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5 Mass Emigration, Remittances, and Economic Adjustment: The Case of El Salvador in the 1980s

Edward Funkhouser

Among the most important labor market issues to confront the small developing economies of Central America and the Caribbean in the 1990s is the increasing volume of emigration. The continuing decline in real wages relative to those in the United States and increasing political tensions are likely to create further pressures to migrate. This outflow of workers will have large effects on the supply of labor, especially of educated workers, in the sender countries. In addition, for many countries, remittances will be a major source of foreign exchange and household income. In retrospect, one of the striking disparities in these countries was the absence of policies concerning international migration during the 1970s and the critical importance that migration has subsequently assumed.

In this paper, I examine the effect of migration and remittances on one of these countries, El Salvador. The magnitude of migration and remittance flows—and the effect on national income, labor markets, and foreign ex-

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change markets—is large; 10–15 percent of the population has emigrated, and the money these people remit amounted to 9 percent of GDP and 67 percent of exports in 1988. I look at the effects of these flows on brain drain, labor force participation, and wages in the Salvadoran labor market using six data sources on emigrants from El Salvador and two data sources for the native Salvadoran population.¹

I find that the massive emigration from El Salvador had significant effects on the labor force participation of remaining household members: this occurs primarily because of the income effect from receiving remittances. I also find evidence that wages were higher in the areas with the greatest number of international migrants. The initial out-migration, the labor force participation response, and the wage response to migration suggest that unemployment rates were lower with the large emigration than they would have been otherwise. Although the motives for migration from other small sender countries may differ from those in El Salvador, the effects of emigration are likely to be similar to those in El Salvador as emigration and remittances increase.

5.1 The Migration and Remittance Experience in El Salvador in the 1980s

From 1979 until 1981, the levels of out-migration, capital flight from El Salvador,² and the inflow of remittances to El Salvador from emigrants increased significantly. Although capital flight resumed its previous level in 1981, migration and remittances have remained high throughout the 1980s.

Estimates of the volume of migration from El Salvador, summarized in appendix A, range from 194,000 Salvadorans outside the country (MIPLAN 1986) to over one million (Montes 1987). The official data, presented in column 1 of table 5.1, indicate that, between 1978 and 1987, there were 653,200 more exits than entrances by citizens of El Salvador.³ The peak in net migration in 1982 was followed by a slight decline until 1986. By 1988, emigration began to increase again.

1. The data sources on emigrants are the 1985 Multiple-Purpose Household Survey (MIPLAN 1986), the 1987 University of Central America (UCA) Survey (Montes 1987) in El Salvador and the United States (see n. 11 below), Salvadorans in the 1980 U.S. Census, Salvadorans in the April 1983 Current Population Survey, and Salvadorans in the June 1988 Current Population Survey. The data sources on natives are the 1985 Multiple-Purpose Household Survey and the 1988 Multiple-Purpose Urban Household Survey (MIPLAN 1989b). These sources are discussed in more detail in app. B.

2. Capital flight, measured by the sum of the lines in the balance of payments accounts for "Short-Term Capital: Other Sectors" and "Net Errors and Omissions," registered as particularly large outflows of \$216.7 million in 1979 and \$406.7 million in 1980.

3. This number may undercount the number of emigrants who left for Honduras through areas affected by the civil war. But since there is no legal restriction on Salvadoran exit from El Salvador or Salvadoran entrance to Guatemala, there is not likely to be a large volume of illegal emigration that is not captured by the official statistics. The period of exception is 1979–80. The official data show that this was a year of extremely low migration, suggesting an undercount of forty to sixty thousand net emigrants.

Table 5.1

Annual Levels of Emigration and Remittance Flows for El Salvador, 1978–87: Official Data and Estimates by Author

	Migration			Remittances					
	Official Registered Total (1)	Estimates		Central Bank Balance of Payments (4)	IMF Balance of Payments (5)	Central Bank Estimate (6)	Author's Estimates		
		Medium Variant (2)	High Variant (3)				(7)	(8)	(9)
1978	68.4			45.3	44.9				
1979	68.8	35.6	60.5	49.2	44.9	49.2			
1980	83.2	43.0	73.5	10.9	17.4	59.6	132.7	94.4	148.3
1981	40.5	46.6	79.2	7.0	39.2	74.7	176.4	143.5	215.8
1982	129.4	66.9	113.9	20.5	51.7	87.3	240.9	217.2	318.5
1983	73.0	37.8	64.2	11.2	97.4	97.0	289.1	266.4	393.8
1984	55.6	28.8	48.9	19.6	118.0	121.4	333.9	309.3	463.0
1985	51.5	26.6	45.3	11.7	129.4	101.9	379.9	352.4	534.4
1986	52.6	27.2	46.3	9.2	149.6	134.5	429.5	398.6	611.9
1987	30.2	15.6	26.6	14.5		168.7	470.2	433.1	674.1

Sources: Column 1, MIPLAN (1988); and published data. Columns 2 and 3, app. A: medium variant = 450,000 emigrants in 1987; high variant = 650,000 emigrants in 1987. Columns 4 and 6, Central Bank of El Salvador, unpublished data. Column 5, IMF, *International Financial Statistics* (various issues), private unrequited transfers. Columns 7–9, app. A: low variant = remittances from emigrants in the United States (\$600 per year in 1978; \$900 per year in 1987) and from other emigrants (\$0 per year); high variant = remittances from emigrants in the United States (\$600 per year in 1978; \$1,200 per year in 1987) and from other emigrants (\$250 per year in 1978; \$400 per year in 1987). Column 7, medium variant for migration, high variant for remittances. Column 8, high variant for migration, low variant for remittances. Column 9, high variant for migration, high variant for remittances.

I show two additional estimates of the net emigration flow in columns 2 and 3. These estimates are calculated by interpolation between a base stock of emigrants of 164,000 in 1978⁴ and medium (450,000) and high (650,000) estimates of the number of Salvadorans outside the country in 1987. The shape of the migration flow for these estimates is that of the official statistics adjusted for the low 1979–80 outflow. I estimate the total stock of emigrants in 1988 to be between 500,000 and 750,000, or 10–15 percent of the 1988 population of 5.3 million persons. Of these, it is estimated that 85 percent came to the United States.

There was also a sizable shock to the economy from the inflow of remittances. From column 4 of table 5.1, it can be seen that, following 1979, private exchangers ceased the use of official channels to change dollars. The level of remittances must, therefore, also be estimated. Existing estimates range to over \$1.3 billion per year (Montes 1987).

Two official estimates of remittances are shown in columns 5 and 6—the line item for “Private Unrequited Transfers” in the balance of payment account reported to the International Monetary Fund and the Central Bank’s own estimate. The data show an increase in remittances from less than \$50 million in 1979 to over \$194 million in 1988 and a total of over \$1 billion in remittances during the 1980s.

These estimates are based on a constant level of remittances per emigrant over time. Remittance per emigrant has not remained constant, however. Calculations from the 1987 University of Central America (UCA) survey (see app. A) suggest that average remittance per emigrant, including nonworkers, has increased to approximately \$100 per month. To calculate the volume of remittances shown in columns 7–9 of table 5.1, therefore, I used an interpolation of remittance per emigrant that is then multiplied by an estimate of the stock of emigrants at each point in time. The three estimates represent different variants of high and medium estimates of remittances and emigration as described in the notes to table 5.1.

The estimates range from \$400 to \$600 million per year, or an increase from double the Central Bank estimates in 1980 to over three times the Central Bank estimate in 1986. The lower amount is equal to 67 percent of exports, 99 percent of the trade deficit, and 8.6 percent of GDP in 1987.⁵ Over this period, remittances became an important source of foreign exchange.

While these estimates of migration and remittances are crude, their orders of magnitude suffice to document the key fact that motivates this study: the large outflow of persons from El Salvador and the correspondingly large inflow of remittance funds.

4. This figure is the official estimate of the Central Bank.

5. In addition, for all years except 1984, estimated remittances exceed U.S. economic aid to El Salvador (see Gallardo and Lopez 1986; and MIPLAN 1989a).

5.1.1 Characteristics of Emigrants

Emigrants are not a random draw from the Salvadoran population. In table 5.2, I compare the characteristics of the emigrant population with the characteristics of the Salvadoran population using all available data sources. Emigrants are much more likely to come from an urban area, are more likely to be of working age, and are more educated than the nonmigrant population.

There are two ways to analyze further the characteristics of emigrants relative to the native population: in terms of their personal attributes and in terms of the attributes of their families. In column 1 of table 5.3, I estimate probit equations that relate emigrant status to individual characteristics using data obtained in the 1985 Salvadoran Household Survey, which asked limited questions about the characteristics of emigrants. In column 2, I estimate similar probits for a pooled data set consisting of natives from the 1985 Household Survey and migrants from the 1987 UCA Survey conducted in El Salvador, which contains information about the education and marital status of emigrants not found in the 1985 Household Survey.

The results in the two columns confirm the simple tabulations in table 5.2: persons who are urbanized, more highly educated, married, male, and young are more likely to be migrants. All these characteristics suggest that migrants had greater human capital and labor force participation than nonmigrants. In addition, migrants are likely to be a generation younger than the household head and to come from larger households.

In column 3 of table 5.3, I show how households with emigrants differ from households without members abroad. I include the characteristics of the household head (age, education, marital status, sex), household income,⁶ household size, urban status, and department.⁷ As in the individual data, urban households are more likely to have emigrant members. The coefficients on the characteristics of the household head suggest that adult children are those who migrate—households in which the head is married and over the age of 50 are those most likely to have had members emigrate. Female-headed households are also more likely to have members abroad. Unfortunately, the data do not specify relationship of the emigrant to the household head. Therefore, I cannot test directly whether migration has contributed to family split up.

Two robust findings in the household estimates are that higher-income

6. Remittances are not identified separately in the 1985 data. It is not likely that respondents included remittances in the "Other Income" category in the 1985 survey. The 1988 Urban Household Survey (MIPLAN 1989b) does ask about assistance from people outside the country. Only a small proportion of persons report such assistance, and for those persons the predicted remittance from the UCA Survey (419 colonies per month) exceeds total income (255 colonies per month).

7. In El Salvador, there are fourteen regional divisions called *departments*. The eight departments located in the eastern half of the country are those that have been most affected by the civil war.

Table 5.2 **Characteristics of Salvadoran Population and Emigrants (%)**

	Total Population					Emigrants					
	Salv. Census, 1971	Salv. Household Surveys				U.S. Census, 1980	April CPS, 1983	Salv. Household Survey, 1985	UCA Surveys		June CPS, 1988
		1975	1978	1980	1985				Salv., 1987	U.S., 1987	
Age:											
0-14	46.4	45.0	44.9	43.7	39.7	11.8		3.2	1.1	.9	9.7
15-54	46.3	46.4	46.1	46.1	49.2	81.5	95.6	94.2	94.2	92.7	84.7
Over 54	7.3	8.6	9.0	10.2	11.1	6.7	4.4	4.7	2.6	6.4	5.6
Urban	39.5	40.3	41.7	41.9	48.4		61.7		61.1		
Rural	60.5	59.7	58.3	58.1	51.6			38.3	38.9		
Pop. 15-54											
Male	48.6	47.0	47.3	47.0	45.5	43.6	44.1	58.7	58.9	51.8	51.4
Female	51.4	53.0	52.7	53.0	54.5	56.4	55.9	41.3	41.1	48.2	48.6
Education level of pop. over 10:											
0-6 years	90.9		83.1	80.7	75.1	32.3	41.2		36.8	35.8	35.7
7-9 years	5.0		8.8	10.4	11.9	20.2	23.5		21.1	25.8	14.3
10-12 years	2.7		5.8	7.0	10.1	27.5	23.5		36.9	29.4	37.5
13+ years	1.3		2.3	2.0	3.0	19.7	11.8		5.1	9.0	12.5
Labor force participation:											
Male		68.4	69.4	70.1	66.6	79.2	86.7			64.7	87.7
Female		25.3	29.2	34.4	34.7	59.8	65.8			60.4	65.5
Occupation:											
Professional			5.1	4.9	6.6	6.3		5.7	1.3	8.9	4.6
Workers/employees			85.7	86.3	81.4	63.2		88.0	57.1	36.3	55.3
Domestic			{	9.1	8.8	10.4	30.5	{	14.1	22.6	{
Service											
								6.3	27.6	32.2	40.1

Source: See app. B.

Table 5.3 Probit Estimates for Migrant Status: Emigrant Data Pooled with Nonmigrant Data from National Household Survey

	1985 Salvadoran Household Data Pooled with:				
	1985 Migrants		1987 Montes Data		1985 Household Data, Migrant Member, Probit
	Probit (1)	Change (1b)	Probit (2)	Change (2b)	(3)
Intercept	- 2.324 (.074)		- 3.407 (.112)		- 3.214 (.207)
Urban	.299 (.027)	.032	.149 (.030)	.015	.257 (.042)
Education:					
0-6 years			- .379 (.061)		.308 (.111)
7-9 years			.326 (.064)	.080	.505 (.125)
10-12 years			.540 (.061)	.039	.166 (.121)
Age	.060 (.004)	.003	.105 (.005)	.001	.041 (.007)
Age ² /100	- .101 (.006)		- .139 (.007)		- .028 (.007)
Married × male			.388 (.038)		
				.131	.084
Married × female			.483 (.040)		.043
Female	- .274 (.024)	- .030	- .252 (.033)	- .026	.349 (.044)
Household income/1,000					.124 (.026)
Persons over 10					.031 (.031)
Department dummies	yes		yes		yes
Log likelihood	6,231.0		5,856.2		2,954.2
N	30,530		30,534		8,095

Note: In cols. 1b and 2b, "Change" refers to the change in probability resulting from a one-unit increase in the independent variable. For the education variables, the change is movement from the next lowest education group. In col. 3, characteristics are those of household head. Observations weighted by expansion factors. Numbers in parentheses are standard errors.

households and larger households—even after exclusion of the emigrants themselves—are more likely to have household members outside the country. Higher-income households can more easily afford the transportation costs of migration. Larger households can more easily afford the psychic costs or more easily insure themselves against loss when there are credit constraints.

5.1.2 Brain Drain

Of special concern is the possibility that the number of more educated migrants exceeds the replacement capacity of the educational system. I use published data from the 1980 Household Survey and official education statistics to calculate whether natural increase has replaced emigrants in the Salvadoran labor market. Between 1980 and 1986, the natural increase in the potential labor force was slightly over 100,000.⁸ This is double the high estimate of the number of emigrants who would have been in the labor force had they not migrated.

I find that, even for the more educated population, the educational system has supplied at least as many graduates at each educational level as the number of people at that level who have left the country. For those with ten or more years of education, there was an increase of thirty-two thousand people per year between 1980 and 1986, or approximately seven thousand more than the estimated number of migrants from this education group.⁹

This evidence suggests that increases in nonmigrant graduates from the educational system at higher education levels have compensated for the effects of migration on the stocks of persons in each education group. The extent of shortages in skilled labor has been lessened because there has not been growth in aggregate demand for labor—replacement of the educated work force has been sufficient to avoid shortages in most areas. The net effect is that the pool of persons in the work force of a given education level becomes increasingly younger and commands less labor market experience, as emigrants are replaced by recent graduates.

5.1.3 The 1980s Migration

An important question is the extent to which the changes following 1979 can be attributed to political changes and the subsequent violence or to economic decline. The more the migration is due to economic forces, whether politically induced or not, the more likely the results of this study can be generalized to other countries. In table 5.4, I compare the characteristics of Salvadorans who migrated before and after 1979, in four data sets. Despite the lack of comparability due to sample selection, the data show a higher proportion of men, a higher proportion of single persons, and lower levels of education among those who migrated after 1979 than among those who migrated before 1979.¹⁰ Although the lower education level of post-1979 mi-

8. The increase in the potential labor force is calculated by subtracting the age 60–64 cohort from the age 10–14 cohort and averaging over the five-year bracket to account for the six-year period.

9. Between 1978 and 1986, there were an average of 43,200 Salvadorans per year completing the ninth grade, 21,660 completing the twelfth grade, and 10,000 in each university year (MIP-LAN 1986, table K1, pp. 147–48).

10. It should be noted that those counted as having left before 1979 are, in fact, those who left before 1979 and did not return. Thus, there is not equal selection in both cohorts.

Table 5.4 **Characteristics of Migrants before and after 1979: Evidence from the April 1983 CPS, the June 1988 CPS, and the 1987 UCA Survey**

	CPS				UCA			
	April 1983		June 1988		Salv., 1987		U.S., 1987	
	Before 1979	After 1978	Before 1980	After 1979	Before 1979	After 1978	Before 1979	After 1978
Mean age at migration	24.8	29.3	20.4	25.6	24.9	24.8	25.7	26.3
Sex (%):								
Male	44.4	41.4	40.0	47.7	45.9	62.1	38.8	56.4
Female	55.6	58.6	60.0	52.3	54.1	38.9	62.2	43.6
Married (%)	47.2	65.5	56.7	47.7	72.5	40.2	54.4	44.3
Education (%):								
0–6	38.9	48.3	13.3	35.4	34.2	35.9	40.2	33.2
7–9	19.4	31.0	6.7	21.5	16.7	23.9	22.9	27.1
10–12	22.2	20.7	43.3	41.5	44.0	35.6	31.8	29.6
Over 12	19.4	. . .	36.7	1.5	5.0	4.6	5.1	10.2
Working in U.S. (%):								
Male			75.0	80.6	90.7	71.1	84.9	62.0
Female			66.7	55.9	77.1	65.1	70.8	58.2

(continued)

Table 5.4 (continued)

	CPS				UCA			
	April 1983		June 1988		Salv., 1987		U.S., 1987	
	Before 1979	After 1978	Before 1980	After 1979	Before 1979	After 1978	Before 1979	After 1978
Mean U.S. earnings (\$1980):								
Week					306	209	246	191
Year	8,548	7,110						
Married emigrant left spouse (%):								
Male					17.1	40.1	12.7	31.6
Female					15.8	27.0	12.5	22.9
Legal status (%):								
Legal					75.1	24.4	47.6	14.1
Undocumented					11.8	56.0	36.8	62.9
In legalization process					13.2	19.6	15.6	23.0
Migration for (%):								
Economic reason					70.5	75.9	58.3	37.5
Political reason or both					3.7	12.2	17.4	47.3
Plan to return to El Salvador (%)					9.4	32.1	40.3	53.4
Plan to bring family to U.S. (%)					45.4	52.7	63.4	53.2

grants is consistent with political emigration from a more conservative government, the data are more suggestive of economic motivations to migration affecting a greater cross section of the population.

Further evidence is provided from the UCA surveys,¹¹ which asked motive for migration, in the bottom half of table 5.4. Although the responses do show a higher proportion reporting political motivation among those emigrating after 1979, even during the early 1980s, the years of greatest conflict, most emigration was economically motivated. Not surprisingly, however, a higher proportion of those surveyed in the United States, where reprisal is less likely, stated political motivations for migration.

One of the principal determinants of "economic" migration—an increase in the wages in the destination country relative to those in the source country—did provide greater incentive for emigration from Central America in the 1980s. In figure 5.1, I present data on earnings in El Salvador and the United States, calculated from social insurance data for El Salvador (ISSS 1978, 1987) and *Employment and Earnings* for the United States. The ratio of mean weekly earnings in the United States to those in El Salvador increased from 8.3 in 1980 to over 14 in 1986. However, the decline in relative earnings alone does not explain why migration levels from El Salvador are higher than those from other countries with similar declines in relative real wages.¹²

To examine the contribution of earnings incentives to the composition of the emigrant pool, I estimated log earnings equations for Salvadorans in the United States and those in El Salvador using the 1980 Census of the United States and the 1985 Encuesta de Hogares de Propósitos Múltiples (MIPLAN 1986) of El Salvador:

$$(1) \quad \ln w_{li} = \alpha_l + \beta_l X_i + \epsilon_{li},$$

in which w_{li} is the earnings in location l of person i , α_l and β_l determine the reward structure in location l , X_i is a vector of characteristics of individual i , and ϵ_{li} is the random component of the wages of individual i in location l .

The results of these estimations are shown in table 5.5. In both countries, there is an inverted U-shaped age-wage profile, a positive relation between

11. Segundo Montes, then director of the Instituto de Investigaciones of the University of Central America, conducted parallel surveys with similar questions about emigration patterns of households in El Salvador and of emigrants in the United States. The survey conducted in El Salvador asked questions about relatives who had emigrated. The survey conducted in the United States asked questions of the emigrants themselves. (See Montes 1987; and app. A below.)

12. Although real wages have fallen while GDP per capita has increased slightly over the 1980s, data on GDP per capita are more easily available and more comparable across countries. Figures for the increase in real GDP per capita for the period 1983–87 and the officially registered net emigration (as a percentage of the 1983 population) for the period 1983–87, respectively, are as follows: El Salvador, 1.65 and 3.62 percent; Honduras, 0.64 and 1.47 percent; Nicaragua, –16.55 and 3.18 percent; and Costa Rica, 6.24 and 0.87 percent. The increase in real GDP per capita for the period 1983–87 for Mexico and the United States, respectively, is –3.35 and 12.93 percent. (Sources: International Monetary Fund, *International Financial Statistics*; MIPLAN (1988); INEC (1989); and unpublished data.)

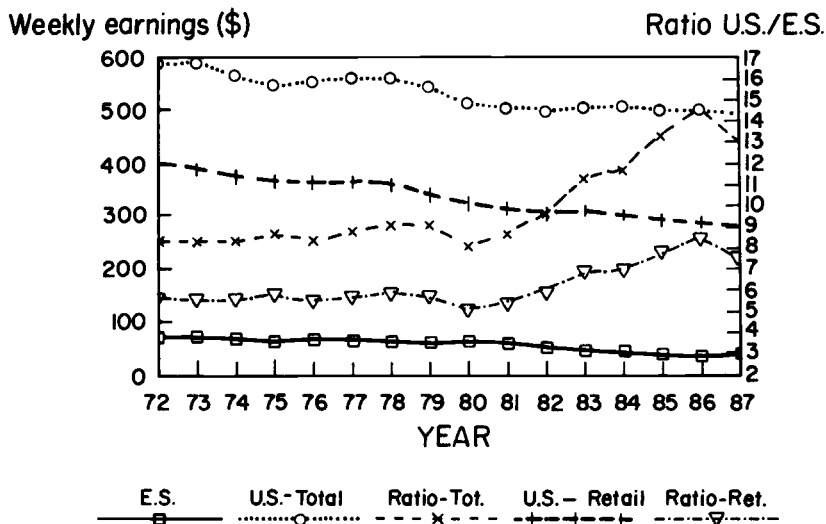


Fig. 5.1 Real wages in El Salvador, the United States, and the retail industry in the United States and the ratio of real wages in El Salvador to real wages in the United States

education and earnings, and a positive marriage effect. The education-earnings profile is flatter in the United States, implying that, in percentage terms, more-educated workers do not do as well as less-educated workers after migration. However, because of the large difference in mean earnings noted above, the difference in earnings in absolute terms provides a greater incentive for more-educated workers to come to the United States. To see this, consider two married males, aged 30–39, considering moving from San Salvador to a western urban area in the United States. One has ten to twelve years of education and the other zero to six years of education. In El Salvador, the more-educated worker will earn 71.2 percent more than the less-educated worker, while in the United States he will earn only 16.3 percent more. However, because mean wages in El Salvador are less than one-tenth those in the United States, the absolute gain favors the educated worker, who will earn \$593 more by moving to the United States, over the less-educated worker, who will earn only \$531 more.¹³

An additional component of the net benefit to migration is the migration cost. The effect of this fixed cost is to make migration unprofitable for those who gain the least in absolute terms. The cost of illegally entering the United

13. Expected wages are likely to show even greater relative benefits to educated workers. In the 1985 data for El Salvador, unemployment rates for educated workers are higher than those for uneducated workers. In the 1980 Census data, unemployment rates for educated Salvadoran immigrants are lower than those for uneducated Salvadorans.

Table 5.5

Estimates of Log Earnings Equations for Salvadorans, El Salvador and the United States

	Males Aged 16-65						Females Aged 16-65					
	Wages in El Salvador			Wages in the U.S.			Wages in El Salvador			Wages in the U.S.		
	Total, 1985 (1)	Urban		U.S. Census (4)	UCA		Total, 1985 (1)	Urban		U.S. Census (4)	UCA	
		1985 (2)	1988 (3)		U.S. (5)	Salv. (6)		1985 (2)	1988 (3)		U.S. (5)	Salv. (6)
Intercept	6.358 (.058)	6.718 (.064)	6.884 (.056)	5.025 (.323)	5.117 (.267)	5.215 (.287)	6.465 (.080)	6.572 (.081)	6.723 (.083)	4.672 (.306)	4.947 (.407)	4.446 (.300)
Education:												
0-6	-.898 (.042)	-.868 (.044)	-.736 (.033)	-.221 (.068)	-.158 (.136)	-.535 (.086)	-1.202 (.052)	-1.203 (.054)	-.970 (.043)	-.227 (.073)	-.368 (.202)	-.649 (.087)
7-9	-.612 (.047)	-.632 (.050)	-.481 (.038)	-.113 (.073)	-.080 (.143)	-.374 (.089)	-.893 (.061)	-.857 (.065)	-.688 (.054)	-.118 (.077)	-.530 (.209)	-.535 (.090)
10-12	-.361 (.046)	-.334 (.047)	-.306 (.039)	-.073 (.063)	-.063 (.137)	-.393 (.085)	-.394 (.056)	-.388 (.058)	-.339 (.049)	-.117 (.072)	-.120 (.200)	-.485 (.087)
Age:												
<20	-.130 (.049)	-.393 (.071)	-.446 (.060)	-.816 (.259)	-.249 (.269)	.114 (.299)	-.368 (.070)	-.504 (.084)	-.542 (.088)	-.431 (.218)	-.327 (.384)	-.687 (.307)
20-29	.086 (.038)	-.053 (.052)	-.038 (.049)	-.066 (.240)	-.092 (.239)	.124 (.267)	-.077 (.057)	-.134 (.065)	-.174 (.078)	.212 (.191)	.245 (.339)	.955 (.283)
30-39	.245 (.038)	.182 (.051)	.161 (.048)	.247 (.240)	-.132 (.237)	.241 (.266)	.066 (.057)	.049 (.065)	.080 (.075)	.286 (.190)	.321 (.336)	1.008 (.283)
40-49	.213 (.038)	.193 (.052)	.193 (.050)	.199 (.242)	-.105 (.247)	.213 (.274)	.109 (.057)	.106 (.065)	.155 (.077)	.285 (.191)	.259 (.345)	.953 (.286)
50-59	.137 (.040)	.102 (.055)	.157 (.052)	-.042 (.250)	-.089 (.287)	-.121 (.293)	.097 (.060)	.124 (.068)	.141 (.080)	.277 (.195)	.158 (.363)	.785 (.291)

(continued)

Table 5.5 (continued)

	Males Aged 16–65						Females Aged 16–65					
	Wages in El Salvador			Wages in the U.S.			Wages in El Salvador			Wages in the U.S.		
	Urban		U.S. Census	UCA			Urban		U.S. Census	UCA		
	Total, 1985 (1)	1985 (2)		1988 (3)	U.S. (4)	Salv. (5)	Total, 1985 (1)	1985 (2)	1988 (3)	U.S. (4)	U.S. (5)	Salv. (6)
Urban	.345 (.020)				.668 (.201)		.104 (.028)			.275 (.221)		
Married	.128 (.019)	.178 (.025)	.223 (.022)	.373 (.051)	.118 (.069)	.104 (.053)	.166 (.028)	.203 (.032)	.307 (.033)	–.007 (.048)	.078 (.088)	.068 (.044)
Region controls	yes	yes	yes	yes	no	no	yes	yes	yes	yes	no	no
U.S. experience controls	no	no	no	yes	yes	yes	no	no	no	yes	yes	yes
R^2	.30	.26	.28	.27	.13	.19	.29	.30	.30	.09	.21	.25
N	6,812	3,631	4,190	1,366	400	445	3,894	2,778	2,943	1,419	249	357

Note: Numbers in parentheses are standard errors.

States is estimated to be between \$800 and \$1,600 (Webb et al. 1988). Using an approximation of \$1,200 spread out over twelve months, the net gain to the more-educated migrant is 14 percent higher than that to the less-educated one.

5.1.4 Remittances and the Household Return

For the nonmigrants in the household, the private economic motive for emigration of a household member is the remittances that the migrant sends to El Salvador. The family migration decision involves comparing the cost of migration to the remittances the emigrant sends back and deciding whether this amount is more than the individual would contribute to the household without migrating.

Remittance behavior can be estimated from the 1987 UCA Survey in El Salvador. The survey asks both the amount of remittances received by the household and the total amount that the relative in the United States sent to all households in El Salvador. Sixty-five percent of emigrants reported in a survey sent money to relatives in El Salvador. The average amount received, including those who received no remittances at all, was approximately \$140 per month. This amount is two to three times higher than the average amount the emigrant would earn in El Salvador.

I estimate OLS regressions for the amount of remittances sent to El Salvador. In the first specification, I look at the amount received from the emigrant by the household in El Salvador. These results, presented in columns 1 and 2 of table 5.6, show remittances to be positively related to employment of the emigrant, the number of adult migrants who have left the Salvadoran household, and those emigrants who left spouses in El Salvador.

In the second specification, shown in column 3 of table 5.6, the dependent variable is the amount of remittances sent by the emigrant in the United States. The results show that earnings are positively related to the amount remitted. In addition, the effect of other emigrants related to the respondent is interesting—whereas the number of adult migrants increases the total amount sent to the household in El Salvador, each adult emigrant is likely to send less if there are other persons remitting. And, not surprisingly, those emigrants who left a spouse in El Salvador are likely to send more money than other emigrants.

These data show the economic reward to emigration for the nonmigrant household members to be high. Remittances of \$140 per month exceed the contribution of the emigrant to the household, even adjusting for the migration cost.

5.2 Effects of Migration on the Salvadoran Labor Market

How might the migration and remittances shown in section 5.1 affect the Salvadoran labor market? Within a household from which an emigrant has left, the loss of a domestic earner should lead to a within-household substitution of work among the remaining household members. This response may

Table 5.6 Remittance Equations Estimated from UCA Surveys in El Salvador and the United States (dependent variable = dollars per month sent from U.S.)

	Received by Household in El Salvador		Sent by Emigrant in U.S., OLS (3)
	WLS (1)	WLS (2)	
Intercept	-25.573 (47.852)	-51.835 (51.107)	97.838 (60.454)
Working	45.244 (16.752)	49.304 (17.571)	
Monthly income			.056 (.015)
Female	-11.664 (14.467)	-7.462 (15.127)	-21.461 (22.306)
Age:			
16-19	37.124 (48.980)	57.926 (51.431)	59.370 (67.418)
20-29	38.623 (41.097)	51.285 (42.605)	10.629 (53.064)
30-39	64.242 (42.018)	68.150 (43.094)	-18.716 (52.304)
40-49	84.498 (42.784)	83.075 (43.912)	29.964 (54.201)
50-59	43.601 (46.819)	47.452 (48.095)	19.667 (61.192)
No. adult migrants	65.000 (14.203)	68.056 (14.765)	-24.229 (20.983)
Left spouse		32.837 (18.056)	48.765 (23.236)
Department dummies	yes	yes	yes
R ²	.19	.20	.25
N	431	408	158
Mean dependent variable	143	144	120

Note: Numbers in parentheses are standard errors.

differ by sex. In particular, because the female labor force participation rate is quite low, there may be more possibilities for changes in the participation status of females. A second income effect on labor force participation results from the receipt of remittances.

In regional labor markets, the loss of a significant proportion of the work force can be expected to lead to an increase in the wage, all else equal. It is also possible that a high level of remittances to a regional labor market increases aggregate demand and, thus, the demand for labor.

In this section, I examine the relation between household emigration and labor force participation (LFP) in El Salvador using

$$(2) \quad LFP_i = f(\alpha + \beta_1 X_i + \beta_2 H_i + \beta_3 D + \beta_4 M + \varepsilon_i),$$

where X_i is a vector of individual characteristics including age, education, and marital status; H_i is a vector of household characteristics including non-own-wage income, number of adults in the household, number of children in the household, and urban status; D is a vector of department dummy variables; and M is a vector of migration variables, including household member outside El Salvador, predicted remittances, and proportion of households in department-urban cell with emigrant members.

I present labor force participation equations for persons aged 20–59 in table 5.7. The results show quite different labor force participation patterns and effects of migration on labor force participation for males and females.¹⁴ In column 1, the key explanatory variable is a dummy for individuals in families from which a member has emigrated. The total effect of having a member of the household abroad is negative for males and insignificant for females. From this, I conclude that the total within-household effect on labor force participation is negative.

The next step is to separate this combined effect—which may mask separate effects—into the effect of receipt of remittances and the effect of having a member of the household abroad. Since none of the data sets I utilize has information on both labor force activity and remittances, I use remittance data from the 1987 UCA Survey in El Salvador and labor force data from the 1985 Household Survey.

First, I estimate remittances received by households with members¹⁵ in the United States from the 1987 UCA Survey in El Salvador, using only those household variables that can be identified in both the 1987 and the 1985 survey.¹⁶ Second, remittances are predicted for each household in the 1985 sur-

14. For both males and females, there is an inverted U-shaped relation between labor forced participation and age, with participation declining after age 50. Females with a high school education and above have participation rates higher than females with less education. In contrast, males with one to nine years of education have the highest participation rates, controlling for other characteristics. Marriage has a significant positive effect on the participation of males and a significant negative effect on the participation of females.

Examining the coefficients on the household characteristics yields the following results. Non-own-wage income has the expected negative sign for both men and women. The marginal response decreases as income goes up. The results also show that substitution within households does take place. In households with more adult members, the men are less likely and the women more likely to participate. The former is likely the result of economies of scale in household production. The latter is explained by the greater possibilities for someone else to take care of children when there are more adults. A greater number of children is associated with higher participation rates of men, with no effect, or with offsetting effects on women.

There is some variation in labor force participation across areas of the country, with areas of conflict having lower participation rates than areas without conflict. The higher participation rate of women in urban areas—16 percent higher, controlling for other characteristics—is quite striking.

15. For the calculation of expected remittance, immediate family members are grandparent, parent, child, or son/daughter-in-law.

16. These variables are age, sex, work status, and department of origin of the emigrant.

Table 5.7 Labor Force Participation in El Salvador: Population 10–59 Years

	Males			Females		
	Working or Looking Probit		Increase in Probit from 1-unit change	Working or Looking Probit		Increase in Probit from 1-unit change
	(1)	(2)		(1)	(2)	
Demographic variables:						
Yrs. educ.	.063 (.013)	.063 (.013)	.0035	.053 (.010)	.052 (.010)	.0174
Yrs. educ. ² /10	– .004 (.001)	– .004 (.001)		– .002 (.007)	– .002 (.007)	
Age	.108 (.013)	.108 (.013)		.126 (.010)	.125 (.010)	
			.0038			.0048
Age ² /10	– .013 (.002)	– .013 (.002)		– .016 (.001)	– .016 (.001)	
Married	.232 (.046)	.232 (.046)	.0495	– .374 (.033)	– .373 (.033)	– .1278
Household variables:						
Urban	.077 (.046)	.108 (.077)	.0241	.462 (.034)	.435 (.057)	.1553
Nonwage income/ 100 (month)	– .045 (.006)	– .045 (.006)	– .0003	– .019 (.004)	– .019 (.004)	– .0002
Nonwage income ² / 10,000	.006 (.002)	.006 (.002)		.020 (.006)	.020 (.006)	
No. of adults (>10)	– .027 (.010)	– .027 (.010)		– .0062	.016 (.008)	
No. children	.055 (.014)	.054 (.014)	.0118	– .022 (.011)	– .022 (.011)	– .0075
Migration variables:						
Migrant in house- hold	– .205 (.056)	.012 (.117)	.0027	– .033 (.043)	.149 (.087)	.0523
Predicted remit- tance/100		– .029 (.014)	– .0001		– .024 (.010)	– .0001
Proportion migrants in dept.		– .005	– .0010 (.010)		.005 (.008)	.0019
Constant	– .769 (.241)	– .731 (.256)		– 2.674 (.182)	– 2.721 (.194)	
Department dummies						
Log likelihood	yes – 2,806.4	yes – 2,804.0		yes – 5,223.9	yes – 5,220.9	
N	7,033	7,033		8,656	8,656	

Note: Remittances are translated to colones at average black market rate for 1985, which is 5.66 colones per \$US 1.00. The omitted groups are rural, age 50–59, and college education. In col. 2b, change is a one-unit change for education, age, marriage, urban, adults in household, children in household, migrant in household, and proportion of households in region with migrant member. For income and remittances, change is a 1 percent change. Numbers in parentheses are standard errors.

vey reporting a member outside the country. This leads to use of the following remittance variable:

$$(3) \quad R_{h85} = \frac{\hat{\alpha}_{87} + \hat{\beta}_{87} X_{h85}}{\text{CPI}},$$

where α and β are the coefficients from the estimation of remittances using the 1987 UCA data, X is a vector of household characteristics in the 1985 data, and CPI is the 1987 consumer price index, base 1985. The regression from which this variable is calculated is column 1 of table 5.6. A shortcoming of this method is that households that do not have a member abroad but that receive remittances from another relative have zero predicted remittances since they cannot be identified in the 1985 data.¹⁷

In column 2 of table 5.7, I include the three migration variables—amount of predicted remittances, emigrant from household, and emigrants as a proportion of population in the department-urban cell—as determinants of labor force participation. The strongest effect of emigration is through remittances. For both men and women, there is a significant negative effect of the level of remittances on participation that is approximately the same in magnitude as the domestic nonwage income effect.

The remittance effect is the only significant effect of emigration on the labor force participation of men. For women, however, the remittance effect is partially offset by a positive within-household substitution effect. There is also a weak positive coefficient on the proportion of migrants from the local labor market variable that suggests some movement of women into the labor force to fill the jobs of the men who left.

The total effect of migration on labor force participation can be calculated from the three separate effects. For men, the negative income effect from remittances dominates all other effects. For females, the positive regional labor market effect, although insignificant, is large enough to outweigh the negative within-household effect (remittance and composition effects) on participation.

I can now examine how much of an effect migration had on observed changes in labor force participation in the 1980s. To make this calculation, I use the counterfactual assumption that migration would have stayed at the same proportion of the population as it had been in the 1970s—5 percent instead of 13 percent. Between 1978 and 1985, the labor force participation

17. Unfortunately, all households without an emigrant member in the 1985 survey are candidates to have a nonmember send remittances, and the only overlapping information for these households in both surveys is the department-urban cell of residence. Predicting on the basis of area alone mixes the direct and indirect effects of remittances for these households since all households in a particular area identified not to have an emigrant member will be assigned the same value of remittances. Estimating the direct effects of remittances in this manner is likely to underestimate the true effect since the comparison group includes some households for which there actually were remittances. It is also likely to increase the apparent direct substitution effect since for these households the negative effect of remittances will show up in the variable measuring presence of migrants.

of men aged 20–59 dropped from 92.9 to 89.7 percent and for women aged 20–59 increased from 39.9 to 47.7 percent.¹⁸ Under the counterfactual assumption, labor force participation for men of this age group would have fallen 2.1 points instead of 3.2. For women, labor force participation would have risen only 4.3 points instead of the observed 7.8 points.

5.3 Macroeconomic Effects of Migration

The macroeconomic implications of the discussion in sections 5.1 and 5.2 are summarized in figure 5.2*a*, based on the presentation of Bhagwati and Brecher (1981) and Djajic (1986). *NT* is the production-possibilities frontier between traded and nontraded goods before migration. With balanced commodity trade, production and consumption take place at point $C = X$.

With migration, the production-possibilities frontier moves inward to NT' . There is a proportionately greater shift inward in the good that is more labor intensive in production. With no remittances, production following migration takes place at point X' , which is above the premigration nontraded/traded ratio if the traded-goods sector is labor intensive and below this line if the nontraded-goods sector is labor intensive.

When emigrants remit, income increases. The budget constraint moves outward by the value of the remittances in traded goods to CP' . At the existing price ratio, desired consumption is the point C' . But since remittances cannot purchase nontraded goods from abroad, consumption initially can move only to point C' . Excess demand for nontraded goods results, the price of nontraded goods increases, final production moves to point X' , and final consumption is point C' .

At the optimum, the slope at the points of production X' and C' are equal. The locus of points traced out by the maximum consumption point for each level of migration, CC , is depicted in figure 5.2*b*. The maximum consumption possibility occurs at point C^* , where the indifference curve is tangent to the CC locus. This corresponds to inward movement of the postmigration production-possibilities frontier until the postmigration consumption-possibilities frontier is at its maximum.¹⁹

The magnitude and shape of the inward shift of the production-possibilities frontier is the aggregation of the individual responses.²⁰ Above, I found the characteristics of emigrants to be disproportionately of higher productivity

18. To be comparable with the earlier published data, the probit regression of col. 2 of table 5.3 was reestimated with self-reported participation in the labor force as the dependent variable.

19. The actual shape of the CC curve is not determined. When the marginal gain from remittances is greater than the marginal gain in production, the curve moves to the right. When the opposite holds, the curve bends back toward the origin.

20. This suggestion is smooth if the distribution of household characteristics is sufficiently diverse.

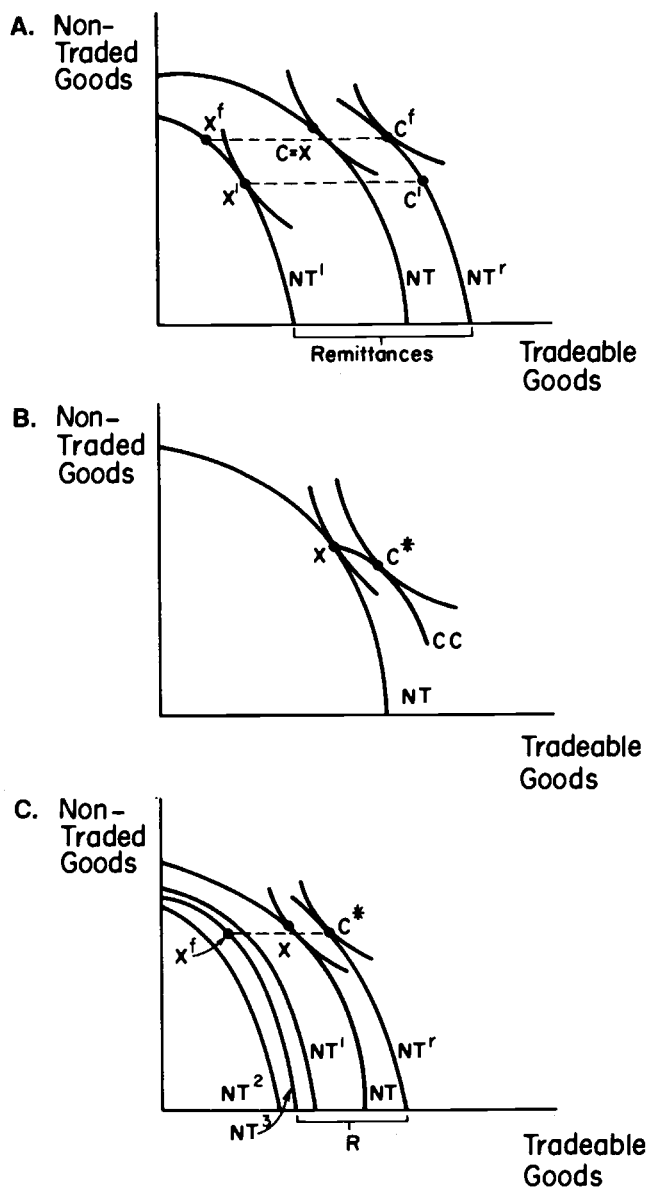


Fig. 5.2 Shift in the production-possibilities frontier and the consumption-possibilities frontier with emigration and remittances

than those of nonmigrants and that labor supply response to emigration is negative for males and positive for females.

These considerations lead to the following modification of figure 5.2*a*, shown in figure 5.2*c*. The initial movement in the production-possibilities frontier in figure 5.2*c* depends on the number of migrants, shown as NT^1 . For the case of El Salvador, since the labor market characteristics of those migrating are above average, the frontier will be placed closer to the origin that it would have been had the migrants been of average labor market quality, to NT^2 . Since the net effect on participation of remaining members is positive, the production-possibilities frontier after migration is located slightly away from the origin, to NT^3 .

5.3.1 Wages

Large-scale migration can also affect wages. To estimate the effect of Salvadoran emigration on wages, I utilize two approaches.

First, I add two migration variables—proportion of households in department-urban area with members abroad and member of own household abroad—to the wage equations using the 1985 Salvadoran Household Survey. I present the regressions in table 5.8 for both monthly wages and calculated

Table 5.8 Coefficients on Migration Variables in Wage Regressions for Persons in El Salvador

	Males		Females	
	Hourly Wage (1)	Monthly Wage (2)	Hourly Wage (3)	Monthly Wage (4)
Proportion migrants \times urban	.012 (.007)	.010 (.006)	– .001 (.011)	– .011 (.010)
Proportion migrants \times rural	.006 (.005)	.001 (.005)	.011 (.008)	.005 (.008)
Migrant in household	.083 (.029)	.081 (.028)	.066 (.037)	.088 (.034)
Years education	.026 (.010)	.037 (.010)	– .016 (.015)	.001 (.014)
Education ²	.004 (.001)	.003 (.001)	.010 (.001)	.008 (.001)
Years experience	.035 (.003)	.037 (.003)	.035 (.004)	.033 (.003)
Experience ² /100	– .052 (.004)	– .055 (.004)	– .042 (.006)	– .041 (.006)
R^2	.33	.34	.32	.31
N	6,342	6,425	3,592	3,642

Note: Controls include department, urban, marital status, and literacy. Numbers in parentheses are standard errors.

hourly wages. For men, columns 1 and 2 show that wages are higher in urban areas with a high number of migrants but that there is no difference in rural areas. For women, columns 3 and 4 show that the reverse is true. Wages are higher in rural areas with a high number of migrants but not in urban areas.

At first glance, the positive relation between wages and having had a member of one's own household migrate is surprising. There is no direct effect on productivity from migration of other household members. One interpretation is behavioral. An increase in nonwage income through remittances increases the reservation wage, which results in lower participation rates and higher wages for those who work. A second interpretation is that this coefficient provides evidence on the type of selection that takes place in migration. Within households, the household will, on average, send members abroad for whom the economic return to the family investment in migration is greatest, leaving behind those with worse labor market characteristics. The significant positive coefficient indicates that positive selection across households dominates the effects of positive selection within households.

My second approach is to relate migration to average wages in local labor markets. To do this, I construct a longitudinal data set from department-urban-gender cells in the published data from the 1978 Household Survey (MIPLAN 1979) and the tabulated data from the 1985 survey.²¹ I then estimate the following difference equation:

$$(4) \quad w_{k85} - w_{k78} = a + b(Z_{k85} - Z_{k78}) + cM_k + e_k,$$

where $w_{k85} - w_{k78}$ is the change in wage in the department-urban cell k between 1978 and 1985, $Z_{k85} - Z_{k78}$ is a vector of change in characteristics in the area k , and M_k is the proportion of households in area k that have at least one member who left El Salvador between October 1979 and 1985. These regressions, presented in table 5.9, show that areas with greater increase in average education and regions with a high proportion of females in the labor force had larger wage growth.

A possible explanation for the lower wage growth in urban areas is the increase in labor supply in cities arising from an increase in rural-to-urban migration. The outflow of migrants is associated with a higher change in the real wage between 1978 and 1985. The effect of a 1 percentage point increase in the proportion of households with migrants who left between the two dates is a 0.6 percent increase in the rate of change of wage. These estimates are consistent with those found in the cross-sectional data.

5.3.2 Labor Force and Unemployment

With 40 percent of its population below the age of 15, El Salvador has a labor force that is projected to continue growing at an average rate of 3.0

21. There are fifty-six such cells, arising from fourteen departments, urban or rural area, and two sexes.

Table 5.9 Regressions of Change in Wage by Department, 1978–85: Change in Logarithm of Wage for Department-Urban-Sex Cell

	(1)	(2)	(3)	(4)
Intercept	– .710 (.179)	– .526 (.157)	– .635 (.183)	– .467 (.158)
Change in education		.143 (.036)		.146 (.036)
Change in log employment	.097 (.109)	.048 (.092)		
Change in unemployment rate			– .209 (.371)	– .224 (.308)
Female	.078 (.032)	.087 (.027)	.110 (.058)	.118 (.048)
Urban	– .251 (.057)	– .147 (.056)	– .248 (.057)	– .140 (.054)
Proportion households with migrants	.021 (.008)	.006 (.008)	.018 (.008)	.004 (.008)
Department dummies	yes	yes	yes	yes
R ²	.53	.79	.68	.79
N	52	52	52	52

Note: There are no data included in the 1985 Household Survey for the rural parts of the departments of San Vicente and Morazan. Regressions are weighted by economically active population in cell in 1978. Numbers in parentheses are standard errors.

percent per year for the next twenty years.²² Especially during periods of poor economic performance, emigration may act to reduce the number of unemployed. In the case of El Salvador, a low estimate of the amount by which emigration between 1978 and 1985 has reduced the labor force of persons aged 20–59 is 185,000. This is nearly 50 percent of the 400,000-person increase in the labor force that would have been expected without migration.²³ In other words, working-age out-migrants are equal to 11.2 percent of the potential work force of 1985. Again using the counterfactual assumption that only 5 percent of households had migrants instead of 13 percent, these numbers indicate that the labor force would have increased by approximately 6.9 percent without the increase in emigration.

The larger labor force would have put downward pressure on wages, which

22. Calculation based on the data found in MIPLAN/CELADE (1986) using current labor force participation rates.

23. The expected increase in the labor force from aging of cohorts with labor force participation rates held constant is 315,000. The effect of migration accounts for 40,000 of the increase of 60,000 that can be attributed to changes in labor force participation rates. With the addition of 25,000 immigrants, the increase in the labor force is approximately 400,000. Of this increase, 175,000 is the observed increase in the labor force in El Salvador. The remaining 225,000 is the low estimate of the number of persons 19–59 who would have been working in El Salvador had there not been an increase in migration following 1978. The change in the labor force due to migration is thus 185,000.

in turn would have created some additional jobs. I estimate this effect by approximating the effect of migration of wages and the effect of wages on employment. I calculate that, for each 1 percentage point increase in migration, the average change in real wages between 1978 and 1985 increased by approximately 4.0–8.0 percent more than they would have otherwise. For a wage elasticity of employment of 0.5, this would imply an increase in employment of between 2.0 and 4.0 percent. These calculations indicate that, had migration not increased, all else equal, the unemployment rate would have increased by an additional 2.9–4.9 (6.9–4 to 6.9–2) percentage points.

5.3.3 Effect on Foreign Exchange Markets

Although remittances to El Salvador do affect household consumption and investment,²⁴ the main feature of remittances to Central America in the 1980s is the effect on foreign exchange markets. Although the increase in dollars from remittances should act to relieve current account problems and stabilize the exchange rate because otherwise the economy would have experienced foreign exchange shortages, this was not the case initially in El Salvador. During the period when remittances were increasing, the government was attempting to implement a two-tier exchange rate²⁵ and to control foreign trade.²⁶ Because the success of such a system depends on the proper allocation of dollars between the official and parallel government markets, the increase in the remittances exchanged in the decentralized black market undermined the government attempt to control exchange markets.

The deficit in the official exchange market worsened, as only \$50 million of the \$400 million in remittances in the mid-1980s was changed in the official exchange market.²⁷ The imbalance eventually led the government to abandon the two-tier system and adopt a 100 percent devaluation of the official rate (to five colonies/US\$) during 1985 (U.N. Economic Commission for Latin America, various issues).²⁸ The Salvadoran experience highlights the importance of attracting remittances into the official sector and provides a strong argument against attempts to control foreign exchange markets in countries in which remittances are a significant part of the black market for dollars.

24. In the case of El Salvador, previous research has found that, with the exception of spending on residential construction, nearly all dollars received are used for consumption (Montes 1987). This is in large part due to the decline in the real wage described above. Lopez and Seligson (1990) also find that remittances are an important source of investment for small businesses.

25. With a subsidized rate for the import of essential items, a higher rate for other imports, and the rate for exports in between the two.

26. In late 1979 and early 1980, all import and export activities were nationalized. Subsequently, more stringent restrictions on foreign exchange transactions, including deposits exceeding 100 percent of import value and stiff penalties for violating exchange laws, were implemented. In 1981, unnecessary imports from non-Central American countries were eliminated.

27. A reasonable estimate of imports financed in the black market, based on the excess of the value of imports above import permits issued, is \$300 million in 1985. The remaining \$50 million in remittances in the parallel market finances capital flight (see Webb et al. 1988).

28. In addition, the government unsuccessfully implemented a preferable exchange rate for remittances through the official sector.

5.4 Summary and Conclusions

El Salvador provides a good experiment in the effects of a large outflow of labor combined with an inflow of remittances. Emigrants from El Salvador are disproportionately male, more urban, better educated, and disproportionately aged 20–39 than the Salvadoran population. The main source of this positive selection in labor market characteristics is selection across, rather than within, households. In addition, households from which emigrants leave tend to have more income and to be larger than nonmigrant households.

The incentives to migration, measured by the absolute earnings differential for the individual and return on the migration investment for the household, are large. Earnings differentials alone, however, do not provide a complete explanation for the selection in migration because the most important difference in the earnings distributions between El Salvador and the United States is that in mean earnings.

Migration has important effects on the sender-country labor market in addition to the direct loss of labor force. The main finding of this paper is that migration from El Salvador has affected labor market activity of nonmigrants. Remittances have strong negative effects on labor market participation of nonmigrants. In addition, the labor force participation rate of women is higher both with the emigration of a household member and with a high proportion of migration in the regional labor market. A second result is that wages are affected by changes in the labor force caused by migration. The effects of shortages of skilled labor are not as severe now as they may become as the demand for labor increases with economic recovery and the skilled emigrants do not return to El Salvador. The findings of reduced labor force participation for males and a wage response to out-migration also suggest that, during the current period of economic decline, emigration has reduced unemployment pressures.

Appendix A

Data Sources, Estimates of Volume of Migration, and Estimates of Remittances: Use of the National Household Survey of 1985 and the UCA Survey of 1987

It remains difficult to estimate the number of Salvadorans who have emigrated. The official migration statistics show over 700,000 more Salvadorans have left the country than have returned. Data from the two available household surveys in El Salvador—the 1985 Encuesta de Hogares de Propósitos Múltiples (MIPLAN 1986) and the 1987 University of Central America

(UCA) (Montes 1987)—suggest a much smaller number, at most 500,000 emigrants. Casual estimates based on assistance organizations have resulted in estimates above one million Salvadorans when the United States, Mexico, and other Central American countries are aggregated.

What is disturbing about using the household surveys is that it is unlikely that there is a large upward bias to the official statistics. If there is a bias, it is to underestimate—persons fleeing the war unofficially across the border to Honduras and persons who left through any border during the FMLN offensive in 1980–81 are possibly undercounted.

Data Sources: The 1985 Household survey and 1987 UCA Survey

In 1985, the Salvadoran government conducted a nationwide survey that included all but two rural areas of the country. The sample design for the survey was that of a similar survey conducted in 1978. Expansion factors were adjusted to correspond to estimates by the Ministry of Planning (MIPLAN) of the population by department in 1985. On the questionnaire, the following question was asked of each household: “Since October of 1979 until the present, is there any member who normally lives in this household and who has left to live in another country?” If the respondent answered yes, the number of household members outside the country was given, and relationship to the respondent, sex, age, and occupation were identified for each emigrant. Using the expansion factors for the household and the information provided in these questions, the calculated tables from this survey show 193,096 Salvadorans who had left after 1979 to have been outside the country in 1985.

The second source of household data from El Salvador in which questions about family members abroad were asked is the 1987 UCA Survey (Montes 1987). Continuing previous surveys on internally displaced persons (Montes 1985, 1986), the 1987 survey asked about relatives living outside the country. For each principal person abroad, forty-three subsequent questions were asked, including family relationship, sex, age, marital status, education, whether the emigrant left a spouse or children in El Salvador, year of arrival in the United States, city of entrance, legal status, reason for emigrating, English ability, labor market status, income, money sent to family members in El Salvador, use of remittances, and desire of emigrant to return to El Salvador.

By calculating the proportion of households with members in the United States (35.6 percent), multiplying that proportion by the number of households in El Salvador according to MIPLAN (1,079,245) and by the average number of household members in the United States (2.741), then adjusting for a calculated number of household members that could be cited by more than one household (11.2 percent), Montes arrived at the estimate of between 988,551 and 1,042,340 Salvadorans in the United States.

In the first survey, little information about the emigrant is known. In the second, little information about family members in El Salvador is known, and

no information about families without relatives in the United States is given. More important, in both surveys, the responses to the detailed questions suggest that respondents tended to provide information only about adult family members who had emigrated (see table 5A.1). The calculation based on the 1985 survey is likely to have underestimated the number of Salvadorans abroad because it asks only about former residents of the current household, not about a unit of observation that has not changed over time. The calculation based on the 1987 survey is likely to have overestimated the number of Salvadorans abroad since double counting is likely to have occurred. Nonetheless, these two surveys provide the best source-country information available for estimating the number of Salvadorans outside the country.

Estimates of the Volume of Migration

Estimates with the 1985 Household Survey

In the 1985 Household Survey, 13.3 percent of the 948,000 households represented by the sample, or 126,000 households, stated that at least one household member was living abroad.

Three adjustments are necessary with these data. First, these data count only migrants who left after 1979. I adjust by the proportion of households with immediate family members abroad all of whom migrated prior to 1979 in the UCA Survey (21.2 percent) and by the average number of migrants in all households with members abroad who migrated prior to 1979.

Second, the number of children identified in the data is implausibly small, suggesting that respondents identified only adult household members abroad. Since this problem is also present in the UCA Survey data, any correction rule will be somewhat arbitrary. The first correction considered is the application of the ratio of Salvadorans older than 10 to the ratio of Salvadorans younger than or equal to 10 found in the emigrant Salvadoran population in the 1980 U.S. Census, 11.8 percent.

Third, by asking about usual household members who are outside the country, the survey does not capture whole households that emigrated or, more important, members of a previously restructured household.

Estimates with the 1987 UCA Survey

The design of the sample for the UCA Survey intended the number of households with family members in the United States to be distributed by department proportionately to the distribution of the total population. For each department, the number of households without family members in the United States is known, but no further information about these households was given. From these sample data and the household information from the 1985 Household Survey, factors of expansion by department and urban/rural area were constructed. A weighted average of the number of family members abroad using the departmental-urban cell factors of expansion differed by only 8.0 percent from the calculation based on a national average.

Although each family reported the number of family members abroad, the forty-three follow-up questions, including family relationship, were not asked of all such persons. Of the 3,440 persons included in the 1,282 households interviewed with family members abroad, the detailed questionnaire was asked of only 2,121.

Because the unit of observation is the household in El Salvador, it is necessary to restrict the emigrants corresponding to a particular household to those persons who would have been living in the household had they not migrated. Unfortunately, this information must be inferred from the familial relationship of the migrant. Of the 663,535 emigrants in the UCA Survey represented by the detailed questionnaires for whom family relationship is known, 38,699 were parents, 180,577 were children, 16,770 were spouses or partners, 179,197 were siblings, 3,735 were grandparents, 18,535 were nieces or nephews, 75,943 were aunts or uncles, and 150,079 were cousins.

As a first approximation, emigrants identified as spouse, child, or parent are presumed to be household members. With such a restriction, only 36.1 percent of the original sample of respondents can be included in an expansion using the household as the unit of observation, and only 12.7 percent of the households in El Salvador have members outside the country.

A better determination of which emigrants would be household members if they had not emigrated is to examine household structure in El Salvador, using the 1985 Household Survey. Unfortunately, the 1985 survey does not ask family relationship of household members who have emigrated. The generational distribution of emigrants, shown in table 5A.1, suggests that the "household head" whose relationship to the emigrant is being determined differs in the UCA and Household surveys.

Thus, brothers in the UCA Survey most likely correspond to children in the 1985 survey, aunts and uncles in the UCA Survey to brothers in the 1985

Table 5A.1 **Generational Distribution of Emigrants: Calculations from the 1985 National Household Survey and the 1987 UCA Survey**

Age Head – Age Emigrant ^a	1985 Survey, Proportion of Emigrants (%)	Relationship to Respondent	UCA Survey, Proportion of Emigrants (%)
< –11	1.8	Parents	17.2
–10 to 9	14.4	Siblings, cousins, brothers/sisters-in-law	52.2
10–29	35.8	Children, nieces/ nephews, daughters/ sons-in-law	30.0
30–49	41.8	Grandchildren	.6
Over 50	6.2	Great-grandchildren	...

^aThe difference in age indicates the number of generations that separate the head of the household in El Salvador and the emigrant. For example, an emigrant who is more than eleven years older than the household head in El Salvador is of the generation of the household head's parents. An emigrant whose age is within ten years of the household head's is of the same generation.

survey, and so on. Therefore, in order to estimate the number of persons identified as brothers in the UCA sample who might have lived in the respondent's household had they not migrated, the number of persons one generation younger than an older head (over 50) in houses in which at least one offspring was already living was calculated. Six percent of the families in the 1985 survey in which there was an adult child present also reported an emigrant one generation removed from the household head. This figure corresponds with 12.2 percent of the households in the UCA Survey that indicated a sibling abroad. The average number of siblings abroad per household reporting a sibling abroad is similar between the two surveys (1.28 in the Household survey, 1.35 in the UCA Survey).

The resulting estimate of the number of adult brothers or sisters abroad is approximately 49.3 percent of brothers reported, or 88,344 persons. Including these persons as immediate household members abroad increases the estimate of Salvadorans outside the country to 311,355.

A final adjustment of these data is to account for the migration of children. It is likely that children are included in the persons for whom detailed questionnaires were not recorded. This adjustment is made by applying the proportion of persons under 14 in the age distribution of Salvadoran immigrants in the 1980 Census (11.8 percent, table 5.2). The total number of Salvadorans in the United States including this adjustment is 348,05.

Randomness of the UCA Sample

The expansion factors used in the UCA study were calculated by averaging the number of households encountered without an emigrant before each household in which emigrants were encountered, or

$$\pi_u = 1/(1 + Z),$$

where π is the proportion of households with emigrants, and Z is the average number of households encountered without an emigrant before encountering a household with an emigrant. In the sample for 1987, Z is approximately 1.82, which implies that 35 percent of Salvadoran households have relatives in the United States.

If the samples are random, the distribution of the number of households encountered prior to encountering a household with an emigrant is geometric. The probability of encountering a household with an emigrant after encountering X households without an emigrant is

$$\text{prob}(X) = (1 - \pi)^X(\pi).$$

The expected number of houses encountered prior to finding a house with an emigrant is

$$Z = \pi \sum_{X=0}^{\infty} X(1 - \pi)^X = (1 - \pi)/\pi,$$

and $\pi = 1/(1 + Z)$ gives the true proportion of households with emigrants.

The extent to which the data represent a random sample can be seen from how well the observed distribution of Z corresponds to expected distribution. In table 5A.2, the actual and expected distributions for households with any family members and immediate household members abroad are presented.

This calculation for own household members abroad was made by assuming that, within each department, the order in which the households were surveyed was the same as the order in which they were numbered. Any households that fell at the end of a department ordering but did not have immediate family members abroad were deleted from the sample as they would not have been interviewed under the new emigrant rule. These data suggest that, for both sampling rules, but particularly the sample of persons with any relative abroad, the UCA sample may be slightly biased toward finding households with emigrants.

I use the estimates from the household data shown in table 5A.3 as a lower bound and the official migration data as an upper bound to provide a range for emigration from El Salvador in the 1980s. The shape of the official migration data was applied to three variants, and the resulting estimates of the stock of emigrants and the net yearly flow are shown in tables 5A.4 and 5A.5. In each of the variants, it is assumed that the stock of emigrants in 1978 was 164,700 and that the amount of official net migration in 1981 was 90,000 (instead of the 40,000 reported). In the low variant, it is assumed that the stock of emigrants outside the country was 300,000, corresponding to the household surveys. In the high variant, it is assumed that the stock of migrants in 1985 was 650,000, corresponding to the official data. In the medium variant, a stock of 450,000 emigrants in 1985 is used.

Table 5A.2 Randomness of the UCA Sample in El Salvador: Comparison of Actual Distribution of Number of Households Encountered without an Emigrant with Random Pattern

Households without Emigrants	Any Family Member		Immediate Household Member	
	Proportion of Sample	Geom. Dist. with $\pi = .35$	Proportion of Sample	Geom. Dist. with $\pi = .135$
0	46.8	35.0	19.2	13.5
1	13.5	22.8	12.0	11.7
2	12.5	14.8	10.8	10.1
3	8.4	9.6	7.5	8.7
4	4.0	6.2	5.9	7.6
5	5.3	4.1	7.2	6.5
6	3.4	2.6	5.4	5.7
7	2.9	1.7	4.5	4.9
8	1.1	1.1	4.5	4.2
9	.4	.7	2.9	3.7
10 or more	1.8	.1	20.1	23.5
Mean	1.81	1.85	6.24	6.41

Table 5A.3 Estimation of Number of Emigrants Based on 1985 Household Survey and 1987 UCA Survey

	1985 Household Survey	1987 UCA Survey
No. of households	947,326	1,079,245
% with emigrants from household	13.3	13.5
No. of households with emigrants	126,105	149,711
Nuclear family members abroad represented	193,439	223,011
Adjustment for emigrants prior to 1979 (21.2%)	234,448	
Adjustment for siblings in household (49.2%)		88,344
Adjustment for children not counted (11.8%)	27,665	36,740
Total no. of emigrants	262,113	348,095

Table 5A.4 Estimate of Stock of Migrants in El Salvador, 1978–87

	Low Variant	Medium Variant	High Variant
1985 stock	300,000	450,000	650,000
1978	164,700	164,700	164,700
1979	181,600	200,300	225,200
1980	202,000	243,300	298,500
1981	224,100	289,900	377,700
1982	255,800	356,800	491,500
1983	273,700	394,600	555,800
1984	287,400	423,400	604,700
1985	300,000	450,000	650,000
1986	312,900	477,200	696,300
1987	320,300	492,800	722,900

Table 5A.5 Estimates of Net Migration

	Low Variant	Medium Variant	High Variant
1985 stock	300,000	450,000	650,000
1979	16,900	35,600	60,500
1980	20,400	43,000	73,500
1981	22,100	46,600	79,200
1982	31,700	66,900	113,900
1983	17,900	37,800	64,200
1984	13,600	28,800	48,900
1985	12,600	26,600	45,300
1986	12,900	27,200	46,300
1987	7,400	15,600	26,600

Calculations of Amount of Remittances

The official source of remittances is the balance of payments accounting of the Central Bank. The Central Bank provides three estimates of remittances, all shown in columns 4–6 of table 5.1. First is the estimate of remittances exchanged through the banking sector. Second is the volume of private unrequited transfers recorded in the balance of payments accounts. Third is the estimate of total remittances through both the official and the black exchange markets.

The third series is an estimate based on the number of emigrants abroad. The total value of remittances is calculated by multiplying remittances per emigrant in 1979, the last year for which remittances were channeled through the formal exchange market, by the estimate of the number of emigrants for each year.

First, the Central Bank chose 1979, in which personal remittances were \$49.2 million, as the base year. Second, the number of emigrants was determined to be 164,700 in 1979 and 500,000 in 1985. Between these two years, an interpolation adjusted slightly for the intensity of the internal conflict was applied to yield the estimation of emigration by year found in table 5A.6.

The Central Bank projections of the number of emigrants over the period 1979–87, seen in table 5A.6, are 182,300 lower than the increase reported in exits and entrances of official migration statistics but consistent with the estimation of the emigrant population reported above.

One possible calculation of remittances based on these estimated migration flows would be to apply the average remittance per migrant in 1979 (\$299) or 1978 (\$378, 120,000 emigrants) across the total number of emigrants estimated for a given year. The results of these calculations are shown in columns 1 and 2 of table 5A.7. The third column shows annual remittances based on average remittances of \$907.40 per person abroad derived from the UCA Survey data.

Table 5A.6 **Central Bank Estimates of Emigration**

	Adjusted Rate of Emigration (1)	No. of Salvadoran Emigrants (2)	Yearly Increase (3)
1978			
1979	. . .	164,700	. . .
1980	30.6	215,100	50,400
1981	26.6	272,300	57,200
1982	22.6	333,800	61,500
1983	18.6	395,900	62,100
1984	14.6	453,700	57,800
1985	10.6	501,800	48,100
1986	6.6	534,900	33,100
1987	2.6	548,800	13,900

Table 5A.7 **Remittance Projections Based on Aggregate Emigrant Projections**
(millions \$US)

	Projections Based on Average Remittances			Central Bank Proj. (4)
	1978 (1)	1979 (2)	1987 (3)	
1978	45.3	. . .	108.7	. . .
1979	62.3	49.2	149.6	49.2
1980	81.3	62.9	195.2	59.6
1981	103.0	79.7	247.3	74.7
1982	126.2	97.7	295.7	87.3
1983	149.7	115.9	359.4	97.0
1984	171.5	132.8	411.7	121.4
1985	189.7	146.9	455.4	101.9
1986	202.2	156.6	485.4	134.5
1987	207.5	160.6	498.1	168.7

Note: Columns 1–4 are based on the Central Bank estimate of the number of emigrants in col. 2 of table 5A.6.

The method of the Central Bank, shown in column 4, is to calculate an effective net increase in remittances based not only on the increase in the number of migrants but also on the change in the exchange rate, the level of the domestic interest rate, and the rate of inflation. The overall effect of the Central Bank adjustment is to lower the projected level of remittances for the years prior to the rapid inflation following 1985.

The second source for data on remittances is the survey conducted by Segundo Montes in which detailed questions were asked both about family members who sent dollars and about the total amount of dollars received from all sources. Multiplying the previously calculated number of one million Salvadorans in the United States by an average of \$113.62 sent per month, Montes (1987) estimates total remittances at \$1.4 billion dollars.

With the data available, the proper method for making this calculation is again the household unit in El Salvador. The total number of households multiplied by the proportion with any relative abroad and the average remittances received from all sources yields the total value of remittances for 1987, shown in table 5A.8.

In table 5A.9, high and low estimates of remittances for each of the three levels of migration variants are shown. For all, the following assumptions are used. (1) Remittance behavior depends on destination. (2) The number of Salvadorans in the United States is equal to the number found in the 1980 Census, adjusted upward by 50 percent to account for undersampling, or 141,670 persons. (3) Until 1979, 60 percent of emigrants ended up in the United States. After 1979, this proportion increased to 80 percent. (4) The shape of migra-

Table 5A.8 Estimates of Remittance per Emigrant Based on the 1987 UCA Survey

(1) Total no. of households in El Salvador	1,079,245
(2) Proportion with family members abroad (%)	35.6
(3) Proportion of families with members abroad who receive remittances (%)	62.3
(4) Average monthly remittance (\$) per household from all sources (all households with family members abroad)	98.4
(5) Average monthly remittance (\$) per household from all sources (households that receive remittances)	158.3
Total remittances (\$ million), 1987 = (1) × (2) × (4) × 12	453.7
Average (\$) per emigrant, 1987:	
348,095 emigrants	1,303
500,000 emigrants	907
700,000 emigrants	648

Note: The average per emigrant is across all emigrants, independent of whether they are working.

Table 5A.9 Author Estimates of Volume of Remittances

	Migration Low		Migration Medium		Migration High	
1985 level	300,000		450,000		650,000	
	Remittances		Remittances		Remittances	
	Low Variant	High Variant	Low Variant	High Variant	Low Variant	High Variant
1980	94.4	121.0	94.4	132.7	94.4	148.3
1981	111.5	146.9	125.2	176.4	143.5	215.8
1982	135.5	182.6	170.5	240.9	217.2	318.5
1983	152.6	210.7	201.4	289.1	266.4	393.8
1984	168.0	237.1	228.6	333.9	309.3	463.0
1985	183.4	264.1	225.8	379.9	352.4	534.4
1986	199.7	292.7	284.9	429.5	398.6	611.9
1987	212.7	317.2	307.1	470.2	433.1	674.1

tion flows over time is similar to that of the official statistics, with one adjustment; for 1981, it is assumed that net emigration was 90,000 to account for uncounted exits. The high variant assumes that remittances per emigrant from the United States increased from \$600 to \$1,200 between 1978 and 1987 and that remittances from other areas increased from \$250 to \$400. The low variant assumes that remittances from the United States increased from \$600 to \$900 and that there are no remittances from other areas.

Appendix B

Estimates of Salvadoran Emigration

Study	Type of Emigration	Period of Emigration	Principal Findings
Source country studies			
MIPLAN (1988)	Registered migration	1972–89	Official exits minus entrances: 1972–77 232.2 1978–83 394.9 1984–89 324.1 Total 1972–89 951.2 Total 1978–89 719.0
MIPLAN (1986)	Household members outside the country	October 1979–October 1984	193,096 family members outside the country; 72.5 % are between the ages of 20 and 39
Montes (1987)	Relatives in U.S. (compared with sample of Salvadorans in U.S.)	Residence in U.S. in 1987	Between 988,551 and 1,104,340 Salvadorans lived in the U.S. in 1987. Emigrants tend to come from urban areas, to take unskilled jobs in the U.S., and not to want to return to El Salvador. A higher proportion are found to have emigrated for political reasons in the 1980s. On average, emigrants send \$115 per month to relatives in El Salvador.
MIPLAN/ CELADE (1986)	Annual levels of net emigration	1980–2025	From 1970 to 1975, net migration of Salvadorans was 23,000 per year. From 1975 to 1980, net migration increased to 42,000 per year. For 1980–85, net migration was estimated to be 76,000 per year. And for 1985–90, net migration was projected to be 42,000 per year
Webb et al. (1988)		1975–85	355,000 Salvadorans working in the U.S. A conservative estimate of remittances is \$250–\$300 million per year

Lopez and Seligson
(1990)

702,900 Salvadorans living in the U.S. in 1980. Of these, 576,400 are working. Remittances are estimated to be between \$286.3 and \$629.9 million for 1986

Recipient country studies

CIREFCA (1989a,
1989b) Refugees

Levels 1989

Refugees in:
Guatemala 3,000
Honduras 13,269
Nicaragua 20,000
Mexico 70,000–120,000

Peterson (1987) and
Torres-Rivas and
Jimenez (1985) International migrants

Levels 1987 (Peterson) and 1985
(Torres-Rivas)

Salvadorans in:	Torres-Rivas:	Peterson:
Belize	3,000	6,609
Costa Rica	10,000	12,975
Guatemala	70,000	180,049
Honduras	19,000	28,276
Nicaragua	17,500	18,074
Mexico	120,000	120,000
Panama	1,000	797
U.S.		280,000

Salvadorans counted
in most recent national Census

Belize, 1980	1,150
Costa Rica, 1984	8,743
Guatemala, 1981	16,805
Nicaragua, 1971	2,210
Mexico, 1980	2,055
Panama, 1980	1,791
U.S., 1980	94,447

U.S. INS, *Statistical Yearbook* (1986)* Legal immigration to the U.S.

1975–86

Cohort 1975–80 = 25,611; cohort 1981–86 = 53,785

U.S. INS (1989) Amnesty applicants

Continuous residence in U.S. since
1 January 1982

143,000 applicants

Appendix C

Data Sources

Source	Sample	Coverage	Questions on Migration
<i>Data sources in El Salvador</i>			
National Household Survey, 1985 ^a	National, except two rural areas; 42,156 persons in 9,103 households	Demographic characteristics, labor market activity, and fertility	Each household was asked if any members had left the country between October 1979 and October 1984. For each emigrant, age, sex, and occupation were asked
UCA Survey, 1987 ^b	1,287 Salvadoran households that had at least one relative in the U.S.	Demographic characteristics, labor market performance, migration information, and remittances of the 2,112 family members in the U.S.	Familial relationship of emigrant, year of emigration, motive for emigration, labor market status and income in the U.S., and remittance behavior
National Household Survey, 1988 ^c	25,184 persons in 5,563 households in urban areas	Demographic characteristics, labor market activity, fertility, and residence in 1979, 1984, and 1986	Each household is asked if it receives any assistance. Those that receive money are asked whether the source is national or foreign

Data sources in the United States

U.S. Census, 1980	4,792 Salvadorans in 5% A Sample	Demographic characteristics, labor market status, and income in 1979	Bracket year of immigration, language ability, and naturalization status
CPS, March-April-June match, 1983	68 Salvadorans over the age of 14	Demographic characteristics and labor market activity	Year of immigration, naturalization status, country origin of parents, language spoken, and children born abroad
UCA Survey, 1987 ^a	1,255 Salvadorans in U.S. drawn from consulates and Central American assistance groups	Labor market performance and living arrangements	Year of immigration, legal status, motive for migration, and remittance behavior
CPS, June 1988	124 Salvadorans over the age of 14	Demographic characteristics and labor market activity	Year of immigration, naturalization status, country origin of parents, language spoken, and children born abroad

^aMIPLAN (1986).

^bMontes (1987).

^cMIPLAN (1989b).

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