CHAPTER 5

The Response of LAC Households to Economic Shocks

LATIN AMERICA AND THE CARIBBEAN IS CHARACTERIZED BY HIGH LEVELS OF VOLATILITY OF household per capita income. Although this volatility declined in the 1990s as compared to the 1980s, it has remained high in international terms. These aggregate fluctuations have various sources: climatic shocks, such as those imposed by Hurricane Mitch on Honduras and Nicaragua in 1999; terms of trade shocks, such as the oil price shocks of 1973 and 1979; and external financial shocks, such as the higher real interest rates and quantity loan rationing of the Debt Crisis in the 1980s, and the more recent capital outflows associated with the Asian and Russian contagion episodes in 1997 and 1998–99. Transmission mechanisms and the macroeconomic policy implications of these various shocks are different for each shock and each country.[1]

Because aggregate volatility as examined in Chapter 4 measures the variance of means, it stands to reason that the mean volatility in *individual* or *household* income must have been even higher. After the debt crisis of the 1980s, economists started to quantify the effects of aggregate fluctuations on household welfare.[2] However, the absence of disaggregated, household-level *panel* data had, until recently, prevented serious empirical analysis of the impact of aggregate economic volatility on households and individuals in LAC.[3] The goal of this chapter is to contribute toward understanding the impact of shocks on LAC workers and households, and of their strategies—both ex ante and ex post—of dealing with these high levels of risk.

The Risk of Unemployment: Who is Most Affected?

Though real wages often drop dramatically during crises, in normal times shocks to individual households (idiosyncratic risk) may be more likely to occur when the main earner or household head loses his or her job.

Are the Poor Most Likely to Become Unemployed?

Though differences in definition, measurement, and even cultural conceptions make comparing unemployment rates across countries difficult, this does not prevent us from studying how unemployment may vary across income quintiles within each country (see Table 5.1). The common conception that the poor bear a disproportionate share of the brunt of unemployment seems supported by the rankings by per capita reported income.

However, a temporary fall in reported income due to job loss may lead to incorrectly classifying generally well-off unemployed individuals as poor. Reranking households by a measure of *consumption*—which is less likely to drop as sharply as income if the job loss is considered temporary, as in most cases it turns out to be—leads to a substantially different picture. In Mexico and Uruguay, unemployment is far more evenly distributed across income classes; in Peru and Brazil, the poor show disproportionately less unemployment.

Are Older, Less-Educated Men More Likely to Become Unemployed?

Table 5.2 reveals another important fact: the highest rates of unemployment are found among those under 19 years of age who probably are not heads of households. This suggests

TABLE 5.1

Unemployment Rates by Household Income and Consumption Quintile

	POOREST	2	3	4	RICHEST
Income					
Argentina	28.5	16.1	13.2	7.5	4.1
Brazil	10.8	7.1	6.0	4.6	2.9
Chile	27.7	11.2	7.6	5.1	2.8
Colombia	31.2	20.3	13.8	10.6	5.0
El Salvador*		26.8	15.3	2.9	0.6
Mexico	5.0	4.8	4.6	3.9	3.2
Uruguay	35.7	26.4	19.5	11.9	6.7
Consumption					
Brazil	5.8	8.8	6.8	6.2	4.7
Mexico	4.8	4.4	4.5	3.9	3.8
Peru	5.2	6.3	8.1	9.1	7.4
Uruguary	25.1	20.3	21.1	19.7	13.6

*For El Salvador, the first and second quntiles are combined.
Source: Household Surveys (various); Argentina 1994, Peru 1996, all other countries 1998.

that facilitating the entry of the young into the workplace may be as important an item on LAC government agendas as mitigating unemployment risk among household heads, generally assumed to be older males. Another notable finding is that women experience higher unemployment rates across the sample. It is not clear whether this is due to recent surges in female participation in the work force, or the imperative of predominantly male household heads to take a job and hence shorten job search times, or other factors. Finally, the highly educated do experience less unemployment; but among primary- and secondary-level educated workers there is no consistent pattern across countries.

Is There No Unemployment in the Informal Sector?

For Mexico and Argentina, Arango and Maloney (2000) have used panel household data to more carefully study the dynamics of unemployment, especially the incidence and duration of unemployment spells.[4] Table 5.3 presents estimates of transition probabilities among four types of workers: formal salaried workers; informal workers both salaried and self-employed, unemployed people, and people outside the labor force. The term "informal" refers here to owners of and workers in firms with fewer than 16 employees who do not have social security or medical benefits and are therefore not protected.

TABLE 5.2

Unemployment Rates by Age, Education, and Gender

	ARGENTINA	BRAZIL	CHILE	COLOMBIA	EL SALVADOR	MEXICO	URUGUAY
Age							
12–19	36.8	13.9		36.7	11.6	13.3	20.2
20–29	16.5	8.6	16.5	20.7	10.2	4.6	12.7
30–49	10.2	4.2	7.6	9.8	4.9	1.8	6.4
50–65	12.9	2.5	6.1	8.5	4.7	2.0	4.3
65+	11.0	1.1	5.6	8.7	3.1	6.8	4.3
Education							
Primary	16.6	10.2	N/A	13.7	8.5	4.7	9.4
Secondary	13.8	6.8	N/A	17.3	8.9	3.7	10.0
University	6.0	2.4	N/A	5.9	4.9	2.9	5.1
Gender							
Men	12.5	5.6	9.1	12.1	8.1	3.4	8.1
Women	17.4	8.0	11.7	18.1	6.0	5.5	12.8

Source: Household Surveys (various); Argentina 1997, Peru 1996, all other countries 1998.

TABLE 5.3

Annual Probability of Becoming Unemployed from Formal and Informal Work (Percent)

ORIGIN:	FORMAL SALARIED				INFORMAL			
	MEXICO		ARGENTINA		MEXICO		ARGENTINA	
AGE	HIGH SCHOOL	LOW SCHOOL	HIGH SCHOOL	LOW SCHOOL	HIGH SCHOOL	LOW SCHOOL	HIGH SCHOOL	LOW SCHOOL
<22	NA	1.7	15.4	25.0	NA	1.7	18.0	31.6
22–35	0.8	1.1	4.1	10.0	1.0	1.2	0.2	11.0
36–55	1.3	1.5	2.09	7.3	1.3	1.9	4.3	13.6
>55	2.3	2.7	0.6	8.0	2.7	2.7	2.3	11.3
Total	1.1	1.5	2.8	6.5	0.9	1.4	3.0	13.0

NA= Insufficient data.
Source: Arango and Maloney (2000). Maximum Likeihood Estimations following Kalbfleisch and Lawless (1985).

Consistent with more traditional views of the informal sector, the likelihood of becoming an informal sector worker is found to be two to three times as high as the likelihood of entering formal employment after being unemployed. However, what is striking is that there are also large flows from informality into unemployment. In particular, in Argentina, it is twice as likely for primary-school-educated informal sector workers to become unemployed as their formal sector counterparts. Only some of this effect disappears when we compensate for the fact that fewer people leave formal employment relative to informal sector jobs. This suggests that what is traditionally considered the reserve sector for the formal sector unemployed itself generates many unemployed. In fact, tabulations of the sector of origin of the unemployed sector in Argentina and Mexico suggest that only 36 percent and 25 percent, respectively, of those currently unemployed (who previously held jobs) were in the formal sector. The remainder were from either informal self-employment or informal salaried employment.

In addition, the informal salaried sector is often thought to be a "supercompetitive" sector where a laid-off worker can instantaneously find another job. And in fact, in Mexico and Argentina, those entering unemployment from the informal sector do spend between 22 and 35 percent less time, respectively, in unemployment than formal sector workers (see Box 5.1). But it is also true that the income variance among self-employed workers is significantly greater than in the formal sector (see Table 5.4). However, given the substantially higher incidence of unemployment, the difference in durations does not seem so large that we can conclude that informal workers are somehow of less concern than formal workers from the point of view of designing an income security program. It also suggests that one commonly cited "safety net," the informal sector itself, is less comprehensive than often thought.

But without evidence that the differences in Table 5.4 are indicative of a higher income variance of any particular

BOX 5.1

Informal Self-Employment: Precarious Workers or Voluntary Entrepreneurs?

Do the findings that the informal often find themselves unemployed provide additional evidence that informal work is especially precarious? Perhaps not. As Chapter 2 suggested, there is evidence that up to 70 percent of the people working in the informal sector may be doing so voluntarily. Informal self-employment has behaved procyclically for long periods in Argentina, Chile, and Mexico, and enterprise surveys suggest that less than one-third of business owners in Argentina and Mexico entered the sector involuntarily.

Levenson and Maloney (1998) argue further that small firms everywhere show high rates of mortality and higher income variance. The fact that they may either be able to avoid taxation and regulation (Loayza 1998), or that they generally do not benefit from formal contracting, risk-pooling, and other institutions that larger formal sector firms can avail of, means that small firms will tend to be disproportionately informal. Combining these two elements leads to a finding that is common in the literature: informal firms show very high rates of failure and income volatility, and informal workers show high rates of turnover. But under this interpretation, this is voluntarily accepted risk and does not reflect a "precarious" business environment in the sense the term is frequently used.

TABLE 5.4

Income Variance of Formal Salaried vs. Self-Employed Workers

(Theil Index)

	ARGENTINA	BOLIVIA	CHILE	COLOMBIA	URUGUAY	VENEZUELA
Formal Salaried	.295	.430	.411	.433	.350	.264
Self-Employment	.484	.819	.867	.972	.499	.470

Source: Wodon, Maloney, and Barenstein (2000).

individual in one sector versus the other, this cannot be used as evidence of "precariousness"; it could as likely be evidence of greater heterogeneity in the informal relative to the formal sector. This should not imply, therefore, that those in informal activities should be the focus of an employment security program.

Who Becomes Unemployed and for How Long?

Tables 5.3 and 5.5 shed some light on who becomes unemployed and for how long. In both Argentina and Mexico, people with more schooling tend to become unemployed less frequently, but remain unemployed longer. This is consistent with more firm specific human capital leading to both lower separation rates and longer job searches. No clear pattern by age is shared across countries. In Mexico, older workers are more likely to become unemployed, and for longer periods. In Argentina, the young are far more likely to become unemployed and, among the less skilled, for longer periods. In sum, a blanket statement about who especially needs income protection cannot be made easily.

Household Responses to Income Shocks: Findings of Panel Studies

This section discusses the main results of the impact of shocks on households and their coping strategies, obtained for the agricultural production crisis of 1997 in rural El Salvador (Conning, Olinto, and Trigueros 2000), for the 1995 Mexican Tequila Crisis (Cunningham and Maloney 2000), and for various boom and bust episodes in Brazil in the 1980s and 1990s (Neri and Thomas 2000).[5]

In interpreting the results of these three studies, readers are advised to keep in mind an important shortcoming. All three studies use incomes, not consumption expenditures, to analyze the effects of aggregate shocks. For a study of household responses to shocks, this is no small shortcoming. (See Box 5.2 for a discussion of methodologies used in these studies.) If shocks are not perfectly foreseen, or if capital markets are imperfect, a (constrained) consumption-smoothing household will respond by adjusting consumption levels. But even an unforeseen negative shock ought to lead to a (less than proportional) decline in consumption, and an unexpected positive shock should entail a (less than proportional) increase in consumption.[6] Since welfare ultimately derives from consumption, rather than income, this implies that income variations overstate welfare variations in all cases (and in both directions). The magnitude of the overstatement will, however, decrease with the degree of imperfection in capital markets and with how binding any subsistence constraint is.

The studies generated a wealth of detailed, country-specific information that should be valuable to those with a special interest in these countries, but there are also results of more general interest. We focus on what we call the four

TABLE 5.5

Unemployment Duration, in Years

	MEXICO		ARGENTINA	
AGE	HIGH SCHOOL	LOW SCHOOL	HIGH SCHOOL	LOW SCHOOL
<22	NA.	0.10	0.73	0.58
22–35	0.19	0.12	1.20	0.49
36–55	0.17	0.15	0.80	0.51
>55	0.20	0.14	0.64	0.39
Total	0.18	0.14	0.82	0.47

NA = Not applicable.

Source: Arango and Maloney (2000). Maximum Likelihood Estimations following Kalbfleish and Lawless (1985).

BOX 5.2

Data Sets and Methodologies Used

This box describes the data sets and empirical approaches used by the case studies commissioned for this report and summarized in this chapter.

Rural El Salvador

Conning, Olinto, and Trigueros (2000) investigate the effects of a downturn in agricultural activity in El Salvador in 1997, using a panel of 489 rural households surveyed in 1995 and 1997 by the Universidad Centroamericana. The authors use these data to quantify the incidence of the impact by income groups, to disaggregate it by occupational category, and to investigate which household characteristics were associated with differences in the magnitude of the income shock. The existence of such characteristics would indicate that they play a role in risk management by the household, either ex ante (as insurance or self-protection), or ex post (as coping).

The authors deploy two complementary techniques. First, poverty indexes are computed by subgroup, using one of the seven occupational categories the household fits into: self-employed only, nonagricultural wage only, agricultural wage only, agricultural wage and nonagricultural wage, nonagricultural wage and self-employment, agricultural wage and self-employment, and all three occupations. Second, a model of income determination, including household-specific and time-variant variables, household-specific and time-invariant variables, household-specific and time-invariant unobserved effects, and household-specific and time-variant shocks, was estimated to generate random-effects estimators. A specification test suggested that the hypothesis that the estimates were the same could not be rejected. The authors focus on the analysis of the random effects estimates.

Metropolitan Mexico

Cunningham and Maloney (2000) identify the groups worst affected by the 1995 Tequila Crisis in Mexico, and study the results of labor force participation changes around the shock, as coping strategies. The data set used is a panel of 21,262 households in 16 metropolitan areas in Mexico, from 1994 to 1997, drawn from the National Urban Employment Survey (ENEU). Households are interviewed quarterly, and stay in the panel for five consecutive quarters.

To account for the possibility that "vulnerability" might depend on the initial rank of the household in the welfare distribution, results are presented for unweighted and weighted—where different weights are attached to income levels depending on the place in the distribution. Three quantile regressions (for the first quintile, the median, and the fourth quintile) are estimated, with proportional changes in household income as the dependent variable. A set of demographic, educational, and occupational dummy variables, three of which capture household behavior in response to the shock (head enters labor force, spouse enters labor force, and child enters labor force), are used as independent variables.

Metropolitan Brazil

Neri and Thomas (2000) identify the groups most affected by aggregate economic fluctuations in Brazil, and then investigate the nature of the household responses. They restrict their inquiry to urban areas, but span a longer period: from 1982 to 1999. The data set is drawn from the Monthly Employment Survey (PME), carried out by the Brazilian Statistical Institute (IBGE) every month for Brazil's six largest metropolitan areas. The same households are interviewed for four consecutive months, then excluded from the sample for eight months, and then revisited for a further four consecutive months. This allows the authors to construct a series of panels, using four-month averages of household incomes per capita, to investigate the impact on households of seven periods of macroeconomic volatility: three booms and four recessions. The distribution used is a distribution of household per capita income, per household head.

Neri and Thomas also find that using current income to rank the distribution would bias the results by exaggerating true mobility. They too use a proxy for permanent income, which is the value of the predicted income for each household head in a Mincerian (earnings) equation with age, experience, gender, marital status, and employment sector. Average proportional income

(continues on next page)

BOX 5.2
Continued

changes for each quintile in each episode are calculated, then disaggregated depending on whether the household head was a formal or informal sector employee or was self-employed in the first period. The probability of entering or exiting poverty in booms and recessions is computed by education of the household head and changes in occupational status. Finally, a difference-in-differences approach is used to compare the probabilities of four types of household responses to changes in employment status of the household heads: spouse enters employment, child leaves school, child repeats grade, and child enters employment.

stylized facts of aggregate income risk and household welfare in Latin America:

(1) Aggregate income volatility affects different ranges of income distribution differently, depending on the country and on the episode. There is no discernible pattern that either the poorest or the richest households persistently have a higher income volatility than others.
(2) The ownership of assets—such as land, education, and surplus household labor—reduces the risk faced by households.
(3) The poor, like everyone else, appear to be reluctant to make irreversible divestments during bad times, and this is especially true of decisions concerning the education of their children. The evidence broadly suggests that school enrollment is reasonably insensitive to aggregate economic fluctuations, although school perfomance is not. Child labor is generally procyclical rather than countercyclical.
(4) From the experience of some countries, relatively large crises (deep or long recessions) appear to have qualitatively different effects on poverty and investments in human capital than smaller shocks; for example, the poor are affected more than the rich when the shocks are big, but vice versa when the shocks are smaller.

Do Aggregate Shocks Hurt the Poor More than the Rich?
Macroeconomic volatility—in particular, unexpected negative aggregate income shocks—do not appear to disproportionately affect the incomes of any particular range of the income distribution. Specifically, we find no support for the common claim that the poorest are always those most affected by economic fluctuations. Of the four Brazilian recessions studied, only the most severe (1982–83) generated a greater proportional income loss to the poorest quintile than to any other. In all other cases (1990–91, 1996–97, and 1998–99), the greatest proportional—and therefore obviously also absolute—income losses were borne by the richest quintile. In fact, during the recession that followed the failed stabilization attempt known as the "Collor Plan," which was based on a temporary seizure of financial assets, proportional losses declined consistently by income quintile.

Growth episodes also appeared to have been more benevolent to the poor than is generally acknowledged. In two of the three boom episodes considered (1984–85 and 1986–87) proportional income gains also declined consistently by income quintile. The third episode, which followed the succesfull stabilization of the Brazilian real during 1994–95, is best described as broadly neutral. Table 5.6 and Figures 5.1.a and b summarize the results from Brazil.

Using a different methodology, similar results emerge for Mexico in 1995. Households that suffered average or median losses were found to be evenly spread across all wealth classes. But households in the poorest 40 percent of the population were less likely to suffer large negative losses and were overrepresented among those "suffering" small losses (or even gaining) in the aftermath of the 1995 crisis. Table 5.7 reports the actual results of those regressions. In addition, some groups often thought to suffer disproportionately, such as the elderly and single mothers, do not appear to be particularly badly affected, echoing earlier findings from Peru by Hall and Glewwe (1998).

But just as they did during 1982–83 in metropolitan Brazil, the poorest households do, on some occasions, fare worse than richer households in terms of the relative income losses inflicted by a shock. This was found for the rural Salvadoran sample, where the mean proportional income loss during the aggregate shock suffered by the poorest 20 percent of the population was 32 percent; 18

TABLE 5.6

Metropolitan Brazil: Percentage Income Changes by Head's Wage Bracket

WAGE BRACKET	GROWTH			RECESSION			
	1984–85	1986–87	1994–95	1982–83	1990–91	1996–97	1998–99
1 (poorest)	8.8	31.0	15.7	-33.3	-11.7	-1.8	-3.9
2	6.7	19.4	17.1	-30.7	-12.5	-1.9	-5.5
3	6.6	14.9	16.9	-31.0	-18.9	-1.7	-4.9
4	4.6	12.6	18.0	-28.6	-26.0	-2.0	-6.3
5 (richest)	3.8	4.9	14.0	-27.1	-28.1	-5.2	-6.5

Source: Neri and Thomas (2000).

percent for the second fifth; 2 percent for the third; 5 percent for the fourth; and the richest 20 percent actually experienced a 9 percent gain in income.[7]

Just as the Salvadoran example showed that the results may differ among countries—or for the same country, between rural and urban areas—results also differ if distributional weights are attached to losses, for example, with higher weights attached to incomes of the poor. This qualification should be kept in mind when interpreting results such as those for Brazil and Mexico, and in reacting to claims that the "the poor are affected more severely during crises."[8]

Does Ownership of Assets Reduce Vulnerability to Aggregate Shocks?

The second stylized fact of covariate income risk and household welfare in LAC is that asset ownership decreases a household's vulnerability to shocks (in the sense of reducing its proportional income variation). The term "asset" is used in a broad sense to include land, education, the benefits associated with formal employment, and underused family labor. All three studies uncovered evidence of this, although the different settings to which they refer imply that the assets in question differed in importance.

Perhaps the starkest evidence refers to the smoothing effect of land ownership on the plight of rural households during the 1997 agricultural downturn in El Salvador. Table 5.8 decomposes the total change in the poverty headcount ratio[9] for the seven occupational categories previously mentioned, into three effects: one due to an increase in poverty within the existing subgroup, another due to changes in the population shares of each subgroup, and a third that accounts for interactions between the previous two terms. Given the choice of a relatively high poverty line, the headcount did not change much overall, rising from 0.65 to 0.69.[10] However, the poverty profile was transformed. The self-employed only group, which generally has no access to land, accounted for some 16 percent of the poor in 1995; two years later, the figure was 25 percent. Interestingly, this did reflect a rise in the intragroup headcount ratio, but was predominantly due to an increase in the number of people who lost jobs in agriculture. Correspondingly, the poverty share of agricultural wage workers

FIGURE 5.1

Income Gains and Losses in Seven Episodes of Volatility in Brazil

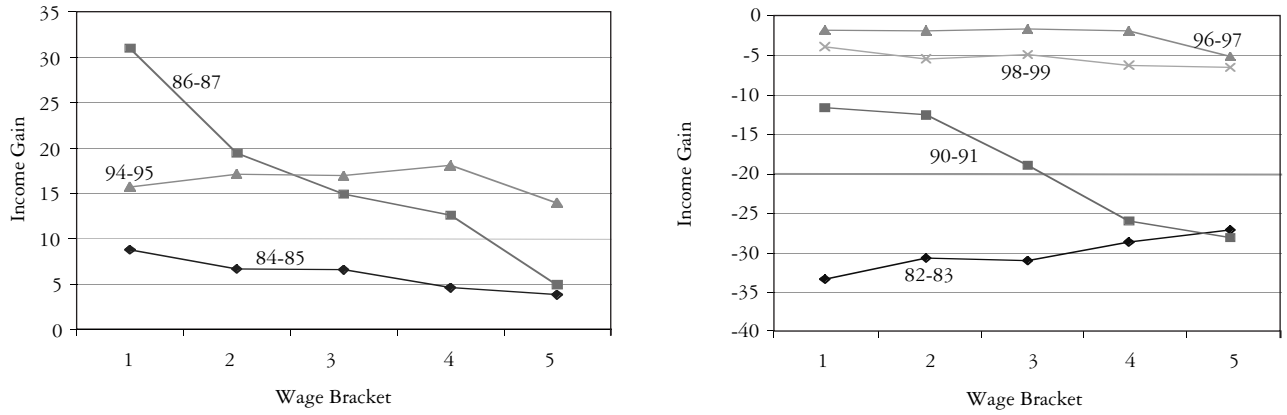


TABLE 5.7

Mexico: Proportional Income Change by Income Quintile, 1995–96

	PERCENTAGE CHANGE ACROSS 5 QUARTERS					
	0.2	0.5	0.8	0.2	0.5	0.8
	A	B	C	D	E	F
Quintile 1	0.033*	0.007	0.085**	0.091**	0.091**	0.281**
Quintile 2	0.048**	0.016	0.006	0.053**	0.046**	0.112**
Quintile 3	0.018	-0.0068	-0.0291	0.064**	0.034**	0.094**
Quintile 4	0.011	-0.021	0.006	0.027	0.012	0.032
Consumption	-0.562**	-0.260**	0.115**	-0.382**	-0.004	0.508**

* Denotes statistical significance at the 1 percent level.
** Denotes statistical significance at the 5 percent level.
Note: The table reports percentage income changes relative to the richest 20 percent of the population. The omitted category is the top quintile, and the proportional change in its income is given by the constant term; other entries indicate differences with respect to that change.
Source: Cunningham and Maloney (2000).

TABLE 5.8

Rural El Salvador: A Dynamic Decomposition of Poverty Changes, 1995–1997

		CONTRIBUTION TOWARD CHANGE IN POVERTY (%)		
HEADCOUNT RATIO	TOTAL	SECTORAL	POPULATION SHIFT	INTERACTION
Self-employed only	160	22	127	11
Nonagricultural wage workers only	-23	29	-43	-8
Nonagricultural wage + self-employed	21	-3	24	-0
Agricultural wage workers only	-91	11	-98	-4
Agricultural wage workers + self-employed	49	27	21	1
Agricultural wage + nonagricultural wage	-12	36	-35	-13
Agricultural and nonagricultural wage + self	-5	-22	20	-3
Total	100	100	16	-16

fell from 18 percent to 11 percent, despite an increase in its own headcount ratio.

The results for El Salvador indicate that—controlling for income—land ownership makes households more likely to keep children enrolled in school, and helps preserve the productivity of labor during crises. The importance of land is confirmed by statistical analysis to estimate earnings in both periods. Land ownership appears to have played a more important role as a self-insurance strategy than as a direct determinant of earnings in good times: the effect of land ownership was not statistically significant in 1995, and only became important after the crisis. During good times, it was access to off-farm employment, rather than having a plot of land, that had the greatest (and most significant) impact on household income.[11] And both original access to nonagricultural employment and the ability to keep it after the crisis appear, in turn, to have been correlated with that other asset crucial to the poor: education.

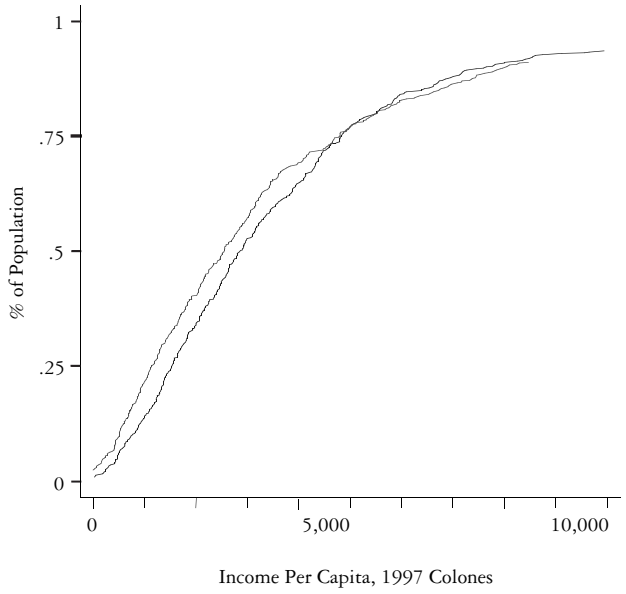
The results for rural El Salvador also indicate a strong and statistically significant effect of the years of schooling of the household head on income. Combined with Figure 5.2, which suggests that those with higher earnings did not suffer income losses even during the agricultural downturn (and may even have done better during the crisis), this hints at the role of education as an important self-protection instrument.[12]

This possible self-protection role of education was found to be associated with a smaller probability of transition into poverty and a larger transition rate out of poverty, both during recessions and growth spurts in Brazil. Figures 5.3.a through 5.3.d illustrate that those associations were robust for all three growth episodes and all four recessions considered.

A partial exception to this role of education is the case of Mexico, where households headed by college-educated males suffered somewhat larger proportional falls in income as a consequence of the 1995 crisis than did those with primary or secondary education. However, inclusion of what the authors call "coping variables"—namely entry into the labor force by the head, the spouse, or a child—reduces that advantage of the uneducated, and it ceases to be significant at the median. It appears that for

FIGURE 5.2

El Salvador: Cumulative Distributions of Real Income Per Capita, 1995 and 1997



Mexico any apparent greater ability to weather shocks by the less educated is due to their greater ability or willingness to send household members previously out of the labor force into it. If one thinks of underemployed family labor as an asset, this finding simply suggests that education is a subsitute for it, as a self-insurance strategy. And if leisure is a good thing, as Box 5.3 suggests, the consequences for family welfare, particularly that of women, may be substantial.

In fact, recourse to underused family labor is also found to be an important coping strategy in rural El Salvador. This may reflect a greater proportion of women in the wage-contract labor force—where demand rationing was clearly in effect—and perhaps more important, a complementarity between greater reliance on owned land and unpaid family female labor. Just as in Mexico's urban setting it appears that education and surplus family labor are substitute assets in coping with a crisis, in the rural El Salvador setting, surplus family labor and land are complementary assets, with a measurable volatility-reducing effect.

Do the Poor Engage in Self-Destructive or Myopic Coping? The third stylized fact of covariate income risk and household welfare in LAC is that the poor, like everyone else, appear to be reluctant to jeopardize their (family's) future in an irreversible way during a temporary downturn. This is particularly true of parental decisions about the schooling of their children.

A number of recent studies have emphasized the risk that, in addition to their temporary impacts, temporary negative income shocks might have permanent effects on the incomes of poor families. One of the main transmission mechanisms which these studies suggest for such "poverty hysteresis" is that parents might be forced to take their children out of school to deploy them in income-generating activities (see, for example, Lustig 1999, and IDB 2000). Even though the opportunity cost of schooling is likely to have declined, as the covariate shock reduces the potential earnings in the market for children's labor, the argument goes, a subsistence constraint may become binding and necessitate a reallocation of the child's time away from schooling and toward work. The existence of a subsistence constraint, and of irreversibilities in the educational production function, would thus lead to a rational decision which might, nevertheless, imply a reduction in the lifetime earnings of the child.

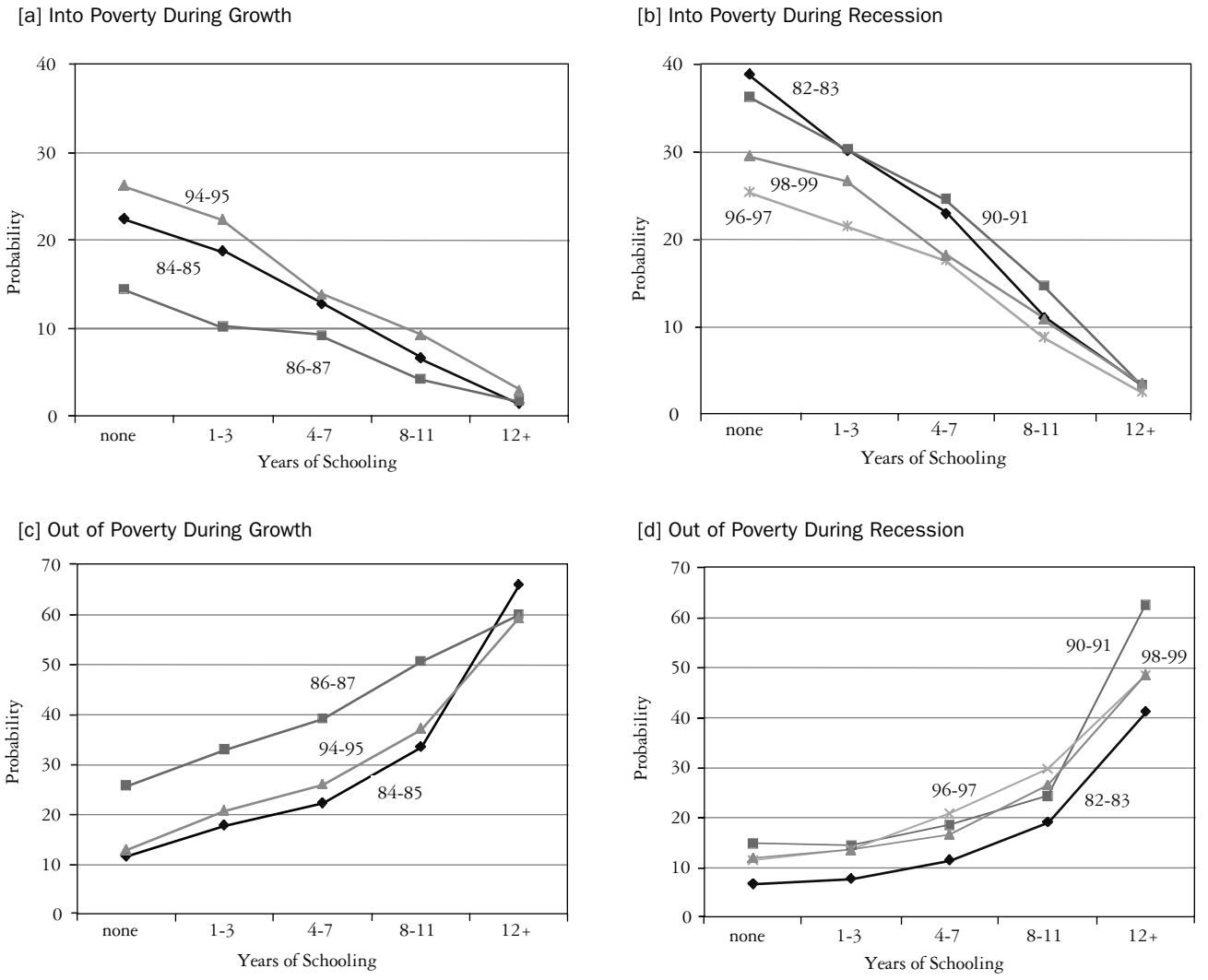
Although the conceptual argument is plausible, empirical tests have been scant. And they are needed: theoretical predictions are ambiguous because of opposing effects of earning opportunities (which are lower during bad times) and the need for income (which is higher during bad times). Examining the effect of the four Brazilian recessions and three growth episodes on three child schooling variables—dropout rates, grade repetition rates, and child labor participation rates—helps shed light on the nature of the effects sketched above. As Figures 5.5, 5.6, and 5.7 suggest, school enrollment is largely acyclical with respect to trend, but child labor and grade repetition are mildly procylical.

The economic cycle appears to have no overall effect on dropout rates. It does, however, have some effect on repetition rates, a serious problem in the Brazilian education system. Upturns appear to increase repetition rates; this may be associated with the procyclical nature of child labor (which can be engaged in without dropping out of school entirely, but at the cost of diminished performance). The result for child labor, illustrated in Figure 5.7, suggests that the effect of a lower opportunity cost of schooling during recessions outweighs the other effects.[13]

However, a more detailed investigation revealed that for children of workers moving from formal sector jobs to informal self-employment—which is more frequent dur-

FIGURE 5.3

Brazil: Moves Into and Out of Poverty, by Level of Education



Source: Neri and Thomas (2000).

ing recessions—repetition rates increased substantially, and there was also an increase in the work participation of these workers' spouses. It is tempting to hypothesize that informality may worsen school performance by drawing on "surplus" household labor.[14] Brazilian children—and probably those in most LAC countries—age 10 to 15 have been entering the labor market at decreasing rates over the last two decades. This trend is clear, and the effects of aggregate fluctuations are relatively minor. But they do exist and are procyclical: entrance into the labor force for this age group has generally been higher in booms than during recessions.

The procyclicality of child labor is not a peculiarity of metropolitan Brazil. In Mexico, the proportion of households sending children to work during the 1995–96 cycle was consistently low (less than 4 percent) and marginally higher during the recovery than during the downturn (see Box 5.4). The procyclical nature of child labor was more pronounced for the poorest quintile, where 3.8 percent of families added children to the work force in the recession, but 5.7 percent did during the recovery. In Chile, once again, labor force participation of youth age 15 to 19 is procyclical, falling for both males and females during the 1982–84 recession. The same is true for men age 20 to 24.[15] Again, it

BOX 5.3

Where Does Time Go During a Crisis?

Using the same Mexican panel data, Cunningham (1999) and Parker and Skoufias (2000) find that wives do enter the job market if the husband loses his job. But when a woman enters the job market, who does the work she used to do? Or does she simply lose her leisure time and work a "double shift"?

Cunningham (1999) finds that for every additional hour worked outside the house, women do one-half hour less housework, in effect, working a "shift and a half." Other members of the family compensate somewhat, but overall, the household work falls by about the same amount. This implies both that women become more "time poor" (that is, lose leisure time) and that many necessary household tasks—such as raising children, ensuring healthy living conditions, and investing in socially useful networks—may get less attention (see Figure 5.4).

was only for young adult women (age 20 to 24) that participation rates were found to be countercyclical. The results from Chile confirm both the countercyclical pattern for female labor force participation rates and the procyclical pattern for child labor found by the other studies.

These results run counter to frequent claims that government efforts to combat child labor should be stepped up during recessions. Hence, the results have important policy implications. Caution is necessary, however, until this is found to be true for other countries or settings (for example, rural areas), and one must keep in mind that this procyclicality result relates to child labor, not school enrollment. In fact, the results for school enrollment are mixed: in Brazil, enrollment was acyclical while in Chile enrollment declined during a severe recession. There is also some evidence that ingredients for producing well-schooled children decline in quantity or quality during downturns (for example, because of lower public and private spending or because some spouses join the labor force and have less time to spend with their children). It is also too early to make strong claims about the nature of the effect of aggregate income shocks on the education of poor children. Nevertheless, the evidence uncovered so far can provide useful guidance to policymakers, as we outline in Chapter 7.

Are All Downturns the Same in Their Effects?

Discussions about policies to protect the vulnerable from the effects of aggregate volatility generally assume that all downturns are similar in their effects on poverty and human capital investments. In fact, the evidence from the case studies for Brazil, Chile, El Salvador, and Mexico reveal that this is not true: longer, deeper recessions appear to have results qualitatively different from shorter downturns. The poor suffered greater proportional losses in income during severe recessions than the wealthy (but this was reversed at least for metropolitan Brazil and Mexico),

FIGURE 5.4

Change in Housework Time Due to Labor Force Entry

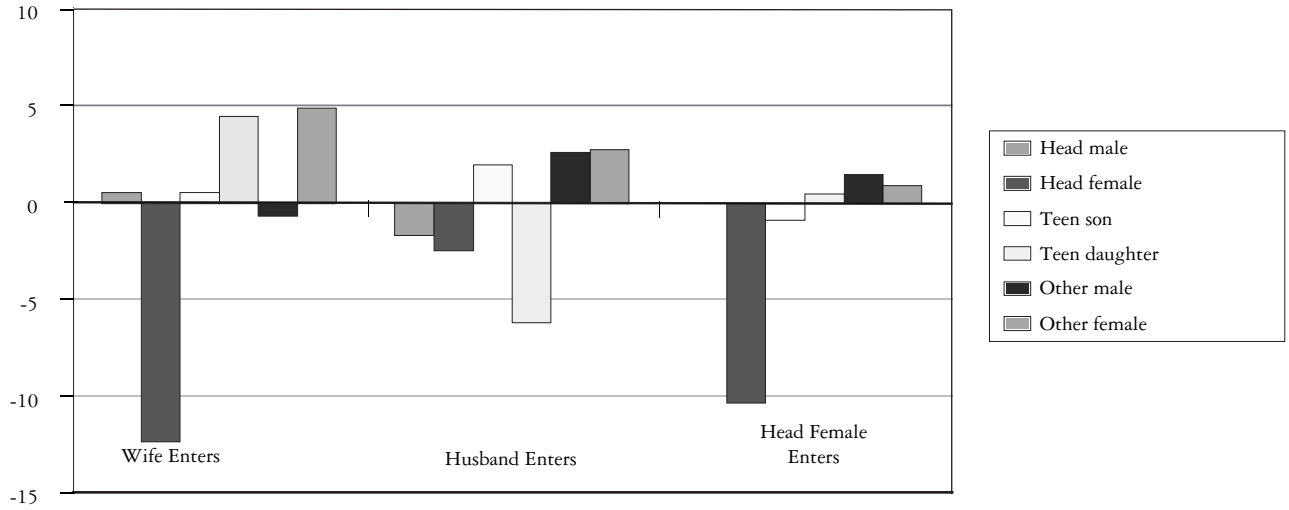


FIGURE 5.5

Brazil: Probability of School Dropout

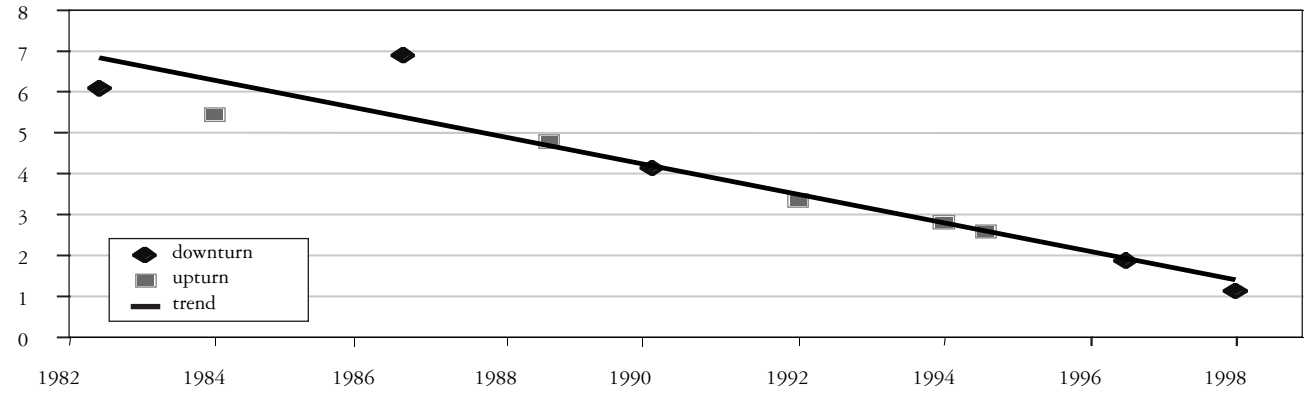


FIGURE 5.6

Brazil: Probability of Repeating a Grade at School

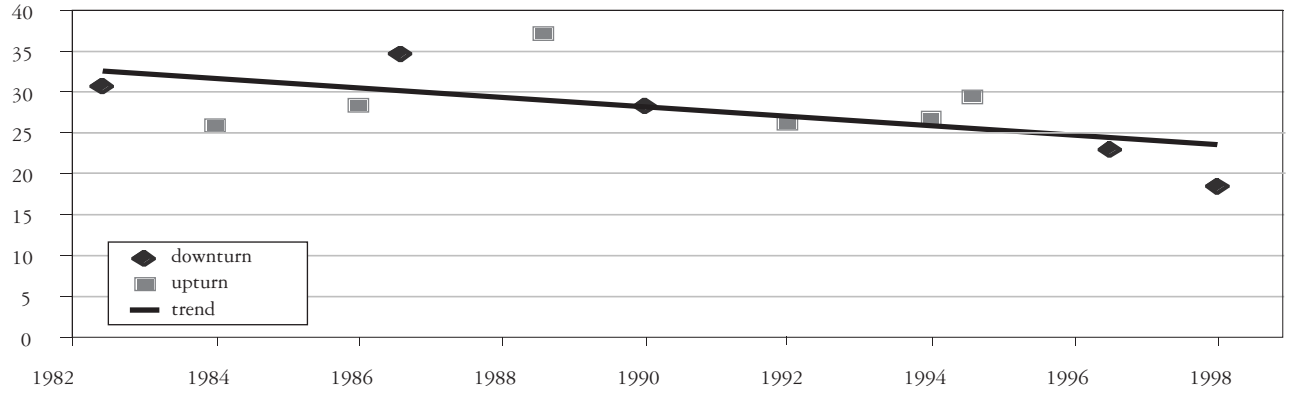
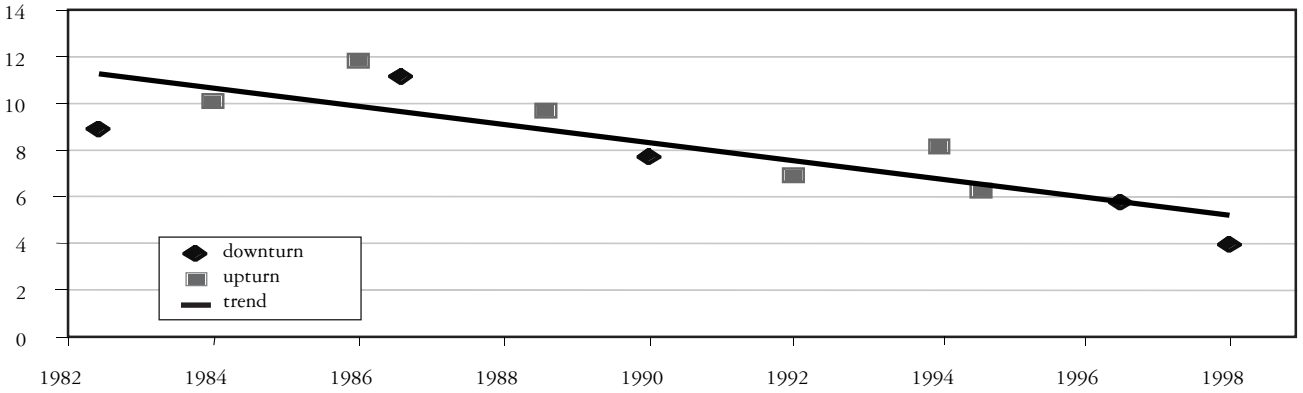


FIGURE 5.7

Brazil: Probability of Child Aged 10–15 Starting Work



Source: Neri and Thomas (2000).

and children were pulled out of school in Brazil and Chile when the recession was deep, but not otherwise. If confirmed for other countries and settings, this finding has important policy implications.

The Brazilian recession of 1982–83 was more serious than the other three downturns (1990–91, 1996–97, and 1998–99) examined here. But it was also different in that while in milder recessions the poorer 40 percent suffered proportionally less than the wealthiest 40 percent of the population—declines in income of about 12 percent, 2 percent, and 5 percent for the poor during 1990–91, 1996–97, and 1998–99, respectively, as compared with 27 percent, 4 percent, and 6 percent, respectively—the deeper recession resulted in a loss of 32 percent for the poorest two-fifths as compared with 28 percent for the richest two-fifths (see Table 5.1 and Figure 5.1). Again, the Chilean recession of 1982–84, which was steeper and longer than other episodes of negative growth, was also different in that it was the only recession during which child enrollment declined.

The rationale for these findings may be that the poor have smaller asset stocks (both in absolute terms and relative to income flows) as compared with the rich, limiting their ability to draw on their assets for prolonged periods. Thus, while they behave similarly during moderate downturns—drawing down some of their assets and working longer hours but maintaining critical long-term investments such as education of children—longer downturns result in a divergence of behavior between the rich and the poor. Again, while the reduced earnings (or "substitution effect") may offset the propensity to send children to work due to the subsistence constraint (or "income effect") during short downturns, the latter may dominate the former during downturns that are expected to last longer. In any case, if confirmed for other countries and settings, this finding, too, has important policy implications which are discussed in Chapter 7.

Conclusion

Large macroeconomic volatility in LAC both causes and obscures even more substantial variation in the incomes and employment status of individuals and families in the region. Although lack of consumption data prevented better estimates of variations in household welfare, the magnitude of the income variations reported here (and which constitute an upper bound to the true welfare changes) was substantial. Recessions like those of 1982–83 and 1990–91 in Brazil led to proportional declines in mean incomes for some quintile groups on the order of 30 percent. In Mexico's 1995 crisis, the median proportional income loss for all households was around 25 percent, and for those suffering "catastrophic losses" (that is, in the first quintile group of the distribution of changes), the figure was over 50 percent. In El Salvador, the agricultural crisis of 1997 led some measures of the severity of poverty to rise by about 37 percent among the rural self-employed.

If Latin Americans are risk-averse, as we suppose most people to be, this degree of household income volatility implies a considerable loss of social welfare. Reducing it would make workers and their families better off, other things remaining the same. This argument and the magnitude of the variations at the household level provide a powerful incentive to study the determinants of microeconomic risk and the strategies adopted by households to reduce it and insure against it.

The general conclusion of this chapter is that households largely respond rationally and sensibly both from the viewpoint of individual households and often even from that of society: most notably, they attempt to shelter their children's schooling and leisure from economic shocks, both aggregate and idiosyncratic. This does not mean that governments cannot do more to help households deal better with income risk. Chapter 6 dicusses how countries in the region have sought to deal with the risk of unemployment, and finds that countries can better match income support programs for the unemployed with the type and level of risk, and the level of sophistication of the available instruments for self-insurance. Chapter 7, which addresses the issue of what governments have done and how they could improve public interventions, finds that while "targeted" social spending is often both procyclical and poorly targeted, broader social spending such as that on education and health is less subject to be cut during economic downturns, but is often insufficient to prevent a deterioration of performance indicators during recessions. The findings of Chapter 5 actually imply that there is considerable scope for welfare gains from better policies for dealing with the risks of unemployment and aggregate economic fluctions that can lead to increased poverty. The final sections of Chapters 6 and 7 propose how these gains can best be realized.

BOX 5.4

Do Families Mortgage Their Children's Future? Other Evidence

As with the evidence from Brazil and Mexico, there is little or only weak evidence from other countries in the region that families faced with income shocks either put children to work or pull them out of school. The claims are made nevertheless.

For Peru, using Living Standards Measurement Surveys for 1994 and 1997, Ilahi (1999) found that when mothers become unemployed, children allocate less time to household chores, but there is little or no change in schooling or child labor. Schady (2000) found no significant difference between school enrollment rates in Peru in the crisis year of 1991 and in the growth years of 1994 and 1997. Once again, acyclicality is observed in the broader context of a secular rise in enrollment.

Like the Neri and Thomas (2000) paper discussed here, Duryea (1998) examined the effects of shocks in metropolitan Brazil. But the nature of shocks is idiosyncratic rather than aggregate: unemployment of the father lowers the probability of grade advancement of children age 10 to 15 by about 4 percentage points, but Duryea (1998) does not explore the reasons for this—for example, whether this is due to a less favorable family environment, reduced inputs such as books, or because the child has to begin or increase paid work. Recall that Neri and Thomas (2000) found no systematic evidence that enrolment or repetition or dropout declines during periods of aggregate downturns, but found some evidence that child labor increases during periods of recovery (in economic parlance, the "substitution effect" of changes in child wages dominates the income effect over the economic cycle).

Cunningham (1999), Parker and Skoufias (2000), and Cunningham and Maloney (2000) focus on Mexico and study the impact of income shocks on child labor and school attendance before, during, and after the 1995 crisis, examining the effects of idiosyncratic shocks while controlling for aggregate risk. All focus especially on the effects on children of involuntary loss of employment. Parker and Skoufias focus especially on those due to illness, divorce, or other labor market reasons—of any of the parents. Their finding is that children—boys more so than girls—are largely unaffected by household-specific economic shocks, in periods of both aggregate downturns and recovery.

Exploiting the dynamic possibilities of the panel, Cunningham and Maloney do find the predicted effects on girls in response to the father's job loss, but ambiguous evidence for boys. Further they find that while in less well-off families children do work and drop out more, there is little evidence of credit constraints that would cause poorer families to put children to work. However, they do find that where a wife or husband enters informal self-employment, children are more likely to work. As with the evidence from Brazil that the substitution effect dominates the income effect, starting a family microenterprise may raise the value of a child's work time and encourage entry. Finally, they find only ambiguous evidence of household adjustments lasting more than a quarter.

Notes

1. See Caballero (2000), Calvo (1991), and Rodrik (1999) for a sampling of possible explanantions on high volatility in the region.

2. Cornia and others (1987) and the *World Development Report 1990* played an important role in raising the profile of this issue in the late 1980s.

3. For a path-breaking exception, see Glewwe and Hall (1998).

4. Arango and Maloney (2000) use both the Mexican Household Survey described in Box 5.2 and the Permanent Household survey (EPH) from Argentina. The EPH conducts extensive biannual interviews in Greater Buenos Aires and is structured so as to generate panels that allow tracking a quarter of the sample across two years. To generate a sufficiently large sample of roughly 5,700 observations, seven contiguous EPH cohorts were combined beginning in May 1993 and rotated every six months.

5. This section is based on Ferreira and Gill (2000).

6. The consumption variations would only be equi-proportional if households were certain that the shocks were permanent.

7. There are a number of good reasons to believe that the nature of this negative shock in 1997 did affect the rural poor more severely than other segments. We will discuss some of these below. But it should also be noted that the ranking of households in this study is based on an average of each household's income in 1995 and 1997. This is arguably a less robust proxy for permanent income than either the neighborhood average used by Cunningham and Maloney (2000), or the Mincerian predicted income used by Neri and Thomas (2000).

8. Cunningham and Maloney (2000) show that when permanent incomes are weighted to give more importance to the poor, the proportional losses accruing to the least educated—and hence likely the poorest—do indeed become greater than when that weight is 1. Like them, other researchers making claims about who suffers disproportionately during crises should make their welfare weights explicit.

9. See Conning, Olinto, and Trigueros (2000) for analogous decompositions using other poverty indexes.

10. Depth and severity, as measured by other poverty indexes, rose in a more pronounced manner.

11. The "self-employment only" category into which many households fell in 1997 due to having lost jobs is not made up mostly of the landless. In fact, most of these households are engaged at least in part in agricultural or animal husbandry activities. The relationship between land ownership and poverty and vulnerability is complex. The main finding in Conning, Olinto, and Trigueros (2000) is how much household labor allocation changes in a crisis. The large increase in self-employment hours is split evenly between farming and nonfarming hours, while the loss of wage hours is driven principally by reduced agricultural wage employment.

12. See Box 3.1 for definitions of alternative insurance instruments; see Ehrlich and Becker (1972), and Gill and Ilahi (2000) for details.

13. See Ferreira and Gill (2000) for a fuller characterization of these opposing effects.

14. This suggests a caveat to our earlier consideration of surplus household labor as an asset with insurance value. It is likely that those family members were not completely idle. In fact, mothers were most likely being a highly productive input into the education of their children. Their joining the labor force is not without cost and, even if the evidence is largely against the proposition that this leads to massive increases in dropout rates, the quality and pace of their children's education may suffer nonetheless.

15. Mizala and Romaguera (2000) report gender-disaggregated time-series for labor force participation rates for people age 15 to 19 and 20 to 24 in Chile, from 1976 to 1993.