POVERTY TRANSITION IN NICARAGUA

By: Alejandro E Martínez Cuenca Ph.D

It is generally accepted that the significance of poverty depends on its dynamic characteristics. For example, if fifty percent of the population is poor at any one time, it makes a great deal of difference whether it is the same group of households that are poor all the time or if all households are poor fifty percent of the time. Poverty would be a concern in either case, but would probably be seen as more serious in the first case than in the second.

In addition to affecting the view that one might have about the seriousness of poverty, its dynamic characteristics will affect the sort of public policies that are considered for its alleviation. If the households who are in poverty were always the same, training and other policies that increase the long-term earning abilities of those households would seem to be appropriate. On the other hand, if all households experience transitory poverty, training would be less relevant and the concentration would be on providing temporary help.

The purpose of this article is to examine poverty and its dynamics in relation to the question of transitions. Once

poverty is defined as a household event, a family is considered to be either above or below the poverty line.

There are many definitions of poverty and poverty lines. In the human development perspective, poverty can involve not only the lack of necessities of material well being, but also the denial of opportunities for living a tolerable life. Life can be prematurely shortened. It can be made difficult, painful, or hazardous. It can be deprived of knowledge and communication, and it can be robbed of dignity, confidence, and self-respect. All are aspects of poverty that limit and blight the lives of many millions in the world today.[10]

Concerns with identifying people affected by poverty and the desire to measure it have at times obscured the fact that poverty is too complex to be reduced to a single dimension of human life. Poverty has many dimensions: there is the short life dimension; there is the illiteracy dimension; the exclusion dimension; and the lack of material means dimension. These dimensions can overlap in different combinations, and they are all-together, or, by themselves, part of the whole phenomenon of poverty (UNDP, 1997).

---

[10] See United Nations Development Programme (Undp), 1997, Human Development Report.

Over the years, the concept of poverty has been defined in different ways. Following is a summary of three different perspectives.

According to the income perspective definition -- which is used in this article -- a family is poor if, and only if, the combined income of all the members of the family is below a defined poverty line. The cut-off poverty line is defined in terms of having enough income for a specified amount of food. In the case of Nicaragua, the poverty line is set at the value of two times the cost of a minimum food basket. It is set at that level because that permits the minimum caloric requirements for a family of five persons. It should be observed that the poverty line measured on the basis of this criterion will change with the movement of the price of that basket of food.

A second definition is the basic needs approach. In this definition, poverty is the deprivation of material requirements for minimally acceptable fulfillment of human needs, including food. This concept of deprivation goes well beyond the lack of private income; it includes the need for basic health, education, and essential services that have to be provided by the community to prevent people from falling into poverty. This concept also recognizes the need for employment and participation. This second

definition is used in this article, but in a very restrictive manner. It is included only because in 1992 and 1998, the questions were included in the questionnaire.

A third definition is the capabilities approach. Here, poverty represents the absence of some basic capabilities to function. For example, a person may lack the opportunity to achieve some minimally acceptable level of functioning. The functioning relevant to this analysis can vary from physical ones, such as being well nourished, adequately clothed, and sheltered and avoiding preventable morbidity, to more complex social achievements such as partaking in the life of the community. The capability approach reconciles the notions of absolute and relative poverty, since relative deprivation in incomes and commodities can lead to an absolute deprivation in minimum capabilities.

In this article, the income approach is chosen for the definition of poverty in the analyses. This is because the data allow this type of approach to be used. This has been the traditional approach used to estimate poverty in Nicaragua; in this article, poverty is also estimated using the basic needs approach whenever possible. A household is regarded as being above the poverty line if its income covers at least twice the value of a basic food basket. A

basic food basket is considered to be the minimum nutritional requirements that a family of five persons should have. On the other hand, the family is considered to be in poverty if its income is not sufficient to meet such minimum food requirements.

Poverty measured in terms of income, and measured in terms of basic needs, has increased for families in the urban sector of Nicaragua from 41.8 percent in 1992 to 56.5 percent in 1998. (See Table 18.) Poverty has moved from 60.2 percent to 62.6 percent when measured in terms of basic needs requirements. Thus, the number of families that fall in the category of poverty tends to be greater when the basic needs approach is used than when the income approach is used.

Table 18

Urban Families in Poverty
Nicaragua: 1992-1998
(measured in percentages)

	1992	1993	1994	1995	1996	1997	1998
Poor (Income Measurement)	41.8	52.4	45.7	46	49.9	60.7	56.5
Poor (Basic Need approach)	60.2	NA	NA	NA	NA	NA	62.9

	Poor	Not Poor
Age of family (mean)	25.8	25.4
Number of persons in the family (mean)	6.20	7.53
Education of Head of Household (mode)	Elementary	Elementary
Gender of Head of Household (mode)	Male	Male
Number of Income Generators per family (means)	1.3	2.5

Observe that the headcount implied in this method of measuring poverty does not indicate anything about the depth or severity of poverty. Furthermore, it does not capture any worsening of the conditions of those already in poverty. Thus, when discussing transitions here, the reference is to movements of families above or below the poverty line through their recorded history. The transition of two states is analyzed: from no poverty into poverty, and from out of poverty. This analysis is for the specific families of the panel data that were followed

during the years 1992 to 1998 in the urban sector of the three major cities of Nicaragua.

Table 19 contains the estimates of the probabilities that a family will be in urban poverty or outside poverty, at any moment in time. The probability that any urban family will be in poverty at any point in time is greater than 57 percent. Additionally, this table shows that the probability of a poor family to move out of poverty is only 14.23 percent while the probability of remaining in poverty is 40.46 percent. On the other hand, the probability that a family that is out of poverty will remain out of poverty is only 28.5 percent. The chances that the family will go to poverty out of no poverty are greater than 16.7 percent. This result would indicate the limited number of possibilities that an individual family faces to leave the poverty in which it has been immersed. This apparent low mobility out of poverty makes the long-term problem of poverty even more serious.

Table 19

Urban Poverty Transition Probabilities:
Nicaragua, 1992-1998

Before\After	Poor	Not poor	Total
Poor	40.46 (2,112)	14.23 (743)	54.69 (2,855)
Not Poor	16.76 (875)	28.54 (1,490)	45.31 (2,365)
Total	57.22 (2,987)	42.78 (2,233)	100 (5,220)

(Number in parenthesis represents the counts in each cell)

The picture of poverty that emerges from the data seems to indicate that there are 14 types of poverty transitions in the history of the families in the sample. While 10.6 percent of the transitions refer to families facing poverty through their recorded history, only 7.7 percent of them refer to families that are outside the poverty line during their whole history. Sixty percent of the transitions correspond to families that are “cyclers,” Cyclers are families that move into and out of poverty several times during their recorded history. Additionally, 21.7 percent of the families experience one single transition, of which 15.6 percent have gone from not poor into poverty and only 6.1 percent of these families have been capable of leaving poverty and never have returned. Table 20 shows the types of poverty transitions.

Table 20

Types of Poverty Transitions

Number	Type	Count	Percent	Cumulative
1.	PNP	149	17.13	17.13
2.	NP	136	15.63	32.76
3.	NPNP	107	12.30	45.06
4.	NPN	107	12.30	57.36
5.	P	92	10.58	67.93
6.	N	67	7.70	75.63
7.	PNPN	58	6.67	82.30
8.	PN	53	6.09	88.39
9.	NPNPN	46	5.29	93.68
10.	PNPNP	39	4.48	98.16
11.	NPNPNP	7	0.81	98.97
12.	PNPNPN	7	0.81	99.77
13.	NPNPNPN	1	0.12	99.89
14.	PNPNPNP	1	0.12	100.00

Figure 7 shows the Kaplan-Meier survival function. This graph shows the speed of the transition into poverty for the families that are initially out of poverty at any point in time. The graph shows that the transition to poverty takes place quickly. In addition, Figure 8 shows the Kaplan- Meier survival function for moving into poverty, once the size of the families is separated into two groups: those families with less than five members and those families with more than five members. The log-rank test used here to study the differences in both functions,

tells that there are significant differences between the two curves as to allow us to reject the null hypothesis (P<0.001). In doing so, one can accept the idea that the larger the size of the family, the longer the family takes to move into poverty. This result suggests that the larger family size contributes more than the smaller family size to extension of the period of time outside the poverty line.

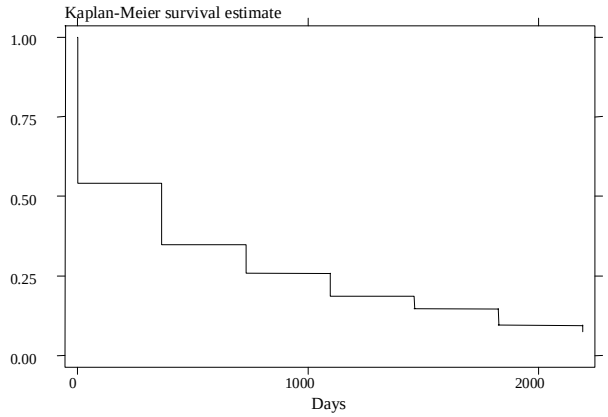

Figure 7: Speed of Going into Poverty

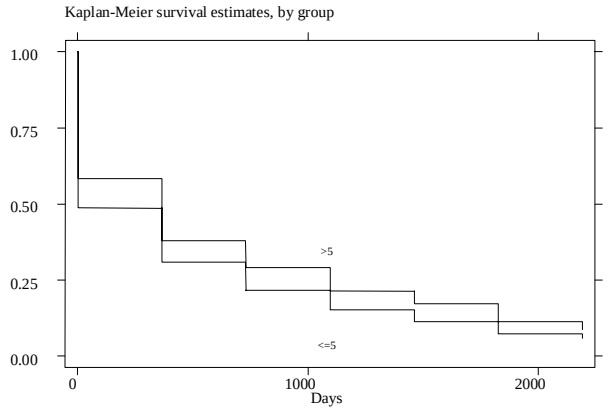

Figure 8: Speed of Going into Poverty by Size of Family

The Cox proportional hazard regression is used to model the transition to and from poverty, both of which are significant at $P < 0.0001$. The covariates examined were gender of the head of the household and educational attainment of the head of the family. The marital status of the head of the family, the number of persons living in the household -- as a time-varying covariate -- the number of young children in the family, as well as the number of members with age above 65 years old, and the number of employment transitions for the head of the household completed the list of variables used. The number of employment transitions variable was created by counting the number of changes from one employment state (E, U, I) to a different state. Note that the transitions that did not result in a different state were not included in the count. Table 21 shows the results from modeling the transition to poverty and out of poverty. Educational attainment appears to be the most important factor in determining whether the family remains out of poverty. The higher the level of education of the head of the family the more likely that the family would remain out of poverty. The number of persons living in the family determines significantly whether the family will move out into poverty. As the number of family member increases, the hazard of moving

into poverty decreases. This same result was shown when the Kaplan-Meier survivor functions were compared for various sizes of households. A possible explanation for this is that the more family members the family has the higher the number of potential workers that can contribute to the income of the whole family. Another important cofactor in this model was the number of employment transitions of the head of the family. As the number of employment transitions increase the higher the hazard of moving into poverty. In this dynamic setting, the effect of the labor market on poverty is seen in terms of labor market transitions as we have treated such transitions in the previous chapter. The results suggest that as the number of employment transitions increase, the higher the hazard of moving into poverty.

Table 21

Hazard Ratios from the Cox Proportional Hazard Regressions: Transitions into and out of Poverty in Urban Areas of Nicaragua

Covariates	From out of Poverty into Poverty	From Poverty to outside Poverty
Gender of Heads of Family (D)	1.053	0.994
	(0.1106)	(0.0684)
Elementary Education of Head of Family (D)	0.800*	1.196
	(0.0921)	(0.1042)

Table 21, continued

Hazard Ratios from the Cox Proportional Hazard Regressions: Transitions into and out of Poverty in Urban Areas of Nicaragua

Covariates	From out of Poverty into Poverty	From Poverty to outside Poverty
High School Education of Head of Family (D)	0.697**	1.227**
	(0.0859)	(0.1177)
University Education of Head of Family (D)	0.340***	1.47***
	(0.0510)	(0.1421)
Technical Attainment of Head of Family (D)	0.498***	1.365***
	(0.090)	(0.1585)
Total Number of Persons living in the house	0.9203***	1.032***
	(0.0138)	(0.0084)
Marital Status of the Head of the Family (D)	1.1919	0.9668
	(0.227)	(0.1333)
Number of Employment Transitions by the Family Head during survey history	1.0697***	974
	(0.0295)	(0.0182)
Number of dependents in the family younger than 10 years	1.052*	0.9796*
	(0.0280)	(0.0171)
Number of persons older than 65 years of age	1.036	0.9831
	(00701)	(0.0458)
Number of Subjects	726	726
Number of transitions	805	1886
Log Likelihood	-4680.46	-1174.3
Chi^2	103.39***	38.27***

Notes: The figures in this table are hazard ratios (exponential coefficients) showing relative risks versus the omitted categories. Significance levels are as follows: *P <= 10%; **P <= 5%; and ***P <= 1%.(Numbers in parenthesis represent Standard Error).

According to this finding, a family could become poor because the number of dependents younger than ten years of age increases in the family. The number of dependents is defined as the number of children of less than ten years of age in each individual family. In this circumstance, a household could become poor, just by the fact that the number of children in the family increases. In this model the number of older people in the family does not seem to bring any significant consequence.

In modeling the transition out of poverty, it was found again that educational attainment is important. The more educated the head of the family is, the higher the probability of getting out of poverty. Similarly, as the number of persons in the family increases the higher the probability of getting out of poverty; this result agrees with the previous model. Note that while the higher number of persons in the family has a favorable impact on reducing the hazard of remaining in poverty, as the number of young children increases the probability of remaining in poverty increases. As the number of employment transitions increase for the head of the family, the probability of getting the family out of poverty decreases or gets smaller. Therefore, the household can move out of poverty by reducing the number of transitions in employment, in

search of securing higher income, or by reducing the number of children of less than ten years of age in the family.

In summary, both demographic and employment transition variables are important in the analysis of movement of families into and out of poverty. Again, consistent with the results of the previous chapter, educational attainment appears to be the driving force of these transitions. It is interesting to note the possible bias inherent in the definition of poverty. The analysis indicates that the more individuals there are in the household, the less likely that the family is in poverty due to the contribution of all members. When families are stratified by the number of children 10 years of age or less, it is confirmed that the probability of a family to being poor is larger when the family has many dependents.

The linear logit model was used to identify risk factors related to dichotomous data. In this study, where individuals are followed through time, logit regressions were used to examine the poverty data at fixed points during the follow-up. This is equivalent to performing a cross sectional study at that selected time point. Four models were fitted using the two definitions of poverty as the dependent variables at two points in time, at the first

and last year of the study. They produced almost similar results.

The dependent variables used in the models were coded as zero if the family was in poverty and one if the family was above the poverty line. The independent variables used were gender, age, educational attainment, family size and marital status of each member.

Table 22

Logit Regression Coefficients: To be "Not-Poor" By Years in Urban Areas of Nicaragua

	Income Approach		Basic Needs Approach	
Year	1992	1998	1992	1998
Gender (Dummy)	-0.129	0.015	0.557*	0.590
	(0.2900)	(0.274)	(0.307)	(0.325)
Age	0.0148**	0.0026	0.0096	0.04***
	(0.007)	(0.007)	(0.007)	(0.009)
Elementary Education (D)	0.5418*	-	1.86***	-
	(0.289)		(0.488)	
High School (D)	1.220***	0.67***	3.162***	2.9***
	(0.3358)	(0.2795)	(0.516)	(0.375)
University (D)	2.926***	0.60***	3.478***	3.4***
	(0.4217)	(0.2590)	(0.529)	(0.378)
Technical (D)	1.227***	1.88***	3.414***	3.6***
	(0.4287)	(0.424)	(0.586)	(0.511)
Number of persons living in the House	0.1875**	0.11***	-0.048	-0.3***
	(0.0373)	(0.034)	(0.038)	(0.051)
Marital Status (D)	0.3757	0.144	1.002*	0.236
	(0.4963)	(0.5620)	(0.5705)	(0.590)
Constant	-2.36***	-1.47**	-2.29***	-2.7***
	(0.5688)	(0.529)	(0.685)	(0.693)
Number obs.	598	453	598	453
Log Likelihood	361.98	-286.6	-345	-1811.3
Chi^2	92.62***	33.83***	132.28***	192.5***
Pseudo R^2	0.1134	0.055	0.1607	0.3115

Notes: The table presents the regression coefficients of no been poor. Significance levels are: *P<=10%, **P<=5%, ***P<=1%. Numbers in parenthesis represent Standard Error.

An analysis of the signs of the various coefficients estimated in the table above indicates that the direction of the signs are in most cases consistent with the results obtained by running the Cox proportional hazard. The only exception is that of gender for the case of the data for 1992, where gender is not significant. From the logit model, it is observed that the probability of remaining out of poverty increases as the level of education increases. Individuals with a college education benefit the most in all models. The number of individuals in the family appears to be another important factor associated with poverty. The more individuals in the family, the less likely that the family will fall below the poverty line. However, when the basic needs approach of poverty is used, the direction of the influence of number of people changes. Doing so gives a result that is opposite to the one obtained when the income approach measure of poverty is used. The reason for this contradictory result is inherent in the way the basic needs poverty level is defined. Note that in the basic needs approach, a family is considered poor the larger the number of persons living in the family.

In conclusion, in this article, poverty transitions have been examined, as well as poverty's major determinants. An examination has also been made into the

link between employment transition and poverty transition. In doing so, it has been possible to recognize that both demographic and employment transition variables are important in the analysis of movement of families out of and into poverty. Again, consistent with the results of the previous chapter, educational attainment appears to be the driving force of these transitions.