 8 and 9 show that LND is strongly and positively correlated with predicted per capita household income. This is to be expected, given the importance of land in this and most other rural Third World areas. PROMALE13 is also strongly and positively correlated with predicted per capita household income, as is to be expected in an environment where only males are normally permitted to earn income outside of the household and where the presence of many non-wage earners (children, for example) may actually represent a burden on the household's overall economic position.

It may seem surprising that EDUC is strongly and negatively correlated with predicted per capita household income. This relationship does not mean that an educated

Table 9—Regression to estimate predicted per capita income, excluding remittances, of all households surveyed

Variable	Regression Coefficient	t-Ratio
Land farmed (rented and owned) (LND)	5.524	914.594**
Mean education of male household members over 18 years (EDUC) (one if preparatory school or higher, zero otherwise)	-7.066	-179.964**
Household size (HS)	-2.317	-519.948**
Males in household over 13 years as proportion of household size (PROMALE13)	44.869	529.709**
Migrant (once abroad) (MIG1)	-0.046	-1.459
Migrant (still abroad) (MIG2)	0.011	0.258
Constant	29.202	619.814**
$R^2 = 0.999$		

Notes: Regression includes all 1,000 households and uses migration dummy variables in order to check the consistency of the coefficients in Table 8. The dependent variable is per capita household income excluding remittances (PREX).
**Difference is significant at the .05 level.

farmer earns less than an uneducated farmer, but that educated people in rural Egypt do not usually become farmers; instead they seek government employment.[11] Not only must educated people wait years to receive a government job, but when they do begin working they start at very low wage rates—LE 30-60 (US$22-$44) per month in the countryside. All of this makes the returns to preparatory and secondary school education quite low in rural Egypt (see the Appendix for more discussion of this issue).

When equation (7) is used to estimate predicted per capita household income including remittances for once-abroad and still-abroad households, five of the six coefficients are significantly different from zero at the 5 percent level (Table 10). With only one exception, all of the coefficients in Table 10 are of the same magnitude as those in Table 9. The one exception, however, is notable. In Table 10, MIG2 is strongly and significantly correlated with predicted per capita household income including remittances, whereas in Table 9, this same variable is small and not statistically correlated with predicted per capita income excluding remittances. This dramatic switch is to be expected where remittances account for such a large share of per capita income for migrant households.

It is now possible to predict per capita household income both excluding and including remittances for nonmigrant, once-abroad, and still-abroad migrant households (Table 11). When remittances are excluded, nonmigrant households have the highest mean predicted per capita income—11.9 percent higher than that of once-abroad migrant households and 1.5 percent higher than that of still-abroad migrant households.

Although nonmigrant households have higher incomes than still-abroad migrant households had before migration, the incomes of the latter soar once a family member

Table 10—Regression to estimate predicted per capita income, including remittances, of all households surveyed

Variable	Regression Coefficient	t-Ratio
Land farmed (rented and owned) (LND)	5.585	38.264**
Mean education of male household members over 18 years (EDUC) (one if preparatory school or higher, zero otherwise)	-5.601	-5.903**
Household size (HS)	-2.955	-27.436**
Males in household over 13 years as proportion of household size (PROMALE13)	49.226	24.049**
Migrant (once abroad) (MIG1)	0.051	0.452
Migrant (still abroad) (MIG2)	6.496	41.402**
Constant	31.569	27.728**
$R^2 = 0.826$		

Notes: Regression includes all 1,000 households. The parameters are used to estimate predicted per capita income (including remittances) for once-abroad and still-abroad migrant households. The dependent variable is per capita household income including remittances (PRIN).

**Difference is significant at the .05 level.

[11]Since the late 1950s the Egyptian government has followed a policy of guaranteeing government employment to every high school and college graduate (Adams 1986, 45).

Table 11—Predicted per capita income per month of nonmigrant, once-abroad migrant, and still-abroad migrant households

Household Group	Predicted Mean Income/Capita/Household/Month	
	Excluding Remittances	Including Remittances
	(LE)	
Nonmigrant (N = 661)	33.31	33.31
Once-abroad migrant (N = 235)	29.76 (2.96)**	29.76 (2.96)**
Still-abroad migrant (N = 104)	32.81 (2.10)**	76.75 (-16.78)**

Notes: Numbers in parentheses are t-statistics (two-tailed), which measure differences between nonmigrant households and once-abroad or still-abroad households. Household income figures are predicted values and thus may not sum up to the actual figures recorded earlier. LE 1 = US$0.73.
**Differences between households are significant at the .05 level.

goes abroad. When remittances are included, the mean predicted per capita income of still-abroad migrant households is 130 percent higher than that of nonmigrant households.

Specification and Estimation of the Migration Model

The balance of this chapter uses the preceding predicted income calculations to specify and estimate a model of the social and economic determinants of migration. To be useful, such a model should take into account the separate effects of three sets of variables—individual, household, and community or village-wide factors—on the decision to migrate. Omission of any one of these sets of variables could result in a misspecified model or biased estimates of the causal relationships of going to work abroad or both.[12]

The decision to migrate may be viewed as a process whereby an individual i in household j in village k considers information and weighs consequences at the individual, household, and village levels. The simplest form of such a model is

$$M_{ijk} = f(X_{ijk}, X_{jk}, X_k), \quad (8)$$

where

M_{ijk} = probability of migration of the *ith* individual in the *jth* household in the *kth* community,

X_{ijk} = individual-level variables,

X_{jk} = household-level variables, and

X_k = community or village-wide variables.

[12]For a discussion of the importance of including village-level variables in estimated migration equations, see Bilsborrow (1981).

In this model the dependent variable (M) is dichotomous— migration (once-abroad or still abroad) or no migration. It can be hypothesized to be a function of the following independent measures.

Individual-level Variables

Age (for migrants, measured at the time of migration) (AGE),
Marital status (one if married, zero otherwise) (MAR),
Employment (operationalized as a set of dummy variables explained below) (EMP), and
Education (operationalized as a set of dummy variables explained below) (EDUC).

Household-level Variables

Land farmed (rented and owned) by household (LND),
Males in household over 13 years of age (MALE13),
Age of household head (AGEHH), and
Predicted per capita household income excluding remittances (PREX).

Village-level Variables

Percent of agriculturalists (farmers/peasants, agricultural laborers) in village owning or renting less than 0.5 feddan (AGR), and
Distance (in kilometers) of the village from the main road to Cairo (DIS).

It may be useful to explain several of these independent variables in relation to the outcomes hypothesized by migration and human capital models of development.

For employment, dummy variables are created to capture the effect of employment on migration. For both once-abroad and still-abroad migrant households, these dummy variables are measured at the time of migration. EMP1 takes a value of 1 if the male is an agricultural laborer and zero otherwise. EMP2 takes a value of 1 if the male is a government worker and zero otherwise. Since agricultural laborers are uneducated and government employees are usually high-school educated, it is expected from the human capital model that the EMP1 coefficient will be negative and the EMP2 coefficient positive.

Dummy variables are also created to capture the effect of education on migration. EDUC1 takes a value of 1 if the male has no education (is illiterate) and zero otherwise. EDUC2 takes a value of 1 if the male has completed more than an elementary school education and zero otherwise. Once again, because migration theory generally predicts the migration of the more educated, EDUC1 is expected to have a negative coefficient and EDUC2 a positive coefficient.

It is difficult to predict a priori the effect of land on migration. Land is positively correlated with income in most rural Third World areas, and it has frequently been observed that higher-income people have a greater propensity to migrate (Stahl 1982; Connell et al. 1976). However, landownership entails responsibilities, which well may inhibit migration among landowners (Shaw 1974). By the same token, landlessness implies fewer ties to community; therefore landless people—especially landless agricultural workers—may be more likely to migrate (El-Dib, Ismael, and Gad 1984; Morrison 1980).

The variable MALE13 refers to the number of males aged 13 and above in the household. According to migration literature, large families or families with more males

have a higher propensity to produce migrants (Roberts 1982; Moock 1973). Because females in rural Egypt do not normally work outside of the home, more males are needed to take over the work of the migrant member. It is therefore hypothesized that the MALE13 coefficient will be positive.

The variable AGEHH refers to the age of the household head. For both once-abroad and still-abroad migrant households, this variable is measured at the time of migration. Some analysts (Lipton 1980; Connell et al. 1976) believe that migration is in part a life-cycle phenomenon in which families with males in their early twenties are more likely to participate. These studies suggest that families with older household heads should have a higher propensity to produce migrants. It is therefore hypothesized that the AGEHH coefficient will be positive.

Like land, the impact of income upon migration is difficult to predict. Some studies have found a positive correlation between family income and migration (Lipton 1980; Nelson 1976), while others have found just the opposite (El-Dib, Ismael, and Gad 1984; Wilkie 1971). It should, however, be noted that the findings of many of these earlier studies are weakened by their reluctance to use predicted income functions in order to accurately establish family income *before* migration. In this study, predicted per capita income excluding remittances (PREX) for each household is calculated from equation (6).

AGR measures the percentage of agriculturalists (farmers/peasants and agricultural laborers) in the village owning or renting less than 0.5 feddan. According to the migration literature, areas with a high incidence of landless or near-landless agricul-turalists may produce more migrants (Lipton 1980; Shaw 1974). It is thus hypothesized that the AGR coefficient will be positive.

DIS attempts to capture the relationship between proximity to the main road to Cairo and migration. According to most studies, distance from roads and major urban areas typically reduces the propensity to migrate (Bilsborrow et al. 1987; Thomas and Croner 1975; Ravenstein 1885). It is therefore hypothesized that the DIS variable will be negative.

Empirical Results of the Model

Equation (8) is run for all 1,859 males over 18 years of age in the sample using a logit regression. A stepwise procedure is needed because the variable PREX is a predicted value that is estimated from three other variables in the equation: EDUC, LND, and MALE13. For this reason, equation (8) is run in four steps, with each step including a different variable. The final, fifth step includes all of the specified variables.

In steps 1, 2, and 4 of the regression, 5 of the 12 variables are significantly different from zero at the 10 percent level (Table 12). For the full regression, 6 of the 12 variables are significant at this level of confidence.

Beginning with the individual-level variables—AGE, MAR, EMP, and EDUC—many of the signs are consistent with standard economic theories of human capital and migration. The variable AGE is, as expected, negative and significant because younger males enjoy greater returns to migration and lower relocation costs.[13]

[13]Estimating migration equation (8) with an age and an age squared variable produces the expected relationship: both variables are significant, with the age variable being positive and the age squared variable being negative.

Table 12—Logit regression analysis of international migration for all males surveyed

Variable	Stepwise Equations (1)	(2)	(3)	(4)	Full Equation (5)
Age of male (AGE)[a]	-0.050 (-7.580)**	-0.052 (-8.032)**	-0.051 (-7.836)**	-0.051 (-7.795)**	-0.050 (-7.546)**
Marital status of male (MAR) (one if married, zero otherwise)	1.431 (7.851)**	1.360 (7.916)**	1.348 (7.803)**	1.298 (7.451)**	1.474 (7.669)**
Employment status of male (EMP1) (one if agricultural laborer, zero otherwise)	1.227 (5.877)**	1.127 (5.357)**	1.207 (5.769)**	1.209 (5.790)**	1.141 (5.401)**
Employment status of male (EMP2) (one if government worker, zero otherwise)	0.005 (0.025)	0.078 (0.465)	0.084 (0.509)	0.066 (0.397)	-0.017 (-0.088)
Age of household head (AGEHH)[a]	-0.026 (-5.503)**	-0.024 (-5.051)**	-0.025 (-4.657)**	-0.026 (-5.426)**	-0.025 (-4.693)**
Educational status of male (EDUC1) (one if no education, zero otherwise)	0.156 (0.873)	...	...	...	0.137 (0.765)
Educational status of male (EDUC2) (one if more than elementary school, zero otherwise)	0.361 (1.678)*	...	...	...	0.385 (1.779)*
Land farmed (rented and owned) (LND)	...	-0.107 (-2.675)**	...	...	-0.119 (-2.482)**
Number of males over 13 years in household (MALE13)	...	...	-0.104 (-0.213)	...	0.023 (0.457)
Predicted per capita household income (excluding remittances) (PREX)[b]	...	...	...	-0.007 (-1.684)*	0.001 (0.291)
Percent of agriculturalists in village farming less than 0.5 feddan (AGR)[c]	-0.001 (-0.222)	-0.003 (-0.517)	-0.002 (-0.284)	-0.002 (-0.328)	-0.003 (-0.430)
Distance of village from main road to Cairo (DIS)	-0.001 (-0.088)	-0.002 (-0.261)	-0.002 (-0.238)	-0.001 (-0.149)	-0.001 (-0.046)
Constant	0.230 (0.447)	0.686 (1.399)	0.537 (1.089)	0.790 (1.545)	0.288 (0.513)

Notes: Includes 1,859 males over 18 years of age. Numbers in parentheses are t-statistics (two-tailed). The dependent variable in the regression is migration (M). 1 feddan = 1.038 acres.

[a]For once-abroad and still-abroad migrants, ages of males (AGE) and ages of households heads (AGEHH) are measured at the time of migration.

[b]Predicted per capita household income (excluding remittances) is calculated from equation (6).

[c]The term agriculturalists includes all those employed as either farmer/peasants or agricultural laborers.

*Difference is significant at the .10 level.

**Difference is significant at the .05 level.

Although migration theory has little to say about the effects of marriage on migration, it is interesting to note that the variable MAR (marital status) is positive and significant; that is, marriage tends to encourage migration. This finding may reflect the relatively high mean age (31.3 years at time of migration) of migrants in the sample. In the Egyptian countryside, males—especially uneducated males working in agriculture—tend to marry in their early to mid-twenties.

The results for the EMP1 and EMP2 variables are not consistent with expectations from migration theory. Both of these variables are contrary to predicted outcomes: the EMP2 variable (government worker) is not statistically significant, while the EMP1 variable (agricultural laborer) is significant and positive, rather than negative. Since most agricultural laborers are illiterate, the latter outcome suggests that less education is associated with more migration. A partial explanation for this paradoxical outcome may be that in the sample 80 percent of agricultural laborers belong to a landless household; in other words landlessness combined with primary employment in agriculture may push people abroad. This explanation, however, implies that landlessness and employment are more important determinants of migration than education. This point will be investigated later.

The results for the EDUC1 and EDUC2 variables also tend to vary from expected outcomes. The variable EDUC2 (more than elementary education) is positive and significant as expected, but EDUC1 (no education) has neither the right sign nor significance. Although statistically insignificant, the outcome for the EDUC1 variable tends to reinforce the idea that education may not necessarily have the simple positive effect on migration that is predicted by migration and human capital theory. This finding parallels that of Bilsborrow et al. (1987: 201), who found that in rural Ecuador, "it is the less educated who migrate more, because they have to."[14] More research is needed to delineate the exact character of the relationship between education and migration.

Turning now to the household-level variables (LND, AGEHH, MALE13, and PREX), the effect of LND on migration is negative and significant according to regression (2) of Table 12. Evidently, the responsibilities of renting or owning land tend to keep men at home. But the variable AGEHH has a negative and significant effect on migration. This unexpected outcome suggests that migration is *not* a life-cycle phenomenon. According to the data, males from families with older heads—and potentially more "age-eligible" migrants—are less likely to migrate abroad.

Regression (3) in Table 12 shows that the number of males over age 13 in the household (MALE13) has a negative effect on migration. Although it is not statistically significant, this is a surprising finding, since the migration literature generally suggests a positive relationship between number of household males and propensity to migrate. Part of the inconsistency here may be caused by the method of data aggregation. The unit of analysis for these regression equations is the individual male. However, when the unit of analysis becomes the individual *household*, the results tend to support a positive relationship between number of males and propensity to migrate. Whereas 27.0 percent of the households with fewer than two males over age 13 have a migrant, fully 56.9 percent of the households with five or more males have a migrant.

[14]According to Bilsborrow et. al (1987, 201), in rural Ecuador "migration propensity peaks at the primary-certificate level for males, with further education associated with lower migration."

Of special interest to this study is the effect of the income variable (PREX) on migration. According to regression (4) in Table 12, this variable is negative and significant. These results suggest that, for the entire set of males over 18 years, males from higher-income households (remittances excluded) are *less* likely to migrate abroad.[15]

Neither of the village-level variables (AGR or DIS) have a statistically significant effect on migration.[16] Such results are unexpected inasmuch as migration studies in other developing countries (Bilsborrow et al. 1987; Brown and Goetz 1987; Connell et al. 1976) have found these variables to have a significant influence on migration. Perhaps the lack of statistical significance here lies in the nature of the data set. The data in this study are drawn from three neighboring villages. Among these three communities, rates of migration abroad are surprisingly uniform, varying from a high of 20.6 percent of all males over 18 years in one village to a low of 18.7 percent. The lack of variation in levels of migration between villages, coupled with the close proximity of these communities to one another within a similar agricultural area, means that neither of the village-level variables had a significant influence on migration.

Table 13 extends and refines the logit results reported in Table 12 by presenting a list of predicted probabilities for international migration. These probabilities are calculated from regression (4), since this is the equation containing the predicted income variable (PREX). When all variables are at the mean, any male in the sample of 1,859 males has an 18.7 percent probability of going to work abroad. Yet when the values of different variables vary from the mean, the probability of international migration also changes. For instance, a male from a household with a relatively low predicted per capita monthly income (excluding remittances)—LE 20 (US$15)—has a 20.6 percent probability of migrating, whereas a male from a household with a much higher predicted per capita monthly income—LE 35 (US$26)—has a probability of only 18.5 percent. These figures serve to emphasize the point that the per capita income status of the household before migration is not the most important factor causing males to migrate. Rather employment status in agriculture combined with lack of land is the leading factor. Row (1) of Table 13 shows that agricultural laborers have the highest probability of migration: 57.7 percent. In their case, poverty of land combines with employment in agriculture to "push" people abroad.

[15]It should be emphasized that these findings pertain only to the whole set of males over 18 years old. As will be shown below, when migrants are divided into their once-abroad and still-abroad categories, the still-abroad category of migrants is dominated by males from higher-income households, excluding remittances (see Table 16).

[16]Estimating equation (8) without the village-level variables (AGR and DIS) produces no change in either the signs or the significances of any of the remaining independent variables.

Table 13—Predicted probabilities of international migration for all males, using logit results

Probability Situation	Predicted Probability of Migration Abroad[a]
	(percent)
All independent variables at the mean, *except* Employment status is agricultural laborer (EMPI = 1)	57.7
All independent variables at the mean, *except* Age of male is 25 years (AGE = 25)	33.3
All independent variables at the mean, *except* Male is married (MAR = 1)	27.5
All independent variables at the mean *except* Predicted per capita household income per month (excluding remittances) is LE 20 (PREX = 20)	20.6
All independent variables at the mean (no exceptions)	18.7
All independent variables at the mean, *except* Predicted per capita household income per month (excluding remittances) is LE 35 (PREX = 35)	18.5
All independent variables at the mean, *except* Employment status is *not* agricultural laborer (EMP = 0)	17.2
All independent variables at the mean, *except* Age of male is 40 years (AGE = 40)	15.5
All independent variables at the mean, *except* Male is *not* married (MAR = 0)	7.5

Notes: Includes 1,859 males over 18 years of age. LE 1 = US$0.73.

[a]Predicted probability of migration (PR) is calculated from regression (4) in Table 12 using the equation

$$PR = (e^{\beta x})/(1 + e^{\beta x}),$$

where β = coefficient of logit regression and x = the value of the independent variable.

4

INTERNATIONAL REMITTANCES AND INCOME INEQUALITY

Even when international remittances are quite large, there is no agreement in the literature regarding the effects of these resource transfers on income distribution. Gilani, Khan, and Iqbal (1981, Part 1: 41) in their study of international remittances of Pakistani migrants argue that, on the whole, remittances "worsened income distribution in the country." According to these authors, international remittances had a negative impact on income distribution because they were earned mainly by upper-income villagers. Other studies, however, suggest a very different outcome. For example, in their study of two Mexican villages, Stark, Taylor, and Yitzhaki (1986) found that internal and international remittances had an egalitarian effect on village income distribution.[17]

To shed additional light on this debate, the results of the migration and predicted income functions reported in Chapter 3 are used in this chapter to analyze the effects of international remittances on rural income distribution. This analysis focuses on the static, first-order effects of remittances on income distribution, evaluating the change that occurs in income inequality when remittances are included, compared with the situation when they are excluded. In this analysis the remittances earned by the 104 households that still have a migrant abroad are included. However, because of the difficulty of determining at what point in time the 235 households with once-abroad migrants received their remittances, the overseas earnings of these migrants are *not* included in the calculations.

Remittances, Earnings, and the Propensity to Remit

At the outset it is necessary to address two questions remaining from the previous chapter. First, how much do different income classes of migrants earn abroad? And second, what is the propensity of different income groups to remit?

The first of these questions is addressed by analyzing both the pattern of income earned abroad and the length of time abroad (Table 14). Both mean monthly income abroad and months spent abroad are distributed fairly evenly among the various quintiles. For example, the actual (as opposed to the predicted) mean monthly income abroad for the bottom two income quintiles is higher than that recorded for the top quintile. Similarly, the mean number of months spent abroad is highest for still-abroad migrants from the second lowest quintile. On the whole, there seems to be no real difference between migrants from low-income households and those from high-income households either in earnings or time spent abroad. This conclusion is underscored by the

[17]For international remittances alone, Stark, Taylor, and Yitzhaki (1986) found that remittances from abroad had an equalizing influence on incomes in one village and an unequalizing influence in another.

Table 14—Actual income earned and months spent abroad by still-abroad migrants, ranked by predicted per capita household income, excluding remittances, 1986/87

Rank[a]	Number of Still-Abroad Migrants in Group	Actual Mean Monthly Income Earned Abroad	Mean Number of Months Spent Abroad	Total Actual Mean Income Earned Abroad[b]
(percentile)		(LE)		(LE)
Lowest 20	25	372.60 (153.02)	20.3 (7.7)	7,563.78
Second 20	17	370.59 (145.84)	23.6 (12.5)	8,745.92
Third 20	15	390.67 (139.72)	23.2 (11.3)	9,063.54
Fourth 20	27	353.70 (81.95)	18.4 (9.1)	6,508.08
Highest 20	34	367.65 (86.94)	22.2 (10.3)	8,161.83
Highest 10[c]	17	385.29 (96.44)	22.2 (10.0)	8,553.43

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.

Notes: The numbers in parentheses are standard deviations of mean. LE 1 = US$0.73.

[a]The 1,000 households surveyed are ranked in percentiles by predicted per capita income excluding remittances.

[b]Total actual mean income earned abroad is derived by multiplying the monthly income by the number of months spent abroad.

[c]The top 10 percent are included in the numbers for the top 20 percent.

data in the last column, which show that still-abroad migrants from the lower-middle groups—the second and third income quintiles—earned the highest total actual mean incomes abroad.

The propensity to remit income earned abroad also does not vary much by quintile (Table 15). The data show that still-abroad migrants from the middle group—the third income quintile—have the highest mean propensity to remit. Still-abroad migrants from the top income quintile have only a slightly higher mean propensity to remit than migrants from the bottom two quintiles.

The results shown in Table 15 differ from those studies that suggest that the propensity to remit varies positively with income level (International Labour Organisation [1987] cited in Kazi 1989; Gilani, Khan, and Iqbal 1981). However, because of methodological problems, it is not clear whether these earlier studies were measuring propensity to remit on the basis of income excluding remittances, income including remittances, or even migrant income earned abroad.[18] Moreover, other studies have

[18]Neither the International Labour Organisation (1987) survey cited in Kazi (1989, Table 6, 16) nor the Gilani, Khan, and Iqbal (1981) study use predicted income functions to establish incomes excluding remittances for migrant households. Moreover, the International Labour Organisation study calculates propensities to remit on the basis of "income category abroad."

Table 15—Propensity to remit income for still-abroad migrants, ranked by predicted per capita household income, excluding remittances

Rank[a]	Number of Still-Abroad Migrants in Group	Mean Propensity to Remit Income Earned Abroad[b]	Standard Deviation
(percentile)		(percent)	
Lowest 20	25	0.62	0.14
Second 20	17	0.63	0.13
Third 20	15	0.66	0.11
Fourth 20	27	0.62	0.12
Highest 20	34	0.65	0.09
Highest 10	17	0.66	0.09

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.

[a]The 1,000 households surveyed are ranked in percentiles by predicted per capita income excluding remittances.

[b]Propensity to remit income for each migrant is defined as

Propensity to remit = Remittances/Total income abroad.
Total income abroad = (Months abroad) (Monthly income abroad).
Remittances = Total income abroad – Travel costs – Housing costs abroad – Food costs abroad.

found that, although the absolute amount of transfers sent home by rural migrants increases with income, "transfers sent as a proportion of income decline" (Knowles and Anker 1981, 211). On the basis of these studies, the average propensities to remit recorded in Table 15 should be considered reliable, especially since they are of the same general magnitude as those estimated for Egyptian international migrants by Egypt's National Specialized Councils (1983)—56 percent. This figure includes both remittances and "real savings" of Egyptians abroad.

The findings in Tables 14 and 15 are important because they show *no* major variations by income class among still-abroad migrants in income earned abroad, time spent abroad, or propensity to remit. Multiplying the results of column (4) of Table 14 by column (2) in Table 15 shows that the second and third quintiles actually remitted the most money (LE 5,509 and LE 5,982) whereas the highest income group remitted only LE 5,305.

Remittances and the Number of Migrants

In order to see whether lower-middle-income groups produce as many migrants as those from higher-income groups, Table 16 presents the distribution of once-abroad and still-abroad migrants through the income order. The total number of migrants abroad was drawn fairly evenly from all income groups [column (1)]. In fact, the lowest quintile actually produced one of the highest shares of total migrants. But the distribution of migrants changed considerably between the once-abroad and still-abroad categories. The shares of the two lower-middle income groups—the second and third income quintiles—are much smaller in the still-abroad category. At the same time, the fourth and the highest quintiles increased their shares of migrants by 47 and 147 percent, respectively, between the once-abroad and still-abroad categories. Column (3) shows that the highest income quintile has the largest share of migrants in the still-abroad category.

Table 16—Distribution of individual imigrants among income quintiles ranked by predicted per capita household income, excluding remittances

Rank[a]	Percent of All 363 Individual Migrants in Group (1)	Percent of 244 Once-Abroad Migrants in Group (2)	Percent of 119 Still-Abroad Migrants in Group (3)	Percent of Change Between Columns (2) and (3) (4)
(percentile)				
Lowest 20	22.87	23.77	21.01	-11.61
Second 20	18.46	20.49	14.29	-30.26
Third 20	22.87	27.87	12.61	-54.75
Fourth 20	18.46	15.98	23.54	47.25
Highest 20	17.36	11.89	29.41	147.35
Highest 10	9.09	6.56	14.26	117.38

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.

[a]The 1,000 households surveyed are ranked in percentiles by predicted per capita income excluding remittances.

Remittances and Income Inequality

The disproportionate share of still-abroad migrants produced by the upper-income groups may have a negative effect on income distribution. To evaluate this effect, it is necessary to compare the first-order changes that occur in income distribution when remittances are excluded with those that occur when remittances are included. As noted above, the latter situation includes the remittances of those 104 households that still have a migrant abroad.

In Table 17, when remittances are included, households from the lower-middle-income quintiles benefit less than households in other quintiles. The share of total predicted per capita income going to households in the second income quintile declines by 9.6 percent in column (3), when remittances are included, while in column (6) the predicted mean income of households in this group increases by only 3.2 percent. In contrast, the percentage of total predicted per capita income going to households in the highest income quintile increases by 16.0 percent and the predicted mean income of these households rises by 32.4 percent. When remittances are included, the largest percentage increases in both relative and mean income are recorded for the highest quintile.

Table 17 also shows that the distribution of rural household income worsens when remittances are included. The Gini coefficient of inequality increases from 0.233 to 0.290 with remittances. Theil's entropy measure also rises, climbing from 0.105 to 0.138. Both of these measures of inequality suggest a rather sharp increase in rural inequality when remittances from abroad are included in per capita household income.[19]

[19]It should be noted that the use of predicted income figures to calculate these changes in inequality may have the effect of *underestimating* the actual degree of increase in income inequality. Depending on the percentage of variance explained by the predicted equations, the predicted income figures will have a smaller variance than actual incomes. This may cause estimates of changes in the degree of inequality to be smaller than they actually were.

Table 17—Effects of international remittances on rural per capita household income distribution, 1986/87

Rank[a]	Percent of Predicted per Capita Income		Percent of Change Between Columns (1) and (2)	Mean Predicted per Capita Income per Month		Percent of Change Between Columns (4) and (5)
	Excluding Remittances (1)	Including Remittances (2)	(3)	Excluding Remittances (4)	Including Remittances (5)	(6)
(percentile)				(LE)		
Lowest 20	9.80	8.96	-8.63	15.89	16.57	4.24
Second 20	15.31	13.84	-9.56	24.81	25.60	3.18
Third 20	18.78	17.18	-8.50	30.45	31.78	4.39
Fourth 20	23.03	21.64	-6.02	37.33	40.03	7.22
Highest 20	33.08	38.38	16.01	53.63	70.99	32.36
Highest 10	38.20	49.67	30.00	61.94	91.86	48.32
Gini coefficient[b]	0.233	0.290	24.46	...	...	...
Theil's entropy measure[c]	0.105	0.138	31.20	...	...	...

Note: LE 1 = US$0.73.

[a]The 1,000 households surveyed are ranked in percentiles by predicted per capita income excluding remittances.

[b]The Gini coefficient is an index commonly used to measure the inequality of a distribution of income. It can be represented as

$$G = 1 + \frac{1}{H} - \frac{2}{HY} \sum_{1}^{H} p(h)\, y^h,$$

where

H = number of units,
y^h = quantity over which inequality is measured,
Y = total inequality, and
p(h) = rank assigned to household h ranked by y.

[c]Theil's entropy measure is another index used to measure inequality of distribution of income. Scaled to lie between 0 and 1, it can be expressed as

$$T = 1 - \frac{Y}{H} \exp\left(-\sum \frac{y^h}{Y} \operatorname{Ln} y^h\right).$$

Households in the lower-middle income quintiles—the second and third income groups—had far fewer migrants abroad at the time of the survey than those in the two highest income quintiles. The top quintiles—the fourth and fifth income groups—now had the largest share of migrants abroad. More than any other factor, it is the disproportionate number of still-abroad migrants belonging to the upper-income groups that serves to explain the sharp rise in rural inequality that occurs when remittances from abroad are included in per capita income.

It should, however, be noted that this negative effect is neither automatic nor inevitable. The data clearly show that at the time of the survey remittances had a negative effect on income distribution because upper-income groups had many more migrants abroad. Yet, in the once-abroad category of migrants, the lower-income groups sent virtually the same number of migrants abroad as households in the upper-income groups. If the number of migrants abroad had continued to be as evenly distributed, it may be logically inferred that remittances would also have had a more equitable effect on rural income distribution.

Remittances and the Sources of Income Inequality

Another way to examine the impact of international remittances on rural inequality is to measure the contribution of remittances to overall income inequality. This can be done by determining what proportions of overall income inequality can be attributed to the various sources of income: agricultural income, nonagricultural income, and international remittances. Such an exercise can help answer the question, What is the role of remittances in determining overall income inequality?

Shorrocks (1982) has shown that the results of decomposing any inequality index depend on the rule used in the decomposition procedure.[20] For this reason, it seems best to base the decomposition analysis on two inequality indices—the coefficient of variation and the Gini coefficient—rather than on a single measure, in order to check the robustness of the results.

The inequality decomposition based on the coefficient of variation can be developed following Shorrocks (1982) and Ercelawn (1984). Let total income, y, consist of income from k sources. The variance of total income, σ^2, can be written as the sum of variances of each source of income, σ_i^2, and of the covariances between sources of income, σ_{ij}:

$$\sigma^2 = \Sigma\sigma_i^2 + \Sigma_{i \neq j}\sigma_{ij}. \tag{9}$$

The contribution of the *ith* source of income to total income variance consists of the *ith* income variance and the part of the covariances allocated to the *ith* source. This leads to the expression:

$$\sigma^2 = \Sigma\sigma_{iy}, \tag{10}$$

where the (absolute) contribution of the *ith* source is measured by its covariance with total income. This relationship can be rewritten to express the contribution in relative terms. The relative contributions remain the same whether inequality is measured by the variance or by the coefficient of variation; because the coefficient of variation places more emphasis on relative (rather than absolute) inequality, however, this measure will be adopted here. The decomposition equation corresponding to the coefficient of variation can be expressed as

$$\Sigma w_i c_i = 1;\ w_i = (\mu_i/\mu);\ c_i = \rho_i\,(\sigma_i/\mu_i)/(\sigma/\mu), \tag{11}$$

where $w_i c_i$ is the so-called factor inequality weight of the *ith* source in overall inequality; μ_i and μ are the mean income from the *ith* source and from all sources, respectively; c_i is the relative concentration coefficient of the *ith* source in overall inequality; and ρ_i is the correlation coefficient between the *ith* income source and total income.

Turning to the inequality decomposition of the Gini coefficient, Pyatt, Chen, and Fei (1980) have shown that the Gini coefficient of total income, G, can be written as

$$G = (2/n\mu)\ \mathrm{Cov}(y,r), \tag{12}$$

[20]According to Shorrocks (1982, 199-200), in the absence of any restrictions, for any inequality measure, the inequality of total income can be allocated in many ways between the components of total income.

where n is the number of observations, y refers to the series of total incomes, and r refers to the set of corresponding ranks. On this basis the Gini coefficient of the *ith* source of income, G_i, can be expressed as

$$G_i = (2/n\mu)\ \mathrm{Cov}(y_i, r_i), \tag{13}$$

where y_i and r_i refer to the series of incomes from the *ith* source and corresponding ranks, respectively. Since total income is the sum of sources of income, the covariance between total income and its rank can be written as the sum of covariances between each income source and the rank of total income. Equations (12) and (13) can then be used to express the total income Gini as a function of the source Ginis:

$$G = \Sigma[(\mu_i/\mu)R_iG_i], \tag{14}$$

where R is the "correlation ratio" expressed as

$$R_i = \frac{\mathrm{cov}(y_i, r)}{\mathrm{cov}(y_i, r_i)} = \frac{\text{covariance between income source amount and total income rank}}{\text{covariance between income source amount and income source rank}}. \tag{15}$$

The decomposition equation corresponding to the Gini coefficient can then be expressed as

$$\Sigma w_i g_i = 1;\ w_i = (\mu_i/\mu);\ \text{and}\ g_i = R_i\,(G_i/G), \tag{16}$$

where w_ig_i is the factor inequality weight of the *ith* source in overall inequality and g_i is the relative concentration coefficient of the *ith* source in overall inequality.

Decomposing the coefficient of variation and the Gini coefficient provides two ways of measuring the contribution of international remittances to overall income inequality. First, it helps determine whether inequality in remittance income serves to increase or decrease overall income inequality. Second, it helps identify how much of the overall income inequality is due to remittance income.

An income source (such as remittances) can be defined as increasing or decreasing inequality on the basis of whether a larger share of that income source leads to an increase or decrease in overall income inequality. From the decomposition equations, it follows that the *ith* income source either increases or decreases inequality, depending on whether the relative concentration coefficient (c_i or g_i) is greater or less than unity.[21] The results are reported in Table 18. In this table, all of the income figures are based on the predicted per capita household incomes including remittances calculated above.[22]

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[21]This analysis ignores feedback effects, that is, the effects that a change in the share of any source of income might have on distribution within that income source. Of course, such an assumption might be quite unrealistic for large changes in the share of any income source.

[22]Predicted per capita incomes (including remittances) for each source of income—agricultural, nonagricultural, and international remittances—are calculated on the basis of the proportion of actual gross income (including remittances) recorded for each source of income.

Table 18—Decomposition of inequality: Relative concentration coefficients of sources of income in overall inequality

Source of Income	Coefficient of Variation[a]	Gini Coefficient[b]
Agricultural	0.721	1.097
Nonagricultural	0.906	0.374
Remittances	3.621	2.954

Note: All estimates are based on predicted per capita household income including remittances.
[a]The equation for concentration of the coefficient of variation is

$$c_i = \rho_i (\sigma_i / \mu_i)/(\sigma/\mu).$$

[b]The equation for concentration of the Gini coefficient is $g_i = R_i (G_i / G)$.

For agricultural income, the alternative decompositions give contradictory results.[23] Decomposition of the coefficient of variation reveals that agricultural income represents an inequality-decreasing source of income, whereas decomposition of the Gini coefficient suggests just the opposite. However, the two decompositions agree that international remittances increase income inequality. This finding is quite consistent with the results recorded in Table 17. As will be shown, remittances increase inequality because there is a high degree of inequality within remittance income, as well as a high degree of correlation between remittance and total income.

The relative factor inequality weights, which measure the contribution of a particular income source to overall inequality, are presented in Table 19. Shorrocks (1983) has shown how widely such factor inequality weights can vary depending on the index used to measure overall income inequality, and this is borne out by the results. In the decomposition of the coefficient of variation, remittance income has the smallest factor inequality weight and makes the smallest contribution to overall income inequality. In the Gini decomposition, however, remittance income takes second place in terms of its contribution to overall inequality.[24] In both decompositions, agricultural income makes the largest contribution to overall inequality. Depending on the decomposition measure, agricultural income accounts for between 43.0 and 65.5 percent of overall income inequality.

These results can be explained by analyzing the three elements of the Gini decomposition procedure: (1) the weight of the income source; (2) the source Gini; and (3) the correlation ratio between the income source and total income inequality (Table 20).

The first row of Table 20 reveals that agricultural income is the most important income source by far, accounting for 57.7 percent of all income. In contrast, remittance income accounts for only 9.6 percent of total income. Row (2) of the table, however, shows that remittance income has the highest source Gini and is thus the least evenly

[23]As Ercelawn (1984, 7) has shown, this contradiction occurs either when $c_i < 1$ and $g_i \geq 1$ or when $c_i \geq 1$ and $g_i < 1$. The contradiction seems to reflect the greater sensitivity of the Gini coefficient to middle-income groups and of the coefficient of variation to extreme incomes.

[24]According to Ercelawn (1984, 9), such contradictory results occur because either $(g_j/g_i)<1$ and $(c_j/c_i)> 1$ or $(g_j/g_i)> 1$ and $(c_j/c_i)<1$.

Table 19—Decomposition of inequality: Factor inequality weights of sources of income in overall inequality

Source of Income	Coefficient of Variation[a]	Gini Coefficient[b]
Agricultural	0.430	0.655
Nonagricultural	0.295	0.122
Remittances	0.275	0.224
Total	1.000	1.000

Note: All estimates are based on predicted per capita household income, including remittances.

[a]The factor inequality weight for the coefficient of variation is $w_i c_i$, where $w_i = \mu_i / \mu$, $c = \rho_i (\sigma_i / \mu_i) / (\sigma / \mu)$.

[b]The factor inequality weight for the Gini coefficient is $w_i g_i$, where $w_i = \mu_i / \mu$, $g_i = R_i (G_i / G)$.

distributed income source. This is because only 104 of 1,000 households receive international remittances. Row (3) reports the correlation ratios between income source and total income inequality. The figures show that inequality in remittance income is highly correlated with overall income inequality.

The data in Table 20 serve to explain the factor inequality weights reported in the preceding table. Agricultural income, for example, has the largest factor inequality weight and makes the largest contribution to overall inequality because it has a large share of total income and a middle-sized source Gini, and it is moderately correlated with overall income inequality. In contrast, remittance income makes only a small contribution to overall inequality. While remittance income has a large source Gini and is strongly correlated with overall income inequality, it has only a very small share of total income.

Table 20—Decomposition of overall income inequality using a Gini coefficient

Item	Agricultural Income	Nonagricultural Income	Remittance Income	Total
Source income weight[a]	0.577	0.326	0.096	1.00
Source Gini[b]	0.509	0.675	0.932	. . .
Correlation ratio between source and total inequality[c]	0.626	0.161	0.924	. . .

Notes: All estimates are based on predicted per capita household income, including remittances.

[a]Source income weight $= w_i$.

[b]Source Gini, $G_i = 2 / n\mu_i \operatorname{cov}(y_i, r_i)$.

[c]Correlation ratio between source and total inequality,

$R_i = \operatorname{cov}(y_i, r) / \operatorname{cov}(y_i, r_i) =$ covariance between source income amount and total income rank / covariance between source income amount and source income rank.

5

INTERNATIONAL MIGRATION, REMITTANCES, AND THE POOR

In the ongoing debate among policy researchers concerning the impact of international remittances on the poor, the basic issue is the ability of poor households to send migrants abroad. Stahl (1982, 883), for example, writes that "migration, particularly international migration, can be an expensive venture. Clearly it is going to be the relatively better-off households which will be more capable of [producing international migrants]."[25] Other analysts, however, suggest just the opposite. For instance, Burki (1984, 679), claims that in rural Pakistan, "it was primarily the very poorest, the bottom 20 percent, that contributed to the stream of [international] migration [to the Middle East]."

Four steps are taken in this chapter toward clarifying this issue: first, a poverty line is constructed for identifying the poor in rural Egypt; second, the effects of international remittances on the poor are evaluated; third, the ability of poor households to produce migrants is examined; and finally, the socioeconomic determinants of migration for the poor are analyzed.

The Poor in Rural Egypt

At the outset it is necessary to identify who the "poor" are in rural Egypt. One conventional way to do this is to establish a poverty line, defined as the break-even amount of per capita household income needed to meet minimum food and nonfood requirements. Households with per capita incomes falling below such a line can then be designated as "poor."

Defining a poverty line is a difficult endeavor in any situation. In Egypt, the situation is compounded by the absence of consistent time-series data on rural prices for basic food and nonfood requirements. Without government data, one must resort to independent efforts to arrive at an acceptable poverty line.

The most reliable set of data for defining a poverty line comes from a series of consumer budget surveys undertaken by Egypt's Central Agency for Public Mobilization and Statistics in 1958/59, 1964/65, and 1974/75. The results of these government surveys can be updated by including data from a 1982 consumer budget survey conducted by the International Food Policy Research Institute (IFPRI).[26]

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[25]This view is shared by some researchers in Egypt, such as Khafagi (1983, 141), who notes that "[international] migrants own more land and come from higher income households than do nonmigrants."

[26]The results of the 1982 IFPRI study are *not* strictly comparable to the consumer budget surveys carried out by the Egyptian government because of differences in sampling techniques and procedures. However, the IFPRI sample was chosen on the basis of the reported variance of the observations of the 1974/75 Egyptian government survey. With 1,389 rural families, the IFPRI sample was large enough to have a probability of 0.997 that mean values for food expenditures would be within 4 percent of the true mean. For more on the IFPRI sample, see Alderman, von Braun, and Sakr (1982).

These data can be used to establish poverty lines for four benchmark years: 1958/59, 1964/65, 1974/75, and 1982 (Adams 1985). In Table 21, the poverty line—defined as the break-even level of per capita household income needed to meet basic food and nonfood requirements—increased from LE 1.29 (US $0.92) per month in 1958/59 to LE 9.72 (US $7.10) per month in 1982.

Unfortunately, no new consumer budget surveys have been undertaken in rural Egypt since 1982. However, it is possible to inflate the 1982 poverty-line figure by using the annual rate of inflation for rural Egypt between 1982 and 1986, estimated at 25 percent by the U.S. Agency for International Development (USAID).[27] This means that at the time of the survey, the poverty line for per capita household income was LE 23.72 (US $17.32) per month.

Given the character of the data, it should be emphasized that this method of defining a poverty line has at least two major limitations.[28] First, because there are no accurate consumer price indices for rural Egypt, it is difficult to estimate increases in the cost of living for that area. Official government price indices for the Egyptian countryside systematically underestimate price increases in such areas as food and housing.[29] Second, whereas this poverty line is based on consumer *expenditure* behavior, data from the 1986/87 survey is based on consumer *income* behavior. That the income calculations in this study are based on predicted figures partially mitigates this problem. These predicted income figures should, in theory, provide a better reflection of permanent income, which itself is viewed as the more important determinant of actual consumption behavior.[30] Although the predicted income figures do take into account the saving or dissaving behavior of various income groups, the poverty line calculations do not. In all likelihood, the interaction of these factors reduces the number of households falling below the poverty line.[31]

Effects of International Remittances on the Poor

It is now possible to compare the number of households falling below the poverty line when remittances are excluded and included. As before, in the latter situation only remittances from the 104 still-abroad migrant households are included.

Consistent with the framework of this study, this comparison focuses on only the direct, first-round effects of remittances on the number of households in poverty. Obviously, the indirect effects of remittances on rural wages and prices also affect the number (and character) of households living in poverty. However, given the controversy surrounding this subject area, it seems best to concentrate on the direct effects.

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[27]This USAID estimate of the annual rate of inflation in rural Egypt is cited in Sullivan (1990, Table 3). It is the same rate of inflation used in confidential World Bank reports.

[28]For a more comprehensive list of the problems involved in creating a poverty line for rural Egypt, see Adams (1985, 706).

[29]On this point, see Bruton (1983, 704) and Adams (1986, 207).

[30]The concept of permanent income (as opposed to "transient" income) originated in the work of Friedman (1957). For more recent work on this topic, see Deaton (1972) and Flavin (1981).

[31]As explained in footnote (19), it is also possible that using predicted income figures to calculate these changes in rural poverty may have the effect of *underestimating* the actual degree of increase in the incidence of poverty.

Table 21—Poverty line for rural Egypt, 1958/59, 1964/65, 1974/75, and 1982

Item	1958/59	1964/65	1974/75	1982
1. Annual cost of minimum required diet per capita per year (LE)	13.14	18.02	45.01	89.85
2. Ratio of food cost to total expenditures	0.70	0.67	0.65	0.64
3. Poverty line per capita per year (LE)	18.78	27.09	69.24	140.40
4. Family size in adult equivalent units	4.15	4.37	4.98	5.06
5. Poverty line per household per year (LE)	77.98	118.34	344.82	711.26
6. Poverty line per capita per month (LE)	1.29	1.87	4.79	9.72
7. Percent of rural households below poverty line	27.4	23.8	60.7	17.8

Source: Adapted from Richard H. Adams, Jr., "Development and Structural Change in Rural Egypt, 1952-1982," *World Development* 13 (June 1985): Table 1.

Notes: Row (1) is the market cost of the diet that satisfies the minimum daily per capita requirements (2,510 calories) for an adult equivalent unit (AEU) in Egypt, as established by the Food and Agriculture Organization of the United Nations, *The State of Food and Agriculture* (Rome: FAO, 1979).

Row (2) figures are obtained by calculating the ratios of food to total expenditures for that expenditure group falling closest to the poverty line. The ratios for 1958/59, 1964/65, and 1974/75 are cited in Samir Radwan, *Agrarian Reform and Rural Poverty in Egypt, 1952-1975* (Geneva: International Labour Organisation, 1977) p. 42.

Row (3) figures are obtained by dividing row (1) by row (2).

Row (4) figures for rural family size for 1958/59, 1964/65, and 1974/75 are derived from Egyptian population censuses; 1982 figures are from the International Food Policy Research Institute, "Egyptian Family Budget Survey," Washington, D.C. (mimeo). For all years, it is estimated that, on average, one person equals 0.830 AEUs; this is the ratio used by Samir Radwan and Eddy Lee, "The Anatomy of Rural Poverty, Egypt, 1977," World Employment Programme, International Labour Organisation, Geneva (mimeo), Table 5:2.

Row (6) figures are obtained by dividing row (5) by 12 months, and then dividing that sum by the appropriate rural family size, expresssed in actual family members.

Row (7) figures are obtained by calculating the total number of rural households with total food and nonfood expenditures below the poverty line.

LE 1 = US$0.73.

When remittances are excluded, the predicted incomes of 26.8 percent of the 1,000 households fall short of the per capita poverty line income of LE 23.72 (US$17.32) per month; thus those households can be classified as "poor." When remittances are included, this figure drops to 24.4 percent.

These estimates of the number of poor rural households are comparable to those recorded in Table 21 and those made by other sources. For example, Egyptian government estimates assigned 30–40 percent of all Egyptian households to poverty throughout the 1970s (Ikram 1980). Similarly, on the basis of their own poverty line calculations, Radwan and Lee (1986) estimated that 35 percent of all rural Egyptian households were poor in 1977. The estimates in Table 21 of the number of poor households in 1986/87 probably fall below these earlier estimates because of the factors noted above.

Although the most common way of determining the degree of poverty is to identify the number of households living below a poverty line, this approach ignores differences

in income of those who fall short of the line. It is therefore useful to supplement this simple household-count measure with a more sophisticated measure, such as Sen's index of poverty, which not only counts the number of people living in poverty but also weighs the amounts by which their incomes fall short.[32]

	Percent of Households below Poverty Line	Sen's Index of Poverty
1,000 households ranked by predicted per capita income:		
Excluding remittances	26.8	0.102
Including remittances	24.4	0.091

The direct, first-round effect of international remittances on the poor is therefore positive but small. When remittances are included, the household count reveals a 9.8 percent decrease in the number of poor households, and Sen's index of poverty declines 12.0 percent.

These changes are a reflection of the small—but proportionate— number of poor households actually receiving international remittances. According to the data, 28 of 268 households (10.4 percent) classified as "poor" when remittances are excluded actually receive remittances when these transfers are included. For the sample as a whole, 104 of 1,000 households (also 10.4 percent) receive remittances. These numbers point to a key policy finding, namely, that poor households can and *do* produce international migrants. Households classified as poor when remittances are excluded produce *exactly* the same proportion (10.4 percent) of still-abroad migrants as the total sample of households.

This finding can be corroborated by referring to Table 16. Column (3) of this table shows that, when all 1,000 households are ranked on the basis of their predicted per capita income excluding remittances, the bottom income group of households supplies slightly more than its quintile share of still-abroad migrants. It is only the lower-middle-income households—the second and third quintiles—that do not supply their proportionate share, which causes remittances to have a negative impact on income distribution.

Another way to analyze the impact of international remittances on the poor is to identify the contribution of remittances to the incomes of the poor. This can be done by taking the 268 households classified as poor when remittances are excluded and comparing their incomes with and without remittances. Using this methodology, the data show that international remittances account for 14.7 percent of total predicted per capita income for the 268 poor households.

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[32]Sen's index of poverty represents a normalized weighted sum of the income gaps of the poor. It measures both the number of people existing below the poverty line and the weighted amounts by which the incomes of the poor fall short of the specified poverty line. It can be expressed as

$$p = (q/n)(1/z)\,[(z-m))(1-G)],$$

where q is the number of people in poverty, n is the total population size, z is the poverty line, m is the mean income of the poor, and G is the Gini coefficient of the distribution of income of the poor.

Poor Households and International Migration

From a policy standpoint the critical question now becomes, Why do only 28 of the 268 households classified as poor have migrants who are still abroad? What, if any, are the socioeconomic characteristics of these 28 poor households that distinguish them from the 240 other poor households?

Several important differences between the two groups of households are revealed in Table 22. First, while the 28 poor households with still-abroad migrants have lower mean predicted per capita incomes, excluding remittances, than the 240 poor households without such migrants, on average, the former have more mean land (rented and owned). This suggests that assets—especially land—may be more important than predicted per capita income excluding remittances in enabling the poor to migrate. This may be true because of the considerable costs of international migration: during the study period it cost the average migrant LE 500 (US $365) to travel abroad in addition to the income he forfeited while searching for a job abroad.[33] Thus, poor households with more assets to draw upon may be better able to produce still-abroad migrants than poor households without such assets. The validity of this hypothesis will be investigated later.

Regarding the demographic structure of the households, Table 22 shows that the two groups are similar in all measures save one. In row (2) the 28 poor households with still-

Table 22—Selected characteristics of poor households, with and without still-abroad migrants, 1986/87

Household Characteristic	Poor Households with No Still-Abroad Migrants (N = 240) (1)	Poor Households with Still-Abroad Migrants (N = 28) (2)	t-Statistic (Two-Tailed) (3)
Income and assets			
Mean predicted per capita household income per month excluding remittances (LE)	17.77	16.43	-1.15
Mean land farmed (rented and owned) in feddans	0.28	0.50	1.46
Demographic structure			
Mean number of males over 13 years in household	2.10	2.54	1.45
Mean proportion of males over 13 years in household	0.22	0.23	0.51
Mean proportion of females over 13 years in household	0.28	0.27	-0.36
Mean proportion of household members below 10 years	0.45	0.45	0.01

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.

Notes: LE 1 = US$0.73. 1 feddan = 1.038 acres. N = 240 poor households without still-abroad migrants and 28 with such migrants.

[33]Most of the migrants in this study traveled to Iraq on tourist visas and had to find a job upon arrival.

abroad migrants have more males over 13 years old per household than the 240 poor households without such migrants. It may be hypothesized that, among the poor, the presence of more males enables households to produce migrants.

Determinants of International Migration for the Poor

To test the effect of these factors—land, predicted per capita income (excluding remittances), and males over 13 years old—on the ability of poor households to produce migrants, the analysis is broadened to ask, What is the ability of poor households to produce both once-abroad and still-abroad migrants?

This question can be addressed by using the poverty line (LE 23.72) to estimate two revised versions of migration equation (8) for different groups of income-stratified males. In the first revised equation, the dependent variable becomes the probability of migration of 487 males from poor households. It can be expressed as

$$M_{ipk} = AGE + MAR + EMP1 + EMP2 + EDUC1 + EDUC2 + LND + MALE13 + PREX + AGEHH + AGR + DIS, \quad (17)$$

where M_{ipk} is the probability of migration of the *ith* individual in the *pth* poor household in the k*th* community. (The other variables are defined in Chapter 3, Table 12.)

In the second revised migration equation, the dependent variable becomes the probability of migration of 1,372 males from nonpoor households, that is, males from households with predicted per capita incomes (excluding remittances) of more than LE 23.72 per month. It can be expressed as

$$M_{ink} = AGE + MAR + EMP1 + EMP2 + EDUC1 + EDUC2 + LND + MALE13 + PREX + AGEHH + AGR + DIS, \quad (18)$$

where M_{ink} is the probability of migration of the *ith* individual in the n*th* nonpoor household in the k*th* community.

Like the original migration equation, equations (17) and (18) use a five-step logit regression, which is necessary because one of the variables (PREX) is estimated from other variables (EDUC, LND, and MALE13).

Tables 23 and 24 present the results of the equations for males from poor and nonpoor households. Since this analysis is concerned with the effect of three variables—LND, PREX, and MALE13—on the propensity of males to migrate, the discussion will focus on regressions (2), (3), and (4).

For poor males in regression (2) in Table 23 the variable LND is positively and significantly related to migration. However, the results are just the opposite for males above the poverty line: LND is negatively and significantly related to migration (Table 24).

Land assets are thus a statistically significant determinant of migration for both sets of males. Among the poor, the propensity to migrate is positively associated with land because some land assets are needed to meet the financial and opportunity costs of international migration. Among the nonpoor, however, the propensity to migrate is negatively associated with land assets because more land provides nonpoor males with increased economic opportunities and responsibilities at home.

Table 23—Logit regression analysis of international migration for males from poor households

Independent Variable	Stepwise Equations (1)	(2)	(3)	(4)	Full Equation (5)
Age of male (AGE)[a]	-0.071 (-4.787)**	-0.070 (-4.772)**	-0.070 (-4.696)**	-0.072 (-4.867)**	-0.071 (-4.653)**
Marital status of male (MAR) (one if married, zero otherwise)	1.598 (3.805)**	1.569 (3.979)**	1.617 (4.105)**	1.634 (4.118)**	1.568 (3.717)**
Employment status of male (EMP1) (one if agricultural laborer, zero otherwise)	0.430 (1.000)	0.513 (1.186)	0.433 (1.004)	0.404 (0.937)	0.496 (1.131)
Employment status of male (EMP2) (one if government worker, zero otherwise)	-0.093 (-0.252)	-0.079 (-0.255)	-0.124 (-0.399)	-0.129 (-0.420)	-0.055 (-0.146)
Age of household head (AGEHH)[a]	-0.037 (-3.743)**	-0.041 (-3.986)**	-0.038 (-3.251)**	-0.036 (-3.664)**	-0.038 (-3.245)**
Educational status of male (EDUC1) (one if no education, zero otherwise)	0.079 (0.232)	...	...	...	0.108 (0.316)
Educational status of male (EDUC2) (one if more than elementary school, zero otherwise)	0.015 (0.038)	...	...	...	0.060 (0.151)
Land farmed (rented and owned) (LND)	...	0.221 (1.788)*	...	...	0.238 (1.797)*
Number of males over 13 years in household (MALE13)	...	...	0.015 (0.190)	...	-0.029 (-0.319)
Predicted per capita household income (excluding remittances) (PREX)[b]	...	...	...	0.006 (0.351)	0.005 (0.284)
Percent of agriculturalists[c] in village farming less than 0.5 feddan (AGR)[d]	0.023 (1.552)	0.029 (1.905)*	0.023 (1.575)	0.024 (1.581)	0.029 (1.898)*
Distance of village from main road to Cairo (DIS)	0.001 (0.050)	0.005 (0.305)	0.002 (0.127)	0.001 (0.072)	0.003 (0.181)
Constant	0.036 (0.033)	-0.269 (-0.251)	0.018 (0.017)	-0.075 (-0.067)	-0.388 (-0.320)

Notes: Includes 487 males over 18 years of age. Numbers in parentheses are t-statistics (two-tailed). The dependent variable in the regression is migration (M). Poor households are defined as those with predicted per capita income (excluding remittances) of less than LE 23.72 (US$17.32) per month.

[a]For once-abroad and still-abroad migrants, ages of males (AGE) and ages of household heads (AGEHH) are those at the time of migration.

[b]Predicted per capita household income (excluding remittances) is calculated from equation (6).

[c]The term agriculturalists includes all those employed as either farmer/peasants or agricultural laborers.

[d]1 feddan = 1.038 acres.

*Difference is significant at the .10 level.

**Difference is significant at the .05 level.

Table 24—Logit regression analysis of international migration for males from nonpoor households

Independent Variable	Stepwise Equations (1)	(2)	(3)	(4)	Full Equation (5)
Age of male (AGE)[a]	-0.045 (-6.041)**	-0.048 (-6.597)**	-0.047 (-6.419)**	-0.046 (-6.307)**	-0.046 (-6.041)**
Marital status of male (MAR) (one if married, zero otherwise)	1.424 (6.786)**	1.330 (6.767)**	1.288 (6.423)**	1.243 (6.274)**	1.487 (6.669)**
Employment status of male (EMP1) (one if agricultural laborer, zero otherwise)	1.482 (6.172)**	1.338 (5.473)**	1.458 (6.015)**	1.457 (6.004)**	1.354 (5.514)**
Employment status of male (EMP2) (one if government worker, zero otherwise)	0.056 (0.240)	0.193 (0.957)	0.182 (0.909)	0.162 (0.803)	0.031 (0.133)
Age of household head (AGEHH)[a]	-0.023 (-4.322)**	-0.021 (-3.806)**	-0.022 (-3.516)**	-0.022 (-4.109)**	-0.022 (-3.064)**
Educational status of male (EDUC1) (one if no education, zero otherwise)	0.178 (0.835)	...	...	...	0.152 (0.708)
Educational status of male (EDUC2) (one if more than elementary school, zero otherwise)	0.485 (1.861)*	...	...	...	0.545 (2.066)**
Land farmed (rented and owned) (LND)	...	-0.147 (-3.027)**	...	...	-0.154 (-2.602)**
Number of males over 13 years in household (MALE13)	...	...	-0.031 (-0.480)	...	0.026 (0.392)
Predicted per capita household income (excluding remittances) (PREX)[b]	...	...	...	-0.015 (-2.336)**	-0.001 (-0.040)
Percent of agriculturalists[c] in village farming less than 0.5 feddan (AGR)[d]	-0.008 (-1.040)	-0.011 (-1.351)	-0.009 (-1.133)	-0.009 (-1.177)	-0.009 (-1.199)
Distance of village from main road to Cairo (DIS)	-0.002 (-0.144)	-0.004 (-0.395)	-0.005 (-0.423)	-0.004 (-0.362)	-0.001 (-0.034)
Constant	0.288 (0.489)	0.887 (1.586)	0.731 (1.295)	1.270 (2.084)**	0.417 (0.609)

Notes: Includes 1,372 males over 18 years of age. Numbers in parentheses are t-statistics (two-tailed). The dependent variable in the regression is migration (M). Nonpoor households are defined as those with predicted per capita income (excluding remittances) of more than LE 23.72 (US$17.32) per month.

[a]For once-abroad and still-abroad migrants, ages of males (AGE) and ages of household heads (AGEHH) are those at the time of migration.

[b]Predicted per capita household income (excluding remittances) is calculated from equation (6).

[c]The term agriculturalists includes all those employed as either farmer/peasants or agricultural laborers.

[d]1 feddan = 1.038 acres.

*Difference is significant at the .10 level.

**Difference is significant at the .05 level.

Table 25—Relationship between international migration and land farmed for males from poor and nonpoor households

Amount of Land Farmed[a]	Predicted Probability of Migration[b]	
	Poor Males	Nonpoor Males
(feddans)	(percent)	
0.0	17.3	21.5
0.5	19.4	20.0
1.0	21.6	18.5
2.0	27.0	16.0
3.0	33.6	13.8
4.0	42.0	11.9

Notes: N = 487 for poor males and 1,372 for nonpoor males. 1 feddan = 1.037 acres. Land farmed includes land rented and owned. Poor households are defined as those with predicted per capita income (excluding remittances) of less than LE 23.72 (US$17.32) per month. Nonpoor households are those above that level.

[a]All independent variables are valued at the mean except for the amount of land farmed (rented and owned) by household.

[b]Predicted probability of migration (PR) is calculated from regression (2) in Tables 23 and 24 using the equation

$$PR = e^{\beta x}/(1 + e^{\beta x}),$$

where ß = the coefficient of logit regression and x = the value of the independent variable.

Table 25 extends this analysis by presenting a list of predicted probabilities of migration for different land values for poor and nonpoor males. In this table mean values are substituted for all independent variables in step (2) of equations (17) and (18), and values for the land variable are allowed to vary. For poor males the propensity to migrate increases sharply with land assets, rising from 17.3 percent for males from landless households to 42 percent for those from households with 4 or more feddans of land farmed.[34] However, for nonpoor males the relationship is reversed: the propensity to migrate decreases from 21.5 percent for males from landless households to 11.9 percent for those from households with 4 or more feddans of land farmed.

Returning to Table 23, the results from regression (4) show that for poor males the effect of predicted per capita income excluding remittances (PREX) on migration is positive and not statistically significant. These results are different from those recorded in regression (4) in Table 24, where the effect of PREX on migration is negative and statistically significant for nonpoor males.

Table 26 extends the analysis of the impact of income on migration by presenting a list of predicted probabilities of migration for different predicted per capita income values for poor and nonpoor males. These values are calculated from regression (4) of equations (17) and (18) using the procedures outlined above. For both groups of males the propensity to migrate varies only slightly with income. For poor males, it increases from 18.8 percent for males from households with a predicted per capita income excluding remittances of LE 10 (US $7.30) to 20.1 percent for males from households with a predicted per capita income of LE 20 (US $14.60). Similarly, for nonpoor males, it falls from 22.8 percent of those with predicted per capita incomes of LE 25 (US$18.25) to 15.6 percent for those with incomes of LE 50 (US $36.50).

[34]According to the data, 68.4 percent of the males from poor households are landless. In contrast, only 10.2 percent of the males from poor households have land farmed (rented or owned) of more than 2 feddans.

Table 26— Relationship between international migration and predicted per capita household income per month, excluding remittances, for males from poor and nonpoor households

Predicted per Capita Income (Excluding Remittances)[a]	Predicted Probability of Migration[b]	
	Poor Males	Nonpoor Males
(LE)	(percent)	
10	18.8	...
15	19.4	...
20	20.1	...
25	...	22.8
30	...	21.1
40	...	18.2
50	...	15.6

Notes: N = 487 for poor males and 1, 372 for nonpoor males. Predicted per capita household income excluding remittances is calculated from equation (6). Poor households are defined as those with predicted per capita income (excluding remittances) of less than LE 23.72 (US$17.32) per month. Nonpoor households are those with income greater than LE 23.72. LE 1 = US$0.73.

[a]All independent variables are valued at the mean except predicted per capita household income per month excluding remittances.

[b]Predicted probability of migration (PR) is calculated from regression (4) in Tables 23 and 24 using the equation

$$PR = e^{\beta x}/(1 + e^{\beta x}),$$

where ß is the coefficient of logit regression and x is the value of independent variables.

These figures serve to emphasize the point that the predicted per capita income status of the household before migration is not the most important determinant of migration for the poor.[35] Rather the results of Table 23 show that, for the poor, assets—here meaning land—are a more important determinant of migration than predicted income, excluding remittances. In this table the sign for the land variable is statistically significant, while that for predicted per capita income excluding remittances is not. When controlling for income, poor households with land assets have a higher propensity to produce migrants than households without land.

The data for regression (3) in Table 23 show that for poor males the number of household males over 13 years old (MALE13) is not significantly related to migration; the results are similar to those recorded in Table 24 for nonpoor males. As noted in Chapter 3, the method of data aggregation used in these equations may have brought about these results. The unit of analysis for these equations is the individual male. When the unit of analysis becomes that of the individual household, however, the results tend to support a positive relationship between the number of household males over 13 years of age and the propensity of a poor household to produce migrants.

[35]Table 13 shows that predicted per capita income (excluding remittances) is also not a very important determinant of migration for the sample of all males over 18 years of age.

6

THE ECONOMIC USES OF INTERNATIONAL REMITTANCES*

In the past many observers have taken a dim view of international remittances, primarily because they believe that the bulk of such monies are spent on personal consumption. For example, a 1977 Egyptian Development Plan says that "growing numbers of Egyptians work abroad for very high wages. . . . These individuals return to Egypt possessed of high purchasing power, which they individually direct not to savings and investment, but to flagrant and luxurious consumption" (cited in Keely and Tran 1989, 503). Lipton (1980, 12) in his review of remittance behavior maintains that "everyday [consumption] needs often absorb 90 percent or more of a village's remittances" and that "investment is only the fourth (and last) priority for remittances."

In more recent years, several empirical studies have refined these rather pessimistic conclusions. Gilani, Khan, and Iqbal (1981) found that Pakistani workers did indeed use international remittances to increase consumption (one-third of the migrant households reported increased expenditures on basic staples) and that most investment went to real estate and housing. Overall, 62 percent of remittance expenditure went to current consumption, 22 percent to real estate, 13 percent to direct investments, and 3 percent to financial investments. However, when the expenditure behavior of migrants was compared with that of a nonmigrant control group, the consumption propensities of the two groups did not differ significantly. These findings suggest that the perceived negative effects of international remittances on development are no different from the results that would have obtained had the poorer members of society become better off by some other means. As the findings of Gilani, Khan, and Iqbal (1981) underscore, the key point of analysis should not be the consumption and investment behavior of migrants, but rather the behavior of migrants in comparison with nonmigrants.

To extend this debate, in this chapter the expenditure behavior of a set of migrant households is compared with that of a control set of nonmigrants. Since all of the households are separated into quintiles on the basis of expenditure or income, it is possible to identify how remittance earnings affect the consumption and investment behavior of different income groups of migrants—rich, middle-income, and poor.

In this chapter the nature and representativeness of the data from round 2 of the 1986/87 household survey are analyzed, the predicted income and expenditure functions used in analyzing migrant and nonmigrant behavior are presented, and the choice of the functional form for the model is discussed. Finally, the model is specified and estimated and the empirical results are presented.

*An earlier version of this chapter appears as "The Economic Uses and Impact of International Remittances in Rural Egypt," in *Economic Development and Cultural Change* 39 (July 1991).

Representativeness of the Second Round Survey Data

In round 2 of the 1986/87 survey, 150 of the original 1,000 households were selected for interviewing: 75 from the income-stratified group of nonmigrant households and 75 from the once-abroad migrant households.[36] None of the households in the still-abroad migrant group were chosen for interviewing in round 2 because it seemed desirable to question only migrants themselves regarding remittance expenditures.[37] The goal was to select two comparable groups of income-stratified migrant and nonmigrant households so that the main difference between them was that the first group had received remittances and the second had not.

It is important at the outset to pinpoint how well the households selected in round 2 represent the households in the larger round 1 survey by comparing household characteristics (Table 27). The nonmigrant and once-abroad migrant households are statistically different in terms of household size and number of males over 13 years old in both rounds.[38] Nonmigrant households farm more land and have higher actual mean per capita incomes (excluding remittances) than once-abroad migrant households in both rounds, but these differences are not statistically significant. Despite the lack of statistical significance, these findings underscore the point that once-abroad migrant households were not wealthy before migration. As for consistency between the two rounds, Table 27 indicates that the households in round 2 are broadly representative of those in round 1.

In round 2, interviewing focused on household expenditure and investment behavior. Data were collected for 14 major categories of outlay and on several subdivisions within each category from both migrant and nonmigrant households (Table 28). The time base over which households were asked to recall outlays differed between categories. Once-abroad migrant households were surveyed over the same 14 major categories, and migrants were queried about outlays in each category since their return. Since all of the migrant workers in round 2 had returned home, their remittance earnings were treated as being either spent or invested.

Nonrecurring items on which once-abroad migrant households in round 2 spent their actual (not predicted) remittance earnings are presented in Table 29. Because of the difficulty of identifying the proportion of remittances spent on normal recurring expenses, migrant expenditures on food, drink, and clothing are not included in this table.

About 54 percent of actual remittances spent on nonrecurring items went to the construction or repair of houses. Another large share (about 21 percent) went to the purchase of land for agricultural or building purposes. The once-abroad migrant households in round 2 spent only small percentages of their remittances on vehicles or

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[36]The 150 households in round 2 were selected as follows. After the 661 nonmigrant households of round 1 were ranked from high to low on the basis of actual gross income, 1 nonmigrant household was chosen for interviewing in round 2 from each group of 9 households in round 1. Similarly, after the 235 once-abroad migrant households of round 1 were ranked from high to low on the basis of actual gross income including remittances, 1 migrant household was chosen for interviewing in round 2 from each group of 3 households in round 1.

[37]Since all of the once-abroad migrants in round 2 had returned home, their remittances were treated as being either spent or invested.

[38]Other analysis of the data also suggests that these two groups of households are statistically different in terms of household size and number of males over 13 years of age (Adams 1989, 49).

Table 27— Selected characteristics of nonmigrant and once-abroad migrant households, 1986/87

Variable	Round 1			Round 2		
	Non-migrant Households (N = 661)	Once-Abroad Migrant Households (N = 235)	t-Statistic (Two-Tailed)	Non-migrant Households (N = 75)	Once-Abroad Migrant Households (N = 75)	t-Statistic (Two-Tailed)
Mean household size	6.55	7.33	-3.43**	6.53	8.39	-3.29**
Mean number of males over 13 years in household	2.10	2.47	-3.75**	1.95	2.96	-4.87**
Mean age of all males in household (years)	25.62	22.43	3.83**	24.92	22.19	1.62
Mean education of males over 18 years in household (one if preparatory school or higher, zero otherwise)	0.18	0.24	-2.28	0.22	0.17	0.76
Mean area of land farmed (feddans)	1.07	0.67	1.88	1.19	0.71	1.06
Actual mean annual per capita income (excluding remittances) in LE	399.72	372.60	1.29	461.39	375.75	1.12

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Notes: Land farmed includes land rented and owned. 1 feddan = 1.038 acres. LE 1 = US$0.73.
**Difference between households is significant at the .05 level.

mercantile activities. A more detailed analysis of these patterns of remittance expenditure follows.

Predicted Income and Expenditure Functions

In order to compare the expenditure behavior of migrant and nonmigrant households in round 2, one theoretical and two methodological issues need to be addressed. The theoretical problem concerns the issue of fungibility. Since money can be spent in many different ways, simply observing that remittances are not used to encourage investment, for example, does not mean that remittances cannot be credited with this result. International remittances may well have freed other resources for expenditure on investment (Stark 1980). To overcome this problem, remittance and nonremittance income are combined for each once-abroad migrant household, and expenditures out of this total income (remittance and nonremittance) are reported.

As for the two methodological problems, in this study it is not known what the annual incomes of the 75 once-abroad migrant households in round 2 would have been had they not had someone abroad. Similarly, it is not known what the expenditures of these migrant households would have been. Therefore, it is necessary to *predict* what the incomes and expenditures of these households would have been without remittances.

Table 28—Expenditure items included in round 2 of the 1986/87 household survey

Expenditure Item	Period of Recall for Nonmigrants	Period of Recall for Migrants
Food, drink	One month	Same
Shoes, clothes	One Year	Same
Education, school supplies	One year	Same
Medical, health expenses	One year	Same
Agricultural expenses	One year	Same
Pilgrimage to Mecca	Five years	Same, plus period since migration
Marriage expenses	Five years	Same, plus period since migration
Household goods (radio, television)	Five years	Same, plus period since migration
Housing costs (building, repair)	Five years	Same, plus period since migration
Land purchases (building, farmland)	Five years	Same, plus period since migration
Agricultural investment	Five years	Same, plus period since migration
Vehicle purchases (car, taxi)	Five years	Same, plus period since migration
Store, restaurant purchases	Five years	Same, plus period since migration
Other investment	Five years	Same, plus period since migration

Table 29—Expenditure on nonrecurring items as a percent of total actual remittance earnings of once-abroad migrants in round 2 of survey, 1986/87

Item	Percent of Total Actual Remittance Earnings
Built new house	42.5
Repaired house	11.4
Purchased agricultural land	11.2
Marriage expenses	10.8
Purchased land for building	9.3
Purchased car or taxi	4.7
Opened or expanded store	3.0
Purchased television	2.3
Purchased radio	1.0
Purchased refrigerator	0.9
Other	2.9

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Notes: N = 75. These figures reflect expenditures of actual (not predicted) remittance earnings.

In pursuit of these ends, a procedure similar to that followed in Chapter 3 is used. The parameters predicting annual gross household income excluding remittances (INC) are estimated from data for the 75 nonmigrant households in round 2. The equation used is

$$INC = LND + EDUC + MALE13 + FEM13, \quad (19)$$

where

LND = land farmed (rented and owned) by household,
EDUC = mean education of male household members over 18 years old (one if preparatory school or higher, zero otherwise),
MALE13 = number of males over 13 years old in the household, and
FEM13 = number of females over 13 years old in the household.

On the expenditure side, the parameters predicting annual gross household expenditures excluding remittances (EXP) are also estimated from the 75 households in round 2 that had not sent a migrant abroad. The equation used is

$$EXP = HS + CHILD5 + MAR + INPC + SQINPC, \quad (20)$$

where

HS = size of household,
CHILD5 = number of children less than 5 years old as a proportion of household size,
MAR = a dummy for marriage expenses (one if marriage costs were incurred in the last five years, zero otherwise),
INPC = log of per capita annual income, and
SQINPC = square of the log of per capita annual income.

The parameters from equations (19) and (20) are then applied to the 75 once-abroad households in round 2 in order to predict their gross annual income and expenditures *without* remittances. In this procedure the variables MALE13 from equation (19) and HS from equation (20) are assumed to include migrants from the once-abroad households.

Finally, it is necessary to determine the income and expenditures of the 75 once-abroad households *with* remittances. Following the framework of this study, remittances for each once-abroad household in round 2 are valued taking total migrant income earned abroad minus travel, food, and housing costs abroad.[39] Since all of these households have had a migrant abroad within the past five years, an annual figure is reached by dividing the resulting remittance figure for each household by the number of years that household had a migrant abroad. If, for example, a household had a migrant abroad for two years and the migrant's net remittance earnings were LE 5,000 (US$3,650), then the annual remittance income of that migrant would be LE 2,500 (US$1,825).

Annual gross household income, including remittances, for the 75 once-abroad households in round 2 is then determined by adding predicted household income and

[39]For more on this point, see equation (1) in Chapter 2.

remittance income for each year. Annual gross household expenditures including remittances for these once-abroad households are calculated in a similar fashion by adding predicted expenditures to remittance expenditures for each year.

In equation (19) it is hypothesized that all four variables—LND, EDUC, MALE13, and FEM13—are positively correlated with gross annual household income.

In equation (20) it is hypothesized that HS, CHILD5, and INPC are positively correlated with gross annual household expenditure. Because marriage costs are extremely high in this area, the dummy variable MAR is entered to capture the effects of marriage on household expenditure.

Tables 30 and 31 summarize the parameter results obtained from using equations (19) and (20) to estimate predicted gross annual household income and expenditures without remittances. In Table 30, all of the coefficients are significantly different from zero at the 5 percent level. As expected, three of the four coefficients are positively correlated with predicted gross household income excluding remittances. However, as before, the coefficient EDUC is significantly and *negatively* correlated.[40] The reasons for this paradoxical relationship have already been explained in Chapter 3 and the Appendix.

In Table 31 all of the coefficients are also significantly correlated with predicted gross annual household expenditures excluding remittances, and only the coefficient for the squared income term (SQINPC) is negative, as expected.

The results of efforts to calculate annual per capita income and expenditures for nonmigrant and once-abroad migrant households in round 2 are summarized in Table 32. The predicted mean annual per capita income, excluding remittances, of once-abroad households is less than that of nonmigrant households. Yet when remittances are included, income of once-abroad households is 67 percent higher than that of nonmigrant households. Similarly, when remittances are included, the predicted mean annual per capita expenditures of once-abroad households are 142 percent higher than those of nonmigrant households.

Table 32 shows that international remittances change the expenditure patterns of once-abroad migrant households. Mean annual per capita expenditures (including remittances) for migrant as opposed to nonmigrant households are higher by 31 percent for consumption, 231 percent for durables, and 1,458 percent for investment.

Because it is important to this analysis, the classification of expenditures in Table 32 into three categories—consumption, durables, and investment—merits some discussion. The distinction between these three categories of expenditures lies in the difference between current and future wants. Consumption refers to expenditures to meet immediate needs: food, clothing, education, medical, pilgrimage, and marriage costs.[41] Durables

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[40]These results are identical to those obtained by running equation (19) on the 661 nonmigrant households in round 1. Such an equation yields results in which all of the coefficients are significantly correlated with predicted gross household income excluding remittances. Three of the coefficients are positively correlated with predicted income excluding remittances, and the coefficient for EDUC is negatively correlated with the dependent variable. The R^2 in this equation is 0.551.

[41]After much thought, it was decided to include expenses incurred for pilgrimages and marriage under the category of consumption. Unlike investment items, expenditure on pilgrimages and marriage meet current—not future—needs. And unlike durable items, pilgrimage and marriage do not provide perceptible future *economic* returns to the individual. Marriage costs include costs of ceremony, jewelry, and bride price.

Table 30—Regression to estimate predicted gross annual household income (excluding remittances) in round 2

Variable	Regression Coefficient	t-Ratio
Land farmed (rented and owned) by household (LND)	329.525	9.294**
Mean education of male household members over 18 years (one if preparatory school or higher, zero otherwise) (EDUC)	-797.968	-2.371**
Number of males over 13 years in household (MALE13)	377.906	2.950**
Number of females over 13 years in household (FEM13)	360.193	2.675**
Constant	892.271	2.460**
$R^2 = 0.585$		

Notes: Regression is based on 75 nonmigrant households of round 2. The parameters are used to estimate predicted gross annual household income, excluding remittances, of the once-abroad migrant households in round 2.
**Difference is significant at the .05 level.

refers to expenditures to meet longer-term needs, such as household goods and housing. Finally, investment refers to those outlays for which the individual expects (or hopes) to enjoy some economic return in the future: land, equipment, and commercial enterprises.

Whereas it may be easy in theoretical terms to distinguish between consumption, durables, and investment, on a practical level the difference between them becomes blurred. Consider, for example, an expenditure of key importance to this study: housing. From the standpoint of society, housing should be classified as a durable expenditure because it benefits the individual without any major social externalities. Yet from the

Table 31—Regression to estimate predicted gross annual household expenditures (excluding remittances) in round 2

Variable	Regression Coefficient	t-Ratio
Household size (HS)	189.029	6.145**
Number of children less than five years as proportion of household size (CHID5)	1,117.431	1.881*
Marriage dummy (one if marriage in household in last five years, zero otherwise) (MAR)	511.550	2.354**
Log of per capita annual income (INPC)	2.119	4.956**
Square of log of per capita annual income (SQINPC)	-0.001	-4.414**
Constant	-805.163	-2.566**
$R^2 = 0.437$		

Notes: Regression is based on 75 nonmigrant households of round 2. The parameters are used to estimate predicted gross annual household expenditures, excluding remittances, of the once-abroad migrant households in round 2.
*Difference is significant at the .10 level.
**Difference is significant at the .05 level.

Table 32—Annual per capita income and expenditures for nonmigrant and once-abroad migrant households in round 2

Income/Expenditure	Nonmigrant Households (N = 75)	Once-Abroad Migrant Households (N = 75)	t-Statistic (Two-Tailed)
	(LE)		
Mean annual per capita income			
Excluding remittances	461.4	391.1[a]	0.90
Including remittances	461.4	772.2[b]	-3.50**
Mean annual per capita expenditures including remittances			
Total	257.7	623.9[c]	-7.24**
Consumption[d]	187.2	246.5	-6.16**
Durables[e]	63.9	211.9	-5.30**
Investment[f]	6.6	102.9	-4.80**

Notes: Predicted income and expenditure values recorded here may not sum up to actual figures presented earlier.
LE 1 = US$0.73.
[a]This is a predicted value estimated from equation (19).
[b]This is a predicted value calculated by adding the predicted income results from equation (19) and net remittance income per year (see the text).
[c]This is a predicted value calculated by adding the predicted expenditure results from equation (20) and net remittance expenditures per year (see the text).
[d]Consumption includes expenditures on food, drink, clothing, education, medical care, pilgrimages, and marriage.
[e]Durables include expenditures on household goods and housing.
[f]Investment includes expenditures on land, agricultural investment, vehicles, stores, and other items.
**Difference is significant at the .05 level.

standpoint of the individual, housing expenses should be classified as an investment, since new or improved housing offers possible future economic returns to the individual. Because expenditures on housing are of vital importance to once-abroad migrant households, housing is analyzed in this chapter as both a durable and an investment good.

Choice of Functional Form

To pursue the analysis, a proper functional form must be chosen for the model. The selected form should do several things. First, it must provide a good statistical fit to a wide range of commodities. Second, because the focus is on expenditure and consumption relationships, the chosen form must have a slope that is free to change with expenditure. Since, in this study, expenditure elasticities as well as marginal propensities to consume need to be calculated, a model specification that imposes the same slope (or marginal budget share) for all levels of expenditure would not be useful. What is needed is a functional form that mathematically allows for rising, falling, or constant marginal propensities to consume over a broad range of expenditure levels. Third, the chosen function should conform with the criterion of additivity; to be internally consistent, the sum of the marginal propensities for all commodities should equal unity.[42]

[42]For more on this point, see Prais and Houthakker (1971, 84-86).

Because it serves all of these purposes, the semilog ratio function is selected as the basic functional form:

$$C_i/EXP = a + b \text{ (log EXP)}, \tag{21}$$

where

C_i = expenditure on good i,
EXP = total expenditure,
a = constant.
b = the parameter to be estimated for good i.

In using this function to compare the expenditure behavior of households with different incomes, various socioeconomic factors other than income must be taken into account. Part of the observed differences in expenditure behavior may be due, for example, to differences in family size or (in this sample) to the presence of a worker abroad and the length of time spent abroad. These variables for household characteristics need to be built into the function in a way that allows them to shift both the intercept and the slope of the Engel curve. Therefore, let HS be the variable for household size, as in earlier chapters, and let MNS (months abroad) be the variable for length of time abroad of migrants. Also, let MIG be a dummy variable for migration (1 for migrants, 0 otherwise), which allows expenditure behavior to differ according to classification as a migrant or nonmigrant household. The complete model is

$$C_i/EXP = a + b\,(MIG) + c\,(\log EXP) + d\,(MIG)(\log EXP) + e\,(HS) + f\,(MIG)(HS) + g\,(MNS). \tag{22}$$

From this equation the expenditure elasticity for the *ith* good (ξ_i) and the average and marginal budget shares (ABS and MBS, respectively) can be derived as follows:

$$\text{when MIG} = 0,\ \xi_i = [(EXP/CON)(c)] + 1; \tag{23}$$

$$\text{when MIG} = 1,\ \xi_i = [(EXP/CON)(c + d)] + 1; \tag{24}$$

$$ABS_i = CON_i/EXP; \text{ and} \tag{25}$$

$$MBS_i = (ABS)(\xi_i). \tag{26}$$

For the individual household, these terms are evaluated at the mean household values for consumption (CON) and expenditure (EXP). But when comparing across quintiles, CON and EXP are assigned their mean values for the relevant quintiles.

Although both income and expenditure data were collected for all households in round 2, the analysis here emphasizes expenditure data for two reasons. First, the income data proved to be noisy, and there was often a large (and unexplained) discrepancy between income and expenditure, even after savings were accounted for.[43] Second, in

[43]See, for example, Table 32, where mean annual per capita income including remittances for once-abroad migrant households is LE 772.2, but mean annual per capita expenditures including remittances for once-abroad households only sum up to LE 623.9 (or about 80.8 percent of mean annual per capita income).

situations like this, expenditure is likely to be a better indicator of *permanent* income, which itself is viewed as the more important determinant of consumption behavior (Friedman 1957; Flavin 1981). This consideration is particularly relevant for migrant households, whose annual incomes fluctuate considerably depending on whether a worker is currently abroad. Under these conditions, total consumption expenditure is likely to provide a better measure of the households' perceptions of their future income than the actual incomes recorded in the surveys.

Specification and Estimation of the Model

Using equation (22) to estimate the model yields the following formulation:

$$C^{con,dur,inv}/EXP = MIG + \log EXP + (MIG)(\log EXP) + HS + (MIG)(HS) + MNS, \quad (27)$$

where

$C^{con,dur,inv}$	=	annual per capita household expenditure on consumption, durables, or investment,
EXP	=	total annual per capita household expenditure,
MIG	=	migration dummy variable (one if migrant household, zero otherwise),
log EXP	=	log of total annual per capita household expenditure,
(MIG)(log EXP)	=	migration dummy variable x log of total annual per capita household expenditure,
HS	=	household size,
(MIG)(HS)	=	migration dummy variable x size of household
MNS	=	months spent abroad by migrant (zero if no migrant).

In this specification, the dependent variable is expressed in per capita terms to facilitate comparisons between households. As explained earlier, the independent expenditure variable (EXP) is also expressed in per capita terms, so that the model permits family size to influence both the intercept and the slope of the various commodity functions.

After two households are eliminated because of incomplete data (one migrant, one nonmigrant), the parameters of equation (27) are estimated for the 148 households in round 2. The parameters are estimated separately for expenditure, income, and each category of outlay: consumption, durables, and investment. The basic estimation technique used is ordinary least squares (OLS).

The results are summarized in Table 33. When expenditure data are used, 11 of the 18 coefficients are significantly different from zero at the 10 percent level. With income data, 10 of the 18 coefficients are significant at this level of confidence.

With consumption as the numerator of the dependent variable, the share of consumption in total expenditures decreases as household size increases. This relationship is highly significant using both expenditure and income data, which suggests that economies of scale do exist for consumption items such as food, drink, and clothing. Both the months abroad and the migration dummy terms are negative and significant when using expenditure and income data. This suggests, first, that once-abroad migrants who stayed

Table 33—Regression analysis of household expenditures and income in round 2, selected variables

Variable	Regression Based on Household Expenditure Data		Regression Based on Household Income Data	
	Regression Coefficient	t-Statistic	Regression Coefficient	t-Statistic
Consumption				
Household size (HS)	-0.019	-2.780**	-0.025	-3.856**
Migrant household size (MIG)(HS)	0.010	1.088	0.026	2.705**
Months abroad (MNS)	-0.004	-3.501**	-0.003	-3.135**
Migration dummy (MIG)	-0.614	-1.748*	-1.460	-3.125**
Annual per capita expenditures (EXP)	-0.289	-7.180**	...	...
Annual per capita income (Y)	...	...	-0.278	-9.056**
Migrant annual per capita expenditures (MIG)(EXP)	0.090	1.661*	...	...
Migrant annual per capita income (MIG)(Y)	...	...	0.210	3.216**
Constant	2.489	10.445	2.339	11.815**
	$R^2 = 0.664$ N = 148		$R^2 = 0.503$ N = 148	
Durables				
Household size (HS)	0.014	1.932*	0.001	0.165
Migrant household size (MIG)(HS)	-0.012	-1.188	0.008	0.744
Months abroad (MNS)	0.002	1.990**	0.002	2.031**
Migration dummy (MIG)	1.510	4.095**	-0.540	-1.019
Annual per capita expenditures (EXP)	0.253	5.966**	...	...
Annual per capita income (Y)	...	...	0.009	0.255
Migrant annual per capita expenditures (MIG)(EXP)	-0.253	-4.436**	...	...
Migrant annual per capita income (MIG)(Y)	...	...	0.078	1.020
Constant	-1.275	-5.096**	0.088	0.382
	$R^2 = 0.270$ N = 148		$R^2 = 0.090$ N = 148	
Investment				
Household size (HS)	0.005	1.055	0.003	0.827
Migrant household size (MIG)(HS)	-0.004	-0.602	0.001	0.088
Months abroad (MNS)	0.002	2.460**	0.001	2.227**
Migration dummy (MIG)	-0.112	-0.448	-0.654	-2.247**
Annual per capita expenditures (EXP)	0.037	1.285	...	...
Annual per capita income (Y)	...	...	0.008	0.418
Migrant annual per capita expenditures (MIG)(EXP)	0.022	0.567	...	...
Migrant annual per capita income MIG)(Y)	...	...	0.104	2.487**
Constant	-0.214	-1.260	-0.054	-0.428
	$R^2 = 0.170$ N = 148		$R^2 = 0.201$ N = 148	

Note: Regressions are based on 148 households, 74 nonmigrant and 74 once-abroad migrant.
*Significant at the .10 level.
**Significant at the .05 level.

abroad longer spend a smaller proportion of their income on consumption; second, once-abroad migrants spend a smaller share on consumption than nonmigrants at a given level of expenditure. These are key findings because they show that once-abroad migrants do not spend a disproportionate share of their remittance earnings on consumption goods.

Moreover, with consumption as the numerator, the negative and significant terms for annual per capita expenditures indicate that as total expenditures rise, the share of spending on consumption falls. This relationship is expected. Adding together the relevant coefficients to arrive at the relationship for migrant expenditures [(EXP) + (MIG)(EXP)] yields a similar result (not shown), which is also statistically significant. As migrant annual per capita expenditures rise, the share of once-abroad migrant spending on consumption falls.

With durables as the numerator of the dependent variable, household size is positive and significant when expenditure data are used. This suggests that at a given level of expenditure, larger households spend a higher proportion on such durable items as household goods and housing. When expenditure data are used, the migration dummy variable and the months-abroad term are also positive and highly significant. This suggests that not only do once-abroad migrant households spend a larger share on durables than nonmigrants at a given level of expenditure, but that migrants who stayed abroad longer spend a larger share on durables. Because housing represents the bulk of durable expenditures (88 percent for once-abroad migrant households), it is reasonable to conclude that at any given level of expenditure migrants spend more on housing than nonmigrants.

With investment as the numerator of the dependent variable, the months-abroad term is positive and highly significant using both expenditure and income data. This suggests that once-abroad migrants who stayed abroad longer also spend a higher proportion on investment at a given level of expenditure or income. Given this relationship, it is disturbing to note that the migration dummy variable is *negative* and significant when income data are used, which suggests that once-abroad migrant households actually devote a *smaller* share of their income to investment at a given level of income. However, when the relevant income coefficients are added together [(Y) + (MIG)(Y)] to arrive at the relationship for migrant income (not shown), the results indicate that as migrant income rises, so does the proportion of income spent on investment.

Empirical Results: Remittances and Household Behavior

To compare the spending behavior of nonmigrant and once-abroad migrant households at similar expenditure (income) levels, all 148 households in round 2 are ranked in quintiles on the basis of expenditure (or income) *including* remittances. These households are then divided into nonmigrant and once-abroad migrant groups, and the regression results from Table 33 are used to calculate expenditure elasticities and marginal budget shares for the various quintiles.[44]

In this comparison, quintile means are determined by aggregating mean individual household values. Once-abroad migrant households are evaluated on the basis of their expenditures or income *including* remittances. The main difference then, between the once-abroad migrant and the nonmigrant households for any quintile should be that the former received remittances within the last five years and the latter did not. Spending

[44]Total annual per capita expenditures (income), including remittances, for migrant households are calculated using predicted functions, and the results of these predicted functions exceed actual expenditures (income) by about 10 percent. Consequently, in Tables 34, 35, and 36 marginal budget shares for consumption, durables, and investment for once-abroad migrant households do not sum to unity.

behavior of migrant and nonmigrant quintiles is compared for consumption expenditures in Table 34, for durable expenditures in Table 35, and for investment expenditures in Table 36.

Using expenditure data, Table 34 shows that marginal budget shares to consumption decline with expenditure for both nonmigrant and once-abroad migrant households.

Table 34—Consumption expenditure behavior of nonmigrant and once-abroad migrant households in round 2, analyzed using expenditure and income data

Percent of 148 Households Ranked by per Capita Expenditures Including Remittances	Percent of 74 Nonmigrant Households	Mean of per Capita Expenditure	Mean of per Capita Consumption	Expenditure Elasticity	Marginal Budget Share to Consumption
(quintile)		(LE)			
Nonmigrant households (N = 74)					
Lowest	39.19	130.58	121.89	0.69	0.64
Second	32.43	217.41	169.23	0.63	0.49
Third	13.51	354.35	248.66	0.59	0.41
Fourth	13.51	551.86	303.88	0.47	0.26
Highest	1.35	875.00	575.00	0.56	0.37
All	100.00	255.97	185.09	0.60	0.43
Once-abroad migrant households (N = 74)					
Lowest	1.35	145.77	145.00	0.71	0.71
Second	8.11	247.21	150.86	0.53	0.32
Third	25.67	364.16	169.77	0.38	0.18
Fourth	27.03	543.02	250.82	0.37	0.17
Highest	37.84	941.43	322.05	0.15	0.05
All	100.00	618.49	247.43	0.28	0.12

Percent of 148 Households Ranked by per Capita Income Including Remittances	Percent of 74 Nonmigrant Households	Mean of per Capita Income	Mean of per Capita Consumption	Income Elasticity	Marginal Budget Share to Consumption
(quintile)		(LE)			
Nonmigrant households (N = 74)					
Lowest	39.19	191.84	129.49	0.59	0.40
Second	27.03	319.27	180.31	0.51	0.29
Third	16.21	462.83	190.23	0.32	0.13
Fourth	8.11	676.57	283.98	0.34	0.14
Highest	9.46	1,839.59	335.54	-0.53	-0.10
All	100.00	465.40	185.09	0.30	0.12
Once-abroad migrant households (N = 74)					
Lowest	...	...	...	...	...
Second	13.51	377.32	151.15	0.31	0.12
Third	24.32	510.31	188.02	0.25	0.09
Fourth	32.43	709.75	233.18	0.15	0.05
Highest	29.73	1,220.97	355.33	0.04	0.01
All	100.00	768.30	247.43	0.14	0.04

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Note: LE 1 = US$0.73.

Table 35—Durable expenditure behavior of nonmigrant and once- abroad migrant households in round 2, analyzed using expenditure and income data

Percent of 148 Households Ranked by per Capita Expenditures Including Remittances	Percent of 74 Nonmigrant Households	Mean of per Capita Expenditure	Mean of per Capita Durables	Expenditure Elasticity	Marginal Budget Share to Durables
(quintile)		(LE)			
Nonmigrant households (N = 74)					
Lowest	39.19	130.58	8.69	4.80	0.32
Second	32.43	217.41	41.17	2.34	0.44
Third	13.51	354.35	94.26	1.95	0.52
Fourth	13.51	551.86	226.75	1.62	0.66
Highest	1.35	875.00	300.00	1.74	0.60
All	100.00	255.97	64.19	2.01	0.50
Once-abroad migrant households (N = 74)					
Lowest	1.35	145.77	18.00	3.05	0.38
Second	8.11	247.21	52.74	2.19	0.47
Third	25.67	364.16	117.64	1.78	0.58
Fourth	27.03	543.02	172.01	1.80	0.57
Highest	37.84	941.43	351.28	1.68	0.63
All	100.00	618.49	214.13	1.73	0.60

Percent of 148 Households Ranked by per Capita Income Including Remittances	Percent of 74 Nonmigrant Households	Mean of per Capita Income	Mean of per Capita Durables	Income Elasticity	Marginal Budget Share to Durables
(quintile)		(LE)			
Nonmigrant households (N = 74)					
Lowest	39.19	191.84	24.40	1.07	0.14
Second	27.03	319.27	29.83	1.10	0.10
Third	16.21	462.83	127.72	1.03	0.29
Fourth	8.11	676.57	137.49	1.05	0.21
Highest	9.46	1,839.59	155.46	1.11	0.09
All	100.00	465.40	64.19	1.07	0.15
Once-abroad migrant households (N = 74)					
Lowest	...	...	...	...	...
Second	13.51	377.32	90.59	1.04	0.25
Third	24.32	510.31	100.68	1.04	0.21
Fourth	32.43	709.75	222.23	1.03	0.32
Highest	29.73	1,220.97	354.28	1.03	0.30
All	100.00	768.30	214.13	1.03	0.29

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Note: LE 1 = US$0.73.

Although consumption here includes more than just food, this finding is broadly consistent with Engel's Law. However, the nature of this decline for once-abroad migrant households is interesting; their marginal budget shares to consumption drop dramatically between the first and second quintiles. Migrant households in the lowest quintile devote 71 percent of incremental expenditure to consumption items, but those in the next group spend only 32 percent and those in subsequent groups spend even

Table 36—Investment expenditure behavior of nonmigrant and once-abroad migrant households in round 2, analyzed using expenditure and income data

Percent of 148 Households Ranked by per Capita Expenditures Including Remittances	Percent of 74 Nonmigrant Households	Mean of per Capita Expenditure	Mean of per Capita Investment	Expenditure Elasticity	Marginal Budget Share to Investment
(quintile)		(LE)			
Nonmigrant households (N = 74)					
Lowest	39.19	130.58	0.00	...	...
Second	32.43	217.41	7.02	2.14	0.07
Third	13.51	354.35	11.43	2.14	0.07
Fourth	13.51	551.86	21.24	1.96	0.08
Highest	1.35	875.00	0.00	...	...
All	100.00	255.97	6.69	2.41	0.06
Once-abroad migrant households (N = 74)					
Lowest	1.35	145.77	0.00	...	...
Second	8.11	247.21	0.00	...	...
Third	25.67	364.16	27.48	1.49	0.11
Fourth	27.03	543.02	70.67	1.28	0.17
Highest	37.84	941.43	180.19	1.19	0.23
All	100.00	618.49	94.34	1.24	0.19

Percent of 148 Households Ranked by per Capita Income Including Remittances	Percent of 74 Nonmigrant Households	Mean of per Capita Income	Mean of per Capita Investment	Income Elasticity	Marginal Budget Share to Investment
(quintile)		(LE)			
Nonmigrant households (N = 74)					
Lowest	39.19	191.84	1.53	2.03	0.02
Second	27.03	319.27	10.00	1.26	0.04
Third	16.21	462.83	6.75	1.57	0.02
Fourth	8.11	676.57	18.29	1.31	0.04
Highest	9.46	1,839.59	8.58	2.77	0.01
All	100.00	465.40	6.69	1.56	0.02
Once-abroad migrant households (N = 74)					
Lowest	...	...	...	...	...
Second	13.51	377.32	4.61	1.67	0.02
Third	24.32	510.31	45.09	1.09	0.10
Fourth	32.43	709.75	54.85	1.11	0.09
Highest	29.73	1,220.97	218.49	1.05	0.19
All	100.00	768.30	94.34	1.07	0.13

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Note: LE 1 = US$0.73.

smaller proportions. These data suggest that as soon as migrant households have satisfied their immediate consumption needs, they begin to devote larger shares of incremental expenditure to nonconsumption items.

These results lead to two conclusions. First, except for the lowest expenditure quintile, incremental budget shares to consumption for once-abroad migrant households are surprisingly low—32 percent or less. This suggests that these migrant households do

not spend large amounts on items such as food, clothing, pilgrimages, marriage, and education. Second, except for the lowest expenditure group, marginal budget shares to consumption for all quintiles are *lower* for migrant than for nonmigrant households. This means that at any given level of expenditure migrant households are actually less likely to spend additional increments of expenditure on consumption than their nonmigrant counterparts.

When spending on durables is analyzed using expenditure data in Table 35, all quintiles of nonmigrant households have expenditure elasticities greater than 1.0. This indicates that durables are luxury goods for nonmigrant households, and marginal budget shares to durables rise as expenditures increase. These relationships also hold true for once-abroad migrant households: their marginal budget shares to durables increase from 38 to 63 percent. With only one exception, however, marginal budget shares to durables are higher for all quintiles of migrant households, compared with nonmigrants. At the mean, once-abroad migrant households devote 60 percent of their incremental expenditure to durables.

The data in Table 35 reflect the importance of one particular durable good—housing—for migrant households. As noted before, once-abroad migrant households spend more than 88 percent of their mean annual per capita durable expenditures on housing (building and repair). Observations in the field suggest that these expenditures are important for migrants from all quintiles. The first priority for most migrants is to replace traditional mud-brick houses with red-brick houses.

Table 36 shows that marginal budget shares to investment for nonmigrant households do not rise with expenditure levels; rather, they remain very low at all levels of outlay. However, marginal budget shares to investment for once-abroad migrant households rise sharply as expenditures increase. With only one exception, marginal budget shares to investment of migrant households are higher at all quintile levels than those of nonmigrants.

At first glance, these findings regarding the investment behavior of migrant households seem to contradict those reported in Table 33. With investment as the numerator of the dependent variable, the regression results for the migration dummy variable in Table 33 show that, at a given level of expenditure (or income), once-abroad migrant households devote a smaller share to investment than nonmigrant households. However, as expenditures (incomes) rise, so does the proportion of migrant expenditure on investment.[45] Because the expenditures, including remittances, of once-abroad migrant households exceed those of nonmigrant households, migrants may spend less on investment at any given level of expenditure but still devote larger shares to investment. Indeed, Table 36 shows that for migrants, only one quintile (the second lowest) has a marginal budget share to investment that is below that of nonmigrants.

Because once-abroad migrant households spend such a high proportion of their expenditures on housing, an alternative way of comparing the investment behavior of migrant and nonmigrant households is presented in Table 37. In this table all expenditures on housing (building and repair) are classified as "investment" rather than as

[45]With investment as the numerator of the dependent variable, Table 33 shows that the sum of the coefficients for EXP and (MIG)(EXP) is positive (0.059). The sum of the coefficients for the relevant income variables (Y) and (MIG)(Y) is also positive (0.112).

Table 37—Investment expenditure behavior of nonmigrant and once-abroad migrant households in round 2, where all expenditures on housing are classified as investment

Percent of 148 Households Ranked by per Capita Expenditures Including Remittances	Percent of 74 Nonmigrant Households	Mean of per Capita Expenditure	Mean of per Capita Investment	Expenditure Elasticity	Marginal Budget Share to Investment
(quintile)		(LE)			
Nonmigrant households (N = 74)					
Lowest	39.19	130.58	3.36	11.77	0.30
Second	32.43	217.41	40.05	2.50	0.46
Third	13.51	354.35	92.50	2.06	0.54
Fourth	13.51	551.86	216.92	1.70	0.67
Highest	1.35	875.00	248.78	1.97	0.56
All	100.00	255.97	59.48	2.19	0.51
Once-abroad migrant households (N = 74)					
Lowest	1.35	145.77	7.50	6.39	0.33
Second	8.11	247.21	17.86	4.83	0.35
Third	25.67	364.16	128.63	1.78	0.63
Fourth	27.03	543.02	215.25	1.70	0.67
Highest	37.84	941.43	501.90	1.52	0.81
All	100.00	618.49	282.66	1.61	0.73

Percent of 148 Households Ranked by per Capita Income Including Remittances	Percent of 74 Nonmigrant Households	Mean of per Capita Income	Mean of per Capita Investment	Income Elasticity	Marginal Budget Share to Investment
(quintile)		(LE)			
Nonmigrant households (N = 74)					
Lowest	39.19	191.84	20.40	1.23	0.13
Second	27.03	319.27	33.75	1.23	0.13
Third	16.21	462.83	116.97	1.10	0.28
Fourth	8.11	676.57	136.94	1.12	0.23
Highest	9.46	1,839.59	129.93	1.34	0.10
All	100.00	465.40	59.48	1.19	0.15
Once-abroad migrant households (N = 74)					
Lowest	...	...	...	...	...
Second	13.51	377.32	76.51	1.12	0.23
Third	24.32	510.31	126.23	1.10	0.27
Fourth	32.43	709.75	252.82	1.07	0.38
Highest	29.73	1,220.97	536.91	1.05	0.46
All	100.00	768.30	282.66	1.07	0.39

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Note: LE 1 = US$0.73.

"durables." From the perspective of the individual, outlays on housing represent an investment to the extent that they offer some expected return in the future.

With housing classified as an investment good, marginal budget shares to investment for nonmigrant households rise sharply with expenditure level (Table 37). Yet marginal budget shares to investment of once-abroad migrant households rise even faster. In fact, once-abroad migrant households in the top quintile devote more than 80

percent of their marginal budget shares to investment. With only one exception, marginal budget shares to investment are as high or higher at all quintile levels of expenditure for migrant as opposed to nonmigrant households.

Taken together, the findings in Tables 36 and 37 show that migrant households *do* invest their remittance earnings. Regardless of whether expenditures on housing are classified as "durable" or "investment" goods, migrants tend to devote larger shares of their expenditure increments to investment than do nonmigrants. When controlling for expenditure, migrants are actually *more* likely than nonmigrants to invest additional increments of expenditure.[46]

It is, of course, essential to identify more precisely the character of migrant investment, especially when such investment does *not* include housing expenses. According to the data, when housing items are excluded, one-half of all once-abroad migrant households (37 of 74 households) report expenditures on investment. Most of this migrant investment goes to the purchase of land (either for agriculture or building) (Table 38). Once-abroad migrant households devote approximately 73 percent of their total per capita investment expenditures to land and much smaller shares to other items, such as purchases of stores (9.2 percent), vehicles (8.6 percent), and irrigation pumps (3.3 percent).[47] Survey data show that only one migrant household bought a taxi and none purchased a tractor.

Table 38 shows that migrant expenditure on investment is dominated by households in the highest expenditure groups. Once-abroad migrant households in the fourth and top quintile groups account for 78 percent of all migrant investing households (29 of 37 households). Moreover, once-abroad migrant households in these top two quintile groups account for more than 92 percent of total per capita migrant expenditures on investment. This concentration of investment is not surprising given the lumpiness of the preferred type of investment: land. It is also not surprising that these wealthy migrant households also account for *all* investment expenditures on vehicles and irrigation pumps. They evidently possess the means to pursue a wider portfolio of investments.

It is useful to examine the reasons other than expenditure that may explain why investment is dominated by once-abroad migrant households in the top quintile. Means tests of social and demographic differences between the 28 once-abroad migrant households in the top expenditure quintile and the 46 once-abroad migrant households in the other expenditure quintiles suggest the following. Mean household size for the 28 households in the top quintile is significantly smaller (6.1 persons) than that for the 46 households in the other quintiles (9.7 persons). Mean age of household head in the top quintile is also significantly less (41.4 years) than that for the other quintiles (48.8 years). However, none of the following variables are significantly different between the two groups of once-abroad migrant households: mean education of males over 18 years;

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[46]This finding does not take into account the role of savings. Because of methodological problems associated with collecting accurate data on savings, this study does not attempt to compare savings propensities for nonmigrant and once-abroad migrant households. If, however, marginal propensities to save were found to be higher for nonmigrant than migrant households, this finding regarding the investment behavior of migrant households would have to be modified.

[47]This pattern of investment is quite similar to that of nonmigrant households in round 2. They devote 72.9 percent of their total per capita investment expenditures to land, 16.9 percent to irrigation pumps, and 10.1 percent to the purchase of commercial enterprises. None of the nonmigrant households bought vehicles, including taxis or tractors.

Table 38—Per capita expenditure on investment by item for once-abroad migrant households in round 2

Percent of 148 Households Ranked by per Capita Expenditures, Including Remittances	Percent of Total per Capita Migrant Investment in							
	Agri-cultural Land	Land for Building	Tractor	Irrigation Pump	Private Vehicle or Taxi	Store	Other[a]	All
(quintile)								
Lowest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Second	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Third	2.1	1.5	0.0	0.0	0.0	3.2	1.1	7.8
Fourth	0.0	18.8	0.0	0.9	0.0	0.0	1.6	21.4
Highest	25.5	25.2	0.0	2.4	8.6	6.0	3.0	70.8
All	27.6	45.5	0.0	3.3	8.6	9.2	5.7	100.0

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Note: N = 74 once-abroad migrant households.
[a]Other includes investment in high-yielding seeds, fertilizer, and pesticide.

males over 13 years as a proportion of household size; mean number of migrant months spent abroad; or mean actual monthly income earned abroad.

Why do once-abroad migrants choose to invest such a large proportion of their remittance earnings in land? There are two reasons. First, on the whole, the once-abroad migrants in this study are not wealthy (see Table 16). When ranked on the basis of their income before migration, once-abroad migrants are disproportionately drawn from the lower and middle quintiles. Since they were not rich before migration, the evidence suggests that when they returned these migrants tended to spend their remittance earnings in a conservative fashion.[48] This can be seen by considering how the investments of migrants tend to follow their occupational backgrounds. Fifty-three percent of the once-abroad migrants in round 2 are farmers or agricultural laborers, 18 percent are government bureaucrats, and only 10 percent are merchants. Thus, the great majority know only agriculture or government bureaucracy; they lack the necessary mercantile skills to either open a store or start a taxi business. In their investments they therefore tend to avoid unfamiliar areas (such as business) in favor of committing their earnings to that which they know best (land).[49]

Second, the attraction of land investment arises from the general investment environment of the study area. Within the last decade the international migration of workers has sparked a major increase in land prices throughout Egypt. For example,

[48]Because they rank households in different ways, there is no contradiction between the findings of Tables 16 and 38. Table 16 ranks once-abroad migrant households on the basis of predicted income *excluding* remittances and shows that these households were not rich before migration. Table 38 ranks once-abroad migrant households on the basis of predicted expenditures *including* remittances and reveals that investment is dominated by once-abroad migrants from the top expenditure groups. Yet when the once-abroad migrants from the fourth and top expenditure groups in Table 38 are ranked on the basis of predicted income *excluding* remittances, the data show that these households were also not rich before migration.

[49]Writing about the manner in which migrants invest their remittance earnings, Stahl (1989, 369) observes that "it is naive to expect that overseas work will transform a poor peasant . . . into an industrial entrepreneur."

between 1980 and 1986 the average price of a feddan of agricultural land in the study area increased by 600 percent, rising from LE 2,000 to LE 12,000 (US $1,460 to $8,760). As a result, rates of return on land investment have clearly exceeded those found in other categories of investment. For instance, real rates of return on agricultural land in the area have averaged about 9.5 percent per year during 1980-86.[50] By means of comparison, average annual real rates of return on most small-farm crops in Egypt have been negative over this same period.[51] Detailing the reasons for such negative real rates of return on Egyptian crops would go far beyond the scope of this study, but the factors involved are closely related to the pattern of pricing, investment, and institutional policies pursued by the Egyptian state.[52] As a result of these policies, few once-abroad migrants in the study area saw fit to invest in agricultural items other than land, such as new high-yielding seeds and fertilizer. Several migrants in the top expenditure quintiles did buy new agricultural machinery (gasoline-powered pumps) to irrigate their fields. But no once-abroad migrants bought tractors or other mechanized agricultural equipment, probably because they decided that the returns to such investment were too small.

[50]In all likelihood, real rates of return on building land in the area have been even higher. However, such rates of return are notoriously difficult to calculate, because they are based on the transfer of relatively small pieces of land. All rate-of-return calculations assume a 25 percent annual rate of inflation in rural Egypt during 1980-86.

[51]Although certain fruits and vegetables do yield positive real rates of return, these are not ordinarily grown by small farmers. At present, the only small crop that yields positive real rates of return in Egypt is *berseem* (Egyptian clover). See Adams (1986, 118-120) and Cuddihy (1980, 85-98).

[52]For a detailed examination of the factors affecting rates of return on Egyptian crops, see Ikram (1980), Cuddihy (1980), and Adams (1986).

7

CONCLUSIONS AND POLICY RECOMMENDATIONS

Who Goes to Work Abroad and Why?

Observers interested in the issues of migration and remittances in the developing world have often assumed that it is the young and educated who tend to become migrants. These observers have also assumed that migrants—especially international migrants—tend to come from richer households. However, some surprising findings emerge from the migration model used in this study.

First, in examining the socioeconomic determinants of migration for different groups of rural Egyptian males—all males over 18 years of age, males from poor households, and males from nonpoor households—the results suggest that education may not necessarily be positively correlated with migration. When the migration model is estimated for the sample of all males over 18 years, the probability of migration is highest for agricultural laborers, the least educated group in the study. This finding—that *less* education is actually associated with migration—parallels the results of other studies in rural Third World areas (Bilsborrow et al. 1987, for example). More research is needed to clarify this point.

Second, an important focus of this study is to pinpoint the effects of income on migration. The results suggest that the predicted per capita income of the household before migration is not the most important determinant of migration; rather, employment status in agriculture combined with lack of land access is the leading determinant. In rural Egypt, those who work in agriculture but have no land of their own are most likely to go to work abroad. For agricultural laborers, poverty of land combines with employment in agriculture to "push" people abroad.

Third, the results of the migration model suggest that migration is not a life-cycle phenomenon. According to some observers, families with older household heads—and thus more "age-eligible" males for migration—should produce more migrants. However, when the migration model is estimated for all males over 18 years, the age of household head variable has a negative and significant effect on migration. This same result is obtained when the model is estimated for males from poor and nonpoor households. These are unexpected outcomes, indicating that households with older heads are actually less likely to produce international migrants.

International Remittances and the Poor

This study uses predicted income equations to evaluate the impact of international remittances on poverty and income distribution. Using this framework, the study shows that international remittances have a small, but positive, effect on poverty. Poverty-line calculations indicate that the number of poor households declines by 9.8 percent when

predicted per capita household income includes international remittances. Such remittances account for 14.7 percent of the total predicted per capita income of poor households.

These changes in poverty are a reflection of the small—but proportionate—number of poor households who actually receive remittances. According to the data, 28 of 268 households (10.4 percent) classified as "poor" when remittances are excluded receive remittances. For the sample as a whole, 104 of 1,000 households (10.4 percent) receive remittances. In other words, the proportion of households receiving remittances is the same for poor households as it is for the sample as a whole. This is a key policy finding, because it shows that poor households can and *do* produce international migrants.

In examining the socioeconomic determinants of international migration for the poor, the study finds that land assets are a more important determinant of migration than predicted per capita household income. Among the poor, the propensity to migrate is positively and significantly associated with land farmed (rented and owned) because some land assets are needed to meet the financial and opportunity costs of international migration. The propensity of the poor to migrate is positively related to predicted per capita household income excluding remittances, but this relationship is not significant. For poor males, the propensity to migrate increases only slightly with predicted per capita household income.

International Remittances and Income Inequality

Whereas international remittances have a positive effect on poverty, they have a *negative* effect on income distribution in this survey. When remittances are included in predicted per capita household income, the Gini coefficient, a measure of inequality, increases by 24.5 percent from 0.233 to 0.290.

The reasons for this paradoxical outcome are as follows. When remittances are included, the lowest income quintile produces its proportionate share of still-abroad migrants; the second and third income quintiles do not. Moreover, when remittances are included, the two top income quintiles produce a disproportionate share of still-abroad migrants—more than 53 percent combined. It is these variations in the number of migrants produced by different income groups—and not differences in either migrant earnings abroad or marginal propensities to remit—that cause remittances to have a negative effect on rural income distribution.

However, this result is not inevitable. The data clearly show that remittances had a negative impact on income distribution because at the time of the survey most still-abroad migrants came from the upper-income groups. Yet data for the once-abroad category of migrants indicate that at an earlier time poor and lower-middle income households produced just as many migrants as households in the upper-income groups. Had the distribution of households sending migrants abroad been as evenly distributed as it was in the past, it is likely that the effects of remittances on rural income distribution would also have been more equitable.

Decomposing the sources of income inequality shows that remittance income makes only a small contribution to overall income inequality. Although remittance income is itself distributed very unequally, it has only a small share in total income. According to the data, agricultural income is the dominant source of overall income inequality.

The Economic Uses of International Remittances

Three conclusions emerge from the analysis of the economic uses of remittances. First, contrary to the findings of other studies, migrant households do not spend a large proportion of their remittance earnings on personal consumption. For example, Lipton's finding that "everyday [consumption] needs often absorb 90 percent or more of a village's remittances" is at odds with the data presented here.[53] In this study, budget shares allocated to consumption items such as food, clothing, education, medical, pilgrimage, and marriage expenses by once-abroad migrant households are much lower than 90 percent. At the mean level of expenditure, migrant households devote only 12 percent of their increments in expenditure to consumption. Instead of spending their remittance earnings on consumption, once-abroad migrant households tend to view their remittance earnings as a temporary stream of income, one not to be "squandered" on consumer goods.

Second, this analysis confirms the findings of other studies concerning the large amount of remittance money that goes into housing.[54] In this study fully 53.9 percent of remittance earnings spent on nonrecurring items goes to the construction or repair of houses. Expenditures on housing dominate the category of durables. And once-abroad migrant households exhibit a higher propensity than nonmigrant households to spend on durables, mostly housing. With only one exception, marginal budget shares to durables are higher for all expenditure quintiles of migrant than nonmigrant households. Migrant households tend to view the temporary income flows from abroad as an opportunity to tackle one of their most immediate concerns, namely, replacing their crowded, traditional mud-brick houses with more modern red-brick dwellings.

Third, the empirical results suggest that it is wrong to claim that "migrants don't invest" or that "investment is only the fourth (and last) priority for remittances" (Lipton 1980, 12). This study not only clearly shows that migrants invest, but that they actually exhibit a *higher* propensity to invest than do their nonmigrant counterparts. Using expenditure data and controlling for level of expenditure, marginal budget shares to investment for once-abroad migrant quintiles are consistently higher than those of nonmigrants. Most of this investment goes to land: approximately 73 percent of total per capita expenditures on investment by once-abroad migrant households went to the purchase of agricultural or building land. From the standpoint of the individual migrant, land represents a good investment. The value of land tends to exceed the rate of inflation, and for most peasant migrants, it represents the best type of investment available to them.

The propensity of migrants to invest their remittance earnings raises several important policy issues. If the Egyptian government is anxious to channel the flow of remittance monies into rural investments *other* than land, it needs to take some concrete policy actions. In order to encourage migrant investment in agricultural production, the government must continue its efforts to raise the purchase prices for key government-

[53]Lipton's findings are based largely on internal remittances earned by migrants (rural to urban) working within India (Connell et al. 1976; Lipton 1980). In all likelihood, these internal remittance earnings represent a much smaller proportion of household income than the international remittance earnings analyzed here. Nevertheless, the marginal budget shares to consumption for migrant households in this study are still *much* lower than the 90 percent reported by Lipton.

[54]See, for example, Gilani, Khan, and Iqbal (1981) and Lipton (1980).

controlled crops: cotton, wheat, and rice. Once the private rates of return on these crops become more favorable, peasant migrants are likely to begin investing a larger share of their remittance monies in elements of the new agricultural technology, such as high-yielding seeds, fertilizers, and agricultural equipment. To the extent that such investment increases the incomes of peasant farmers, it may well provide an economic stimulus for other sectors of the rural, nonfarm economy. As the incomes of peasant farmers rise, they will have more to spend on health, service, and transport activities. The expansion of these and similar locally based activities could well provide a broad economic stimulus for developing rural Egypt from the local level up. The challenge to make more productive use of international remittances clearly exists, but the policy instruments for meeting that challenge need to be identified and implemented.

APPENDIX: RETURNS TO EDUCATION IN RURAL EGYPT

Rates of return to education in rural Egypt can be analyzed using both descriptive statistics and multivariate regression analysis.

Descriptive Statistics

An important reason for low private rates of return to education in Egypt may be the character of the income or wage structure. Table 39 presents the mean monthly income of all income and wage earners by educational level in rural Egypt.[55] Since the analysis focuses on rates of return, these data are expressed in terms of *actual* individual income or wages (excluding remittances) received in Egypt. Table 39 does not include any income (wages) earned outside of Egypt.

The income and wage structure in rural Egypt is highly unusual. Unlike most developing-country situations, in rural Egypt neither mean income nor mean wages increase with education. In fact, for both categories of earners there is no positive difference between those with no education and those with a university degree. According to the data, the mean actual income of earners with no education is 8.8 percent higher than that of those with a university education. Similarly, the mean actual wages of earners with no education is 27.6 percent higher.

There are two reasons for this perverse relationship between income and education. First, in rural Egypt educated people are generally "forced"—through lack of employment alternatives in the private sector—to accept secure but low-paying government jobs. In the cities, educated Egyptians are able to couple their low-paying government posts with income from a secondary source (such as taxi driving), but in the countryside the dearth of private employment opportunities makes such "moonlighting" much more difficult. Second, the continued international migration of villagers—and especially the migration of agricultural workers—has helped boost the wages of uneducated field hands.[56] According to the data, real wages for agricultural laborers in the study area increased at a rate of 6 percent a year during the period 1979-86. At the same time, real wages of government employees fell approximately 10 percent a year.[57] The net result

[55]Wage earners (N=577) includes all those employed as agricultural laborers, government workers, artisans, private-sector workers, or professionals. Income earners (N=1,501) includes all those employed as farmers/peasants or merchants.

[56]In this area of rural Egypt social custom and tradition normally prevent educated people from hiring themselves out as agricultural laborers (see Adams 1986, 39-40).

[57]These calculations regarding the movement of real wages assume a 25 percent annual rate of inflation during the period 1979-86. For agricultural wages, average nominal wages received by an agricultural worker working all day (8 a.m.-12 p.m. and 2 p.m.-4 p.m.) in the study area increased from LE 0.77 (US$0.53) in 1979 to LE 5.00 (US$3.65) in 1986. For government wages, average nominal wages in the study area for a new high-school-educated government employee increased from LE 20 to LE 50 (US$15 to US$36) during this period; average nominal wages for a similarly educated middle-aged government employee increased from LE 45 to LE 110 (US$33 to US$80).

Table 39—Income and wage differentials by education, 1986/87

Education Level	Income Earners[a]		Wage Earners[b]	
	Actual Mean Income/Month Excluding Remittances	Number of Observations	Actual Mean Wages/Month Excluding Remittances	Number of Observations
	(LE)		(LE)	
No school	119.56 (62.51)	981	135.93 (76.32)	216
Less than six years schooling	141.39 (92.42)	300	127.82 (71.77)	161
Elementary or preparatory school graduate	106.93 (72.93)	29	94.04 (57.86)	25
High school graduate	98.35 (69.45)	145	95.12 (68.84)	133
University graduate	109.80 (73.45)	41	106.54 (75.50)	37
Other	81.60 (40.50)	5	81.60 (40.50)	5

Source: Survey of International Migration and Remittances in Rural Egypt, International Food Policy Research Institute, 1986/87.
Notes: N = 1,501 income earners and 577 wage earners. Numbers in parentheses are standard deviations of mean. LE 1 = US$0.73.
[a]Income earners include all those employed as farmer/peasants and merchants.
[b]Wage earners include all those employed as agricultural laborers, government workers, artisans, private-sector workers, or professionals.

of these two factors has been a "scissors-type" series of changes in the rural Egyptian income structure: rising real incomes for uneducated agricultural workers and falling real incomes for educated government workers.

Multivariate Analysis

In the literature, rates of return to education are typically calculated from income or wage data using the Mincerian earnings function (Mincer 1974):

$$Y = f(S, EX, EX^2), \tag{28}$$

where

Y = log of annual income or wages,
S = years of formal schooling completed,
EX = experience of the individual, measured as Age - S - 6, and
EX^2= square of experience of the individual.

Because the focus here is on rates of return to education in rural Egypt, it seems best to express the dependent variable in terms of actual individual income (excluding remittances) received in Egypt. The dependent variable therefore does not include any

income earned outside of Egypt. On the right-hand side of the equation, a land variable is added to capture the effect of landholdings on rural income. The model then becomes

$$ACTINC = S + EX + EX^2 + LNDMALE, \quad (29)$$

where

ACTINC = log of actual annual income (excluding remittances), and
LNDMALE = land farmed (rented and owned) per number of male household members over 18 years old.

In this exercise, rates of return to education are identified according to the level of schooling: primary, high school, and university. The single schooling variable (S) can therefore be replaced with a set of schooling dummy variables representing different intervals of education. This model can be expressed as

$$ACTINC = SCH1 + SCH2 + SCH3 + SCH4 + SCH5 + EX + EX^2 + LNDMALE, \quad (30)$$

where

SCH1 = no schooling,
SCH2 = less than 6 years of schooling (can read and write),
SCH3 = completed elementary or preparatory school (6 or more years but less than 10 years),
SCH4 = completed high school (12 years), and
SCH5 = completed university (16 years).

Equations (29) and (30) are estimated in two different ways. First, in order to analyze the effects of education on income, both equations are estimated for all males over 18 years of age who received an actual income in Egypt (excluding remittances). Nonmigrant and once-abroad migrant males are included here, but still-abroad migrants are excluded because they received no income in Egypt during the time of the survey. Second, in order to pinpoint the effect of education on wages, equations (29) and (30) are estimated for all male wage earners over 18 years old who received wages in Egypt at the time of the survey. Nonmigrant and once-abroad migrant male wage earners are again included, but still-abroad migrants and nonwage earners (peasants and farmers, for example) are not.

The results of equations (29) and (30) are shown in Table 40. Columns (1) and (3) of this table present the results for income and wage earners when the single schooling variable is used. In both equations, EX and EX^2 are significant and of the expected signs. However, in both equations the values for the single schooling term (S) are very low and statistically insignificant.

These results are important for three reasons. First, it is unusual to run a Mincer-type equation and have a single schooling term that is statistically insignificant. Virtually all other studies of Mincer-type rates of return to education in developing countries have found that the single term, "years of schooling," has a positive *and* significant effect on

Table 40—Earnings functions for income earners and wage earners, 1986/87

Variable	Income Earners[a] (N = 1,501)		Wage Earners[b] (N = 577)	
	(1)	(2)	(3)	(4)
Years of schooling (S)	0.0038 (0.931)	...	0.0083 (1.110)	...
Schooling less than six years (SCH2)	...	0.067 (1.836)*	...	-0.070 (-0.933)
Elementary or preparatory school graduate (SCH3)	...	-0.275 (-2.611)**	...	-0.354 (-2.291)**
High school graduate (SCH4)	...	0.019 (0.326)	...	0.069 (0.693)
University graduate (SCH5)	...	0.230 (2.415)**	...	0.290 (1.977)**
Experience (EX)	0.058 (13.842)**	0.058 (13.672)**	0.060 (6.995)**	0.065 (7.399)**
Square of experience (EX^2)	-0.000 (-13.772)**	-0.001 (-13.643)**	-0.001 (-5.738)**	-0.001 (-6.170)**
Land farmed (rented and owned) per male household member over 18 years (LNDMALE)	0.128 (11.780)**	0.127 (11.709)**	0.082 (2.652)**	0.079 (2.570)**
Constant	3.732 (52.853)**	3.729 (52.961)**	3.590 (24.816)**	3.574 (24.886)**
R^2	0.202	0.210	0.137	0.149

Notes: N = 1,501 income earners and N = 577 wage earners. Numbers in parentheses are t-statistics (two-tailed). Columns (1) and (3) are based on equation (29) in the text, which has a single variable for schooling; columns (2) and (4) are based on equation (30), which has a set of four dummy variables representing various levels of schooling. The dependent variable is log of actual income excluding remittances (ACTINC).

[a]Income-earners include all those employed as farmer/peasants and merchants.

[b]Wage earners include all those employed as agricultural laborers, government workers, artisans, private-sector workers, or professionals.

*Difference is significant at the .10 level.

**Difference is significant at the .05 level.

income and wages.[58] The results in Table 40, which suggest that this is not the case in rural Egypt, may be caused by a process of negative selectivity. In rural Egypt education may not have a statistical effect on income or wages simply because the "best and brightest" have already left for the cities or abroad.[59] Nevertheless, the results are so

[58]See, for example, the studies cited in Psacharopoulos (1985).

[59]As noted at the outset, this analysis of rates of return to education does *not* consider the effect of income (wages) received outside of Egypt when remittances are included. If, however, the analysis were revised to take into account the remittance income (wages) earned by migrants, then it is likely that the rates of return to education would be higher. As shown in Table 5, high-school educated males have a higher propensity to migrate, which suggests that rates of return to education (in general) and high-school education (in particular) would be higher if these income (wage) calculations included remittances.

paradoxical that they point to the need for further research into the effect of education on income and wages in rural Egypt.

Second, the results for the single schooling term in Table 40 suggest that the private rate of return to the typical year of schooling (undifferentiated by level) for both income and wage earners in rural Egypt is less than 1.0 percent. Such a figure is much lower than the 3-10 percent private rates of return to the typical year of schooling reported by recent studies in Pakistan (Guisinger, Henderson, and Scully 1984) and rural Burkina Faso (Ram and Singh 1988). It is also much lower than the 8-13 percent private rates of return to the typical year of schooling reported by Psacharopoulos (1985, Table 3) in his review of Mincer-type rates of return to education in 25 developing countries.

Third, it should be noted that all of the private annual rates of return recorded in Table 40 reflect gross, not net, returns to education. Although the opportunity costs of schooling in rural Egypt are unknown, studies of the opportunity costs of capital in other developing countries (Pakistan, for example) suggest that the private before-tax rate of return on physical capital in the industrial sector is on the order of 30 percent (Guisinger, Henderson, and Scully 1984). If opportunity costs of this magnitude were netted out from the gross returns to schooling in rural Egypt, the private net returns to the typical year of schooling for income and wage earners would become negative.

Columns (2) and (4) of Table 40 present the results of the model when the schooling variable is estimated as a set of dummy variables. In both equations the EX and EX^2 variables are significant and of the expected sign. For income earners, three of the four schooling dummy variables (SCH2, 3, and 5) are statistically significant. For wage earners, two of the four schooling dummy variables (SCH3 and 5) are significant.[60]

Private rates of return to education, based on the level achieved, can be calculated from the data in Table 40 by taking the difference between the schooling dummy variables for each interval and then dividing by the difference in years of schooling completed between each interval (Psacharopoulos 1981). Such a procedure is complicated in this data set by the absence of any recorded number for the years of completed schooling for those in the SCH2 interval (less than 6 years of schooling). For this interval, the years of completed schooling were therefore estimated at 2.0.

For income earners, annual private rates of return range from a low of -5.7 percent for elementary/preparatory graduates to a high of 7.3 percent for high school graduates (Table 41). For wage earners, private rates of return range from -4.7 percent for elementary/preparatory graduates to 10.6 percent for high school graduates.

It is surprising to note that for both sets of earners in Table 41 annual private rates of return for elementary/preparatory graduates are *negative*. There are two possible explanations for this unusual outcome. First, as shown in Table 39 (columns 2 and 4), this may be caused by a small-numbers problem. For both sets of earners the numbers of elementary/preparatory graduates are limited. Second, since no guarantees of government jobs are extended to elementary/preparatory school graduates, a process of negative selectivity may be operating here. This means that the negative rates of return

[60]When equation (30) is corrected by Heckman's procedure, schooling variable SCH5 (university graduate) changes both sign and significance: it becomes negative and statistically insignificant. The standard error for this variable in Heckman's correction is four times more than it is in the uncorrected equation. This is indicative of multicollinearity on SCH5.

Table 41—Annual private rates of return to education, 1986/87

Educational Level	Income Earners[a]	Wage Earners[b]
	(percent)	
Less than six years schooling	3.36	-3.51
Elementary and preparatory school	-5.70	-4.74
High school	7.34	10.59
University	5.27	5.53

Notes: Rates of return are calculated from schooling dummy variables in equation (30) of the text. N = 1,501 income earners and N = 577 wage earners.
[a]Income-earners include all those employed as farmer/peasants and merchants.
[b]Wage earners include all those employed as agricultural laborers, government workers, artisans, private-sector workers, or professionals.

to elementary/preparatory school may be caused by the fact that only the least gifted of graduates choose to leave school at this level.

It is also interesting to note in Table 41 that annual private rates of return for *all* levels of schooling in rural Egypt are considerably below those recorded in other developing countries. In a review of 16 developing countries, Psacharopoulos (1981) found that annual private rates of return to primary education averaged 26.5 percent. In the same review Psacharopoulos found that annual private rates of return to high school education in 14 developing countries averaged 19.2 percent. All of the private rates of return recorded here are far below those cited by Psacharopoulos.

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