E C O N O M I C S B U L L E T I N

Transient and chronic poverty in turbulent times: Argentina 1995−2002

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Abstract

Using panel data, poverty in Argentina is decomposed into transient and chronic components. Overall poverty has increased in large part due to higher chronic poverty. While many household characteristics have similar impacts on both chronic and transient poverty, there are differences. Households with self−employed workers and business owners have higher levels of transient but not chronic poverty. The reverse is observed for households with public sector workers.

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1 Introduction

As noted by Jalan and Ravallion (2000, J&R hereafter), while some households remain poor for long periods of time, others are poor only on a temporary basis. In addition, even among the persistently poor, variations in income or consumption imply that households can become more or less poor over time, for example due to employment losses. Income or consumption variability mean that there is a component of poverty which is "transient" and another which is "chronic", which in turn has implications for policy. Because the determinants and consequences of chronic and transient components need not be the same, interventions to deal with each of them may differ. For instance, the reduction of chronic poverty may involve various forms of asset redistribution and employment creation, as well as human capital investments in education and health. By contrast, the reduction of transient poverty may be achieved through appropriate insurance, as well as risk mitigation and coping mechanisms.

Using the method proposed by J&R, we analyze in this note the extent and determinants of chronic and transient poverty in Argentina. Argentina's case is important in light of its recent crisis. The combination of the hard peg of the local currency to the US dollar and excessive borrowing led to an unsustainable fiscal situation and, ultimately, to the collapse of the economy at the end of 2001. During the next six months, the national currency lost nearly 70 percent of its value against the US dollar, and Gross Domestic Product was reduced by 11 percentage points in 2002. The combination of an increase in unemployment (reaching 21.5 percent in May 2002) and a reduction in real wages due in large part to soaring inflation led to a dramatic increase in poverty. Official estimates by the Instituto Nacional de Estadisticas y Censos (INDEC) suggest that the share of the population in poverty reached 53 percent in May 2002, versus 38 percent in October 2001, placing tremendous pressure on households to make ends meet (on coping mechanisms in Argentina following the recent crisis, see Fiszbein *et al.*, 2003).

While the collapse of 2002 was especially dramatic, it was not isolated, as Argentina has been plagued by crises throughout the 1990s. In this note, our aim is to exploit the rotating panel structure of Argentina's Permanent Household Survey for the period 1995-2002 in order to analyze the trends in, and determinants of, overall poverty and of its chronic and transient components.[1] The survey data enables us to look at chronic and transient

[1] This paper is part of a broader set of papers covering related issues for the same period in Argentina. A second paper (Cruces and Wodon, 2003a) establishes a baseline poverty

poverty for a total of 12 cohorts, following each cohort for one year and a half (four observations on a biannual basis). Other studies based on the J&R methodology (e.g., Dercon and Krishnan, 2000; McCulloch and Baulch, 2000) use panels that follow households for a longer period of time, but they typically present only one point estimate of chronic and transient poverty for the whole period. One of the advantages of our rotating panel is that it allows us to construct time series of transient and chronic poverty measures, and therefore to see how both contribute to the overall trend in poverty.

Section 2 briefly presents the methodology for decomposing poverty into its chronic and transient components, and the analysis of their determinants. Section 3 presents our empirical results. A brief conclusion follows.

2 Methodology

Given that we do not have panel data on consumption in Argentina, we rely on income as our indicator of well-being (this may overstate transient poverty because income tends to be more volatile than consumption). Specifically, we use household income adjusted for the number of equivalent adults and normalized by the poverty line. At time t, our measure of income for household i, denoted by y_{it}, is

$$y_{it} = \frac{\sum_{j=1}^{k_i} \psi_{ijt}}{z_t \sum_{j=1}^{k_i} q_{j_t}}. \tag{1}$$

We thus sum the incomes of all household members ψ_{ijt} ($j = 1, ..., k_i$, where k_i is household size) and divide the total by the product of the sum of equivalent adults q_{jt} in the household and the poverty line z_t per equivalent adult.[2] The poverty lines used for the estimation are those proposed by the Instituto Nacional de Estadísticas y Censos (INDEC), although we scale up the poverty lines for the regression analysis, as will be discussed below.

trend for the country as a whole and some stylized facts on poverty determinants, and on the dynamics of poverty. A third paper (Cruces and Wodon, 2003b) analyzes the impact that shocks, or more broadly risk, plays in reducing income levels and increasing poverty under the assumption that households are risk averse.

[2]Note that $\widetilde{z}_{it=} z_t \sum_{j=1}^{k_i} q_{j_t}$ can be interpreted as a household specific poverty line. The details of the equivalence scale are discussed in INDEC (2002).

Let P be the poverty measure, and denote the vector of incomes for household i by $y = (y_{i1}, y_{i2}, ..., y_{iT})$ with $t = 1, ..., T$. At any given point in time poverty for household i is $P(y_{it})$. We define intertemporal poverty P_i, chronic poverty C_i, and transient poverty T_i as

$$P_i = \frac{1}{T}\sum_{t=1}^{T} P(y_{it}),$$

$$C_i = P(\overline{y}_i), \text{ with } \overline{y}_i = \frac{1}{T}\sum_{t=1}^{T} y_{it}, \text{ and} \tag{2}$$

$$T_i = P_i - C_i.$$

Intertemporal poverty is simply the average of the poverty measures obtained over time. Chronic poverty is evaluated at the expected value of income over time $\overline{y}_i$. Transient poverty is the difference between average poverty over time and chronic poverty. The measures for the population as a whole are obtained by averaging across households. Note that even a persistently poor household (i.e., a household with equivalent income below the poverty line for all periods of observations) will have a non-zero contribution to the aggregate transient poverty measure if its income varies over time. Under income variability, the household will become more or less poor over time, and this will be considered as a transient component in the household's overall poverty measure.

Following J&R, we require the function P to be additive, strictly convex and decreasing up to the poverty line (and taking a value of zero thereafter). The convexity assumption rules out the use of the headcount and poverty gap measures. Hence we rely on the squared poverty gap in the estimations. This is a standard measure belonging to the Foster, Greer and Thorbecke (1984) class. Given that incomes have been normalized by the poverty lines, the squared poverty gap is defined as

$$P(y_{it}) = (1 - y_{it})^2 \text{ if } y_{it} < 1 \tag{3}$$

$$= 0 \text{ otherwise} \tag{4}$$

For the analysis of the determinants of overall poverty, chronic poverty, and transient poverty, we use regression techniques. Denoting the explanatory variables by the vector X, and random disturbances by ε, we estimate

the following models:

$$\begin{aligned} T_i &= \alpha_{1i} + \beta'_{1i}X + \varepsilon_{1i} \\ C_i &= \alpha_{2i} + \beta'_{2i}X + \varepsilon_{2i} \\ P_i &= \alpha_{3i} + \beta'_{3i}X + \varepsilon_{3i} \end{aligned} \tag{5}$$

The three dependent variables are censored, since they take a value of zero for the non-poor. In order to reduce the level of the censoring when conducting the regressions, especially for the determinants of chronic and transient poverty estimations, we will use a poverty line one and a half time as high as that proposed by INDEC (2002) in the official poverty measurement methodology for Argentina. J&R adopted a similar procedure in their analysis of poverty in China. For the tabulations and graphs, however, we will keep the official poverty line.

Finally, we do not use tobits for our estimations, since they impose the stringent assumption that the errors are normally distributed. We again follow J&R in using censored least absolute deviations (CLAD) in the estimation. This imposes a relatively mild condition – zero median error term – while allowing for non-normal, non-homoscedastik and non-symmetric errors (Chay and Powell, 2001). The estimation uses an iterative estimation process based on Buchinsky (1994).[3]

3 Data and Empirical Results

The data come from Argentina's Permanent Household Survey ("Encuesta Permanente de Hogares"–EPH), a standard labor market survey administered continuously by INDEC since 1974 in urban areas in May and October. The survey uses a rotating panel whereby 25 percent of the sample is replaced in each round. It is thus possible to observe households for four rounds ($T = 4$), which corresponds to a total period of 1.5 year. We restrict our sample to households belonging to the Greater Buenos Aires area (GBA), which represents around 60 percent of the total population of the country and 70 percent of the urban population. We use fifteen rounds corresponding to the period May 1995-May 2002. While income is measured at the household level, we present population-based poverty estimates (households are weighted by their size apart from their expansion factor).

[3]The estimation was performed using the *qcenreg* Stata routine developed by Robert Vigfusson at Northwestern University.

Given the structure of the rotating panel, the fifteen rounds between May 1995 and May 2002 contain data for twelve cohorts with four consecutive observations, with an average of 453 households and 1812 observations per cohort. The attrition from the panel does not seem to affect the income and poverty measures much (see Cruces and Wodon, 2003b).

Table 1 provides basic information on the status of households in the various periods. We define four mutually exclusive groups: households who are persistently poor (i.e., poor in all four periods), households who are never poor, households who are poor sometimes with a mean level of income above the poverty line, and households who are poor sometimes but with a mean income above the poverty line. Figure 1 provides a graphical representation of the results. The poverty trends basically follow the business cycle, with a peak in poverty in May 2002 following the 2001/2002 economic crisis.

Table 2 presents the decomposition of the squared poverty gap into chronic and transient poverty according to J&R's definition. There is a clear upward trend in both total poverty (an increase in the squared poverty gap from 0.045 in 1995 to 0.116 in 2002) and chronic poverty (increase from 0.025 to 0.080). Transient poverty increases as well, but proportionately less, from 0.019 in 1995 to 0.036 in 2002. Thus, the proportion of total poverty that is chronic increases from 57 percent of the squared poverty gap for the first cohort to almost 70 percent for the last two cohorts.

Consider now the determinants of poverty. The censored quantile regressions are estimated at the 0.8th quantile. The independent variables in the regressions include initial conditions for (a) household level variables, including the number of babies, children, adults, and elderly household members, and their square, and whether the household head has a spouse, (b) characteristics of the household head, including his/her level of education; his/her gender; five age intervals; his/her migration status (in the last five years); whether he/she is unemployed or inactive; whether he/she is an employer, a self-employed worker, or a wage worker; the type of his/her qualification; and whether he/she works in the public sector; and (c) a subset of these characteristics for the spouse of the household head, when there is one. In addition, we include time dummies for each of the cohorts.

In terms of poverty analysis, the results for overall poverty are standard. Poorer households tend to have more infants and/or children (although the magnitude of this result may be sensitive to the choice of equivalence scale), a lower education level, and a less remunerative profession. This is observed for overall poverty as well for both chronic and transient poverty.

A few findings are worth mentioning, however, in terms of differences

between the determinants of chronic and transient poverty. For example, households with young heads (19 years or below) have lower levels of chronic poverty (perhaps because if they were poor on a chronic basis, they would rather choose to live with relatives), but higher levels of transient poverty, probably due to the vulnerability of those young workers to employment and thereby income shocks. Being an employer leads to higher transient poverty, probably because of the risks involved in running a business, but not to higher chronic poverty. Households with a head or a spouse in the public sector have higher levels of chronic poverty (this may be due to the presence of low wage public workers), but lower levels of transient poverty (perhaps because of the security provided by public sector employment; note that the impact on transient poverty is statistically significant only for the spouse). Households with a spouse being self-employed have higher levels of transient poverty (perhaps because of the variability of self-employment income), but they do not have higher levels of chronic poverty. Finally, as suggested by the increasing values of the cohort dunmmies for chronic poverty, controlling for a wide range of household characteristics, there has been an increase in chronic poverty throughout most of the period, but the increase in transient poverty occurred only towards the later part of the period.

4 Conclusion

In this paper, we have applied a simple methodology to incorporate dynamics into the measurement of poverty. The methodology, which was first proposed by Jalan and Ravallion (2000), enables us to measure chronic and transient poverty, and to analyze their determinants. Using household panel data from Argentina for the period 1995-2002, we have found that over time, poverty increased substantially in Argentina, with in addition a higher share of the poor being in chronic as opposed to transient poverty. We have also found that some household characteristics are associated with both chronic and transient poverty, while other characteristics affect only one of these two types. These results may be useful for a fuller characterization of the dynamics of poverty, and for informing policy options to reduce its incidence.

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Table 1: Poverty Status by Cohort, Greater Buenos Aires, Argentina, 1995-2002

Cohort	Persistently Poor	Sometimes poor, mean income above pov. line	Sometimes poor, mean income below pov. line	Never Poor
95-1 to 96-2	9.4%	8.0%	23.8%	58.8%
95-2 to 97-1	16.0%	10.5%	17.5%	56.0%
96-1 to 97-2	8.1%	11.6%	18.7%	61.6%
96-2 to 98-1	12.0%	13.1%	17.5%	57.3%
97-1 to 98-2	10.8%	8.6%	15.1%	65.5%
97-2 to 99-1	9.9%	12.1%	16.6%	61.4%
98-1 to 99-2	13.8%	12.8%	15.4%	58.1%
98-2 to 01-1	13.9%	11.6%	18.5%	56.0%
99-1 to 00-2	17.4%	7.5%	15.8%	59.4%
99-2 to 01-1	14.5%	15.0%	18.6%	51.9%
00-1 to 01-2	18.8%	10.5%	14.9%	55.9%
00-2 to 02-1	23.3%	16.8%	17.2%	42.7%

Source: Authors' estimation based on EPH.

Table 2: Decomposition of Squared Poverty Gap, Greater Buenos Aires, Argentina, 1995-2002

Cohort	Sq. Poverty Gap	Chronic Poverty	Transient Poverty	% Chronic	% Transient
95-1 to 96-2	4.5%	2.5%	1.9%	56.7%	43.3%
95-2 to 97-1	6.5%	4.2%	2.2%	65.2%	34.8%
96-1 to 97-2	5.1%	3.1%	2.0%	60.6%	39.4%
96-2 to 98-1	5.7%	3.4%	2.4%	58.7%	41.3%
97-1 to 98-2	5.0%	3.0%	1.9%	60.7%	39.3%
97-2 to 99-1	5.4%	3.5%	2.0%	63.7%	36.3%
98-1 to 99-2	6.3%	4.0%	2.3%	63.2%	36.8%
98-2 to 01-1	6.1%	4.0%	2.1%	65.9%	34.1%
99-1 to 00-2	6.0%	4.0%	2.0%	67.1%	32.9%
99-2 to 01-1	6.9%	4.6%	2.3%	67.2%	32.8%
00-1 to 01-2	7.0%	4.9%	2.1%	69.7%	30.3%
00-2 to 02-1	11.6%	8.0%	3.6%	69.2%	30.8%

Source: Authors' estimation based on EPH.

Table 3: Censored Quantile Regressions for the Determinants of the Squared Poverty Gap
Greater Buenos Aires, Argentina, 1995-2002

	Total Poverty	Chronic	Transient
Demographic Characteristics of the Household			
Number of infants (age 0-5)	0.02513	0.04728	0.01322
	[0.00495]***	[0.00656]***	[0.00163]***
Number of infants squared	0.01001	0.00589	-0.00214
	[0.00140]***	[0.00230]**	[0.00048]***
Number of children (age 6-14)	0.10942	0.14871	0.02124
	[0.00407]***	[0.00332]***	[0.00111]***
Number of children squared	-0.00882	-0.01415	-0.00321
	[0.00088]***	[0.00062]***	[0.00023]***
Number of youth (age 15-24)	-0.00633	0.02441	0.01252
	[0.00442]	[0.00395]***	[0.00135]***
Number of youth squared	0.00465	-0.00683	-0.00333
	[0.00119]***	[0.00104]***	[0.00038]***
Number of adults (age 25-64)	0.02972	0.00383	0.00837
	[0.00744]***	[0.00748]	[0.00219]***
Number of adults squared	-0.01396	-0.00806	-0.00184
	[0.00169]***	[0.00150]***	[0.00046]***
Number of elderly members (age 65+)	-0.10748	-0.15352	-0.01712
	[0.01159]***	[0.01153]***	[0.00413]***
Number of elderly members, squared	0.02211	0.04187	0.00272
	[0.00473]***	[0.00423]***	[0.00218]
No Spouse in the household	-0.01436	-0.01835	-0.01101
	[0.01290]	[0.01226]	[0.00411]***
Characteristics of the Household Head			
Age - 19 and younger	0.1144	-0.17914	0.05603
	[0.02546]***	[0.01358]***	[0.00724]***
Age - 20-29	0.06319	0.03264	0.00745
	[0.00864]***	[0.00781]***	[0.00267]***
Age - 30-39	0.02578	0.00103	0.00174
	[0.00596]***	[0.00526]	[0.00183]
Age - 50-59	0.02224	-0.01307	-0.00725
	[0.00665]***	[0.00591]**	[0.00193]***
Age - 60 and older	0.00291	-0.01523	-0.00956
	[0.00909]	[0.00835]*	[0.00266]***
Female	-0.00593	0.00734	-0.00018
	[0.00725]	[0.00764]	[0.00228]
Recent migrant	-0.12515	-0.02718	-0.01861
	[0.01651]***	[0.01188]**	[0.00356]***
Unemployed	0.20448	0.22963	0.0617
	[0.00825]***	[0.00725]***	[0.00248]***
Employer	0.06007	0.02433	0.02785
	[0.02213]***	[0.02175]	[0.00489]***
Self-employed	0.029	0.03264	0.00644
	[0.00705]***	[0.00610]***	[0.00216]***
Informal sector worker	0.08725	0.11759	0.01316
	[0.00674]***	[0.00617]***	[0.00197]***
Public sector worker	0.00324	0.03523	-0.00067
	[0.01035]	[0.00956]***	[0.00280]
Level of qualification: Operative	-0.03878	-0.0421	-0.00697
	[0.00574]***	[0.00518]***	[0.00169]***
Level of qualification: Technical / Professional	-0.06805	-0.08	-0.01679
	[0.01307]***	[0.01622]***	[0.00363]***
Inactive	0.08131	0.12793	0.01399
	[0.00907]***	[0.00813]***	[0.00269]***
Primary education – Complete	-0.02666	-0.05328	0.0026
	[0.00549]***	[0.00480]***	[0.00169]
Secondary education – Incomplete	-0.03212	-0.06173	-0.01483
	[0.00677]***	[0.00608]***	[0.00203]***
Secondary education - Complete	-0.16102	-0.18975	-0.02457
	[0.01064]***	[0.01116]***	[0.00261]***
Superior education - Incomplete	-0.11621	-0.07938	-0.04006
	[0.02494]***	[0.02436]***	[0.00705]***
Superior education - Complete	-0.14017	-0.16669	-0.04981
	[0.02096]***	[0.01772]***	[0.00885]***
University education	-0.17906	-0.14143	-0.05126
	[0.01684]***	[0.01279]***	[0.00474]***

Table 3, continued

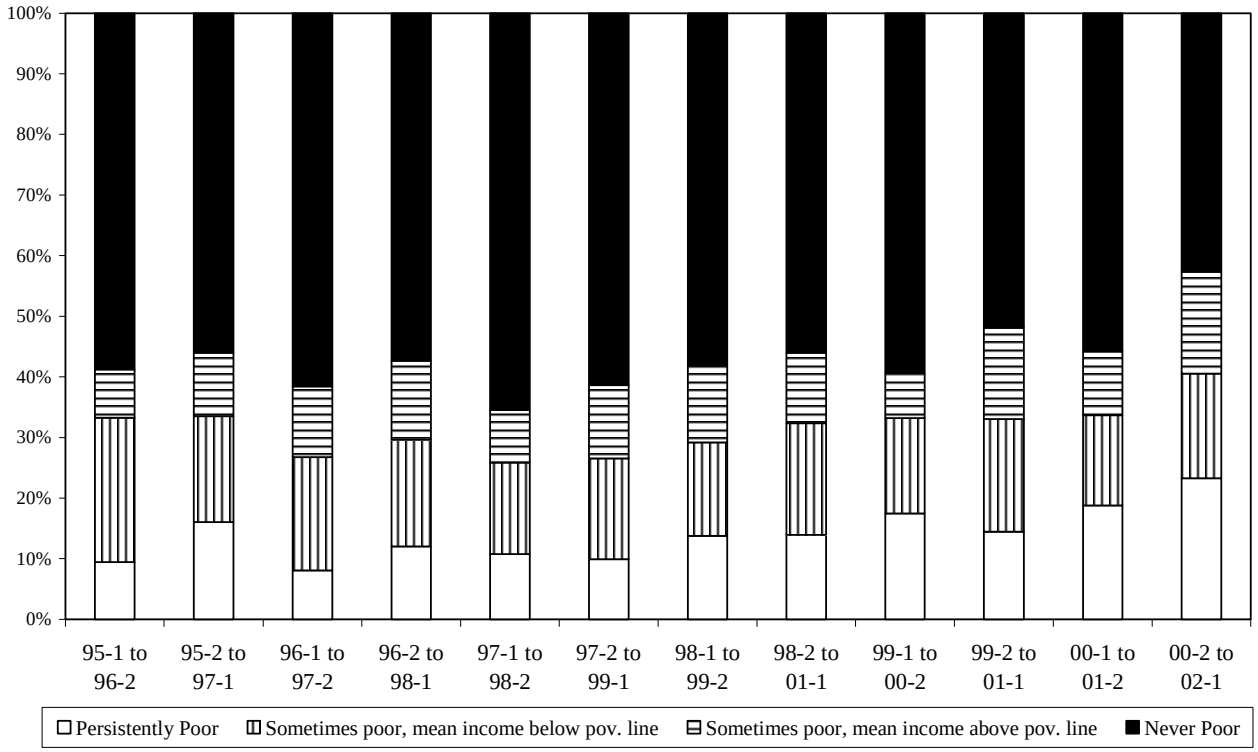
Spouse Characteristics			
Inactive	0.04692	0.0569	0.01223
	[0.01155]***	[0.01017]***	[0.00368]***
Unemployed	0.13502	0.12663	0.02476
	[0.01315]***	[0.01152]***	[0.00416]***
Employer	0.22281	0.07813	0.03661
	[0.03064]***	[0.02825]***	[0.00991]***
Self-employed	-0.01644	-0.01411	0.00677
	[0.01070]	[0.00957]	[0.00325]**
Informal sector worker	0.02914	0.01824	0.00537
	[0.01276]**	[0.01122]	[0.00406]
Level of qualification: Operative	-0.01686	-0.03378	-0.01042
	[0.01071]	[0.01032]***	[0.00337]***
Level of qualification: Technical	-0.08941	-0.12389	-0.01978
	[0.02607]***	[0.01913]***	[0.00626]***
Level of qualification: Profesional	-0.0852	-0.031	-0.01728
	[0.02886]***	[0.02357]	[0.01172]
Public sector worker	-0.11584	0.05596	-0.01236
	[0.02169]***	[0.01616]***	[0.00537]**
Primary education – Complete	-0.06353	-0.05894	-0.02344
	[0.00621]***	[0.00532]***	[0.00196]***
Secondary education – Incomplete	-0.14017	-0.16398	-0.03052
	[0.00757]***	[0.00714]***	[0.00229]***
Secondary education - Complete	-0.16016	-0.19071	-0.03345
	[0.01019]***	[0.01065]***	[0.00273]***
Superior education - Incomplete	-0.04291	-0.09544	-0.043
	[0.02247]*	[0.01927]***	[0.00859]***
Superior education - Complete	-0.0921	-0.33523	-0.02125
	[0.02013]***	[0.01912]***	[0.00514]***
University education	-0.33934	-0.13979	-0.06746
	[0.02516]***	[0.01405]***	[0.01014]***
Cohort Controls			
Cohort 2	0.07824	0.15982	-0.01241
	[0.01138]***	[0.01103]***	[0.00303]***
Cohort 3	0.05245	0.0811	-0.00191
	[0.01219]***	[0.01251]***	[0.00310]
Cohort 4	0.04365	0.09046	-0.00526
	[0.01135]***	[0.01128]***	[0.00291]*
Cohort 5	0.05176	0.1155	-0.00235
	[0.01181]***	[0.01159]***	[0.00310]
Cohort 6	0.05642	0.11633	0.00237
	[0.01160]***	[0.01135]***	[0.00298]
Cohort 7	0.10109	0.16046	0.00464
	[0.01121]***	[0.01117]***	[0.00290]
Cohort 8	0.05722	0.12879	0.00256
	[0.01141]***	[0.01099]***	[0.00288]
Cohort 9	0.07769	0.14167	-0.00607
	[0.01158]***	[0.01101]***	[0.00302]**
Cohort 10	0.09595	0.18423	0.00658
	[0.01152]***	[0.01107]***	[0.00292]**
Cohort 11	0.09066	0.14889	0.00282
	[0.01145]***	[0.01101]***	[0.00302]
Cohort 12	0.17291	0.2458	0.02856
	[0.01117]***	[0.01092]***	[0.00280]***
Constant	-0.05622	-0.20806	0.01912
	[0.01877]***	[0.01884]***	[0.00572]***
Observations	2439	1409	3275
Pseudo R squared	0.2606	0.2646	0.1089

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors in brackets

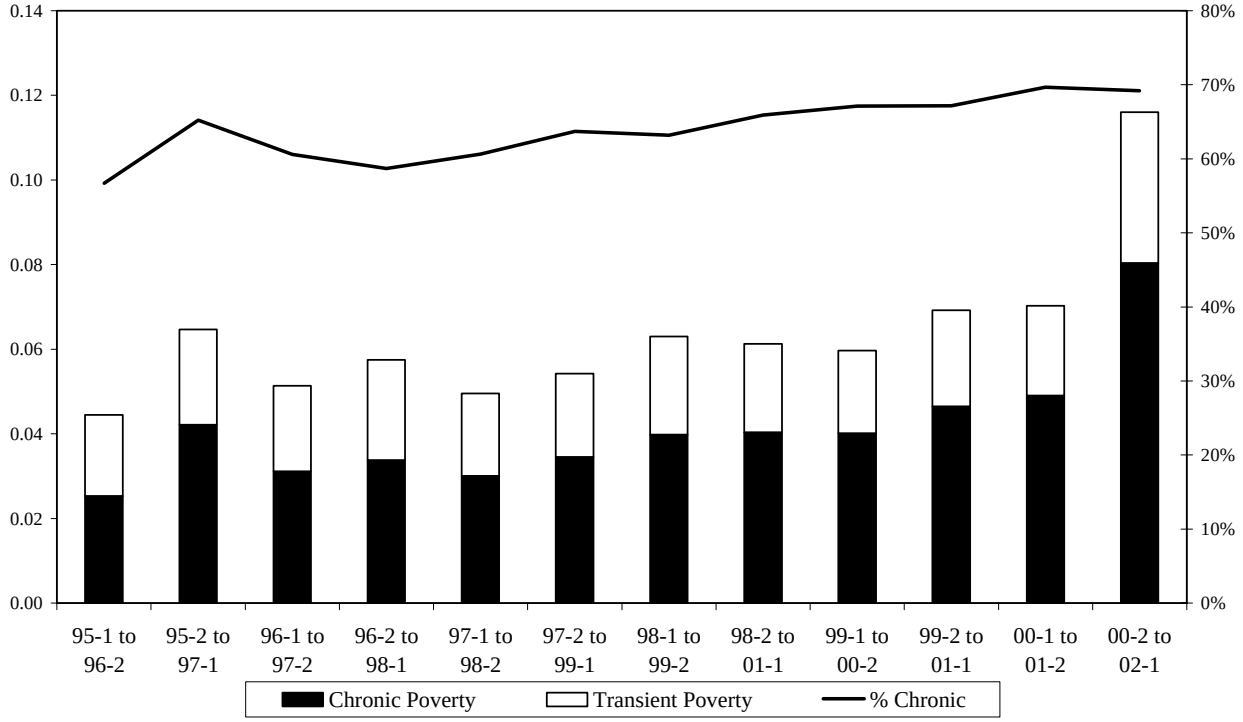
Source: Authors' estimation based on EPH.

Figure 1: Poverty Status by Cohort, Greater Buenos Aires, Argentina, 1995-2002



Source: Authors' estimation based on EPH.

Figure 2: Decomposition of Squared Poverty Gap, Greater Buenos Aires, Argentina, 1995-2002



Note: Left scale for squared poverty gap and its components; right scale for share of squared poverty gap that is chronic.
Source: Authors' estimation based on EPH.