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**Persistent Poverty and Welfare Programs in the United States**

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## Contents

Abstract	v
1. Introduction	1
2. Poverty Dynamics: Concept and Measurement	3
3. Empirical Model: The Simple Dynamic Panel Model	4
4. Data and Descriptive Analysis	6
5. Profiling Poverty Dynamics	11
6. Estimation Results	17
7. Persistent Poverty and Welfare Programs	21
8. Conclusion	23
References	24

## List of Tables

1. Variability of the log of income-to-needs ratio by components	10
2. Poverty spells and demographics (%)	11
3. Employment rates and their relationship to poverty spells (by % employed)	12
4. Composition of non-wage income among three groups (%)	13
5. Estimation results	17
6. Transition probabilities	21
7. Probability of exiting from persistence poverty without welfare (%)	22

## List of Figures

1. Income and poverty persistence over time in the United States	7
2. Probability of exiting from poverty by educational level (%)	7
3. Probability of exiting poverty by marital status (%)	8
4. Probability of exiting from poverty by ethnic group (%)	8
5. Probability of exiting poverty by gender and employment status (%)	9
6. Share of wages and welfare transfers in relation to spells of poverty (%)	12
7. Transitorily poor individuals in persistently poor counties	15
8. Persistently poor individuals in persistently poor counties	16
9. Probability of being in persistent poverty over time	18
10. Probability of being in persistent poverty by marital status	18
11. Probability of being in persistent poverty by level of education	19
12. Probability of being in persistent poverty by location	19
13. Probability of being in persistent poverty by employment and gender	20

## **ABSTRACT**

A simple dynamic panel model is used to capture persistence in poverty. This simple model allows a more accurate derivation of the permanent level of the measure of well-being from which persistent poverty is defined. Using a longitudinal dataset from the United States of America, the results show that the variability of the measure of welfare (logarithm of income-to-needs ratio) is mainly driven by transitory shocks through unobservable individual and time-specific characteristics. Consequently, means-tested schemes such as food stamps or the Temporary Assistance to Needy Families (TANF) block grant program can easily miss genuinely eligible welfare clients. The results also suggest that the probability of exiting persistent poverty is much higher for job participants than welfare programs participants. However, compared to their employed counterparts, unemployed individuals have little or no chance of escaping persistent poverty unless they choose to participate in welfare programs.

**Keywords: poverty, welfare, dynamic, persistent**



# 1. INTRODUCTION

Poverty is often defined as lack of access to necessities such as food, shelter, and medical care. While relative definitions of poverty allow community flexibility in addressing pressing local concerns, absolute definitions allow tracking progress over time and comparing one geographical area to another (Bradshaw, 2005). Poverty is also defined as a state into which people fall and from which they can be lifted if their incomes or assets increase (Green and Hulme, 2005). According to Sen (1999), those living in poverty are deprived of the right to health, food, and freedom to achieve the inherent potential in their capabilities, all of which determine their own future. Poverty is also perceived as the consequence of economic, social, and environmental policies as well as of the behavioral strategies of individuals and households.

In Sen's entitlement framework, households start out with a stock of assets or endowments that they translate into entitlements through an exchange mapping process. The exchange mapping process involves social, political, or economic environments affecting positively or negatively the transformation of households' endowments into goods or services needed to enjoy a decent human life. Poverty is ultimately the result of insufficient entitlements defined as a broad package of rights that include health, education, and freedom.

The number of years that households or individuals spend under the poverty line is critical in the analysis of poverty because private returns to human capital are determined, in part, by levels of investment over time. Households in transient poverty may overlap over time with those in persistent poverty but they are distinct groups. Indeed, chronic poverty is usually distinguished from transitory poverty by its duration—the chronically or persistently poor are identified not so much by income within a year as by low variation in income over a period of several years (Goohand, 2003).

A “financial snapshot” at a single point in time can suggest affluence but this may be misleading, because people can be poor at any time due to constraints that inhibit their ability to transform the assets with which they are endowed into valuable entitlements. Thus, such static “snapshot” analyses of poverty ignore the processes by which households or individuals fall into or escape from poverty (Rank 2001), and present poverty as a short-term phenomenon. In addition, cross-sectional snapshots of poverty cannot determine whether situations of low income are long-lasting or just temporary (Fouarge and Muffels, 2000). A static analysis is almost unavoidably backward-looking in that it creates a portrait of who was poor at the time survey data were collected. However, dynamic analysis leads to a more forward-looking question, namely this: Who will likely remain poor in the future (Carter and Barrett, 2006)? The answer to this simple question has far-reaching policy implications.

Ahmed et al. (2007) found that between 1990 and 2004 the “dollar a day” poverty rate fell from 29.8 percent to 9.1 percent in East Asia and the Pacific. However, during the same period, poverty rates stagnated in Sub-Saharan Africa (falling from 46.8 percent to 41.1 percent) and in Latin America and the Caribbean (from 10.2 percent to 8.6 percent). In Africa especially, most studies found that transitory poverty comprises a rather large share of overall poverty.

The inability of poor households to invest in the education and assets of their children, the constrained access to credit for those with few assets, and the lack of marketable labor explain a longer persistence of poverty for these households. Moreover, systematic exclusion of certain social groups from access to resources and markets also increases their propensity to experience persistent poverty. As pointed out by Wood (2003), chronic poverty is often seen as reflecting a lack of basic security, which is pervasive both over time and across different aspects of living conditions, thereby making it very difficult to escape poverty.

Unlike previous studies of this topic, I use a simple dynamic panel model with unobserved individual heterogeneity and lagged measure of well-being among explanatory variables to explain state dependence in poverty. The dynamic panel model allows a more accurate derivation of the permanent level of the well-being measure from which persistent poverty is defined. I also look at the potential welfare transfers to effectively address persistent poverty in the United States.

This paper is organized as follows: In Section 2, I present the concept of poverty dynamics and measurement methods. In Section 3, I present the dynamic panel model and derivation of the permanent level of logarithm of income-to-need ratio used as a measure of well-being. Data and preliminary descriptive analysis are presented in Section 4. In the fifth section, I describe the main characteristics of poverty dynamics. Estimation results are discussed in Section 6, while Section 7 presents the impact of current U.S. welfare transfers on poverty transitions. Concluding remarks are presented in Section 8.

## 2. POVERTY DYNAMICS: CONCEPT AND MEASUREMENT

Individuals or households remain in persistent poverty when they fail to self-finance investments in physical, human or social capital due to risk associated with these investments, and their limited access to external finance due to malfunctioning or non-existent credit and insurance markets. As a result, adverse shocks such as income losses may often push individuals below the poverty line for a relatively brief period of time. Those who recover quickly without persistent external assistance are considered to be transitorily poor. While households in transitory poverty are able to rebound relatively quickly from adverse shocks, those in persistent poverty remain poor for much more extended periods (Barrett and Swallow, 2006).

If poverty is essentially a short-term phenomenon, then theories concerning the existence of a “culture of poverty” lack credibility, for these theories rest upon the assumption that certain groups of individuals experience poverty that is both severe and persistent. As a result, they argue, poverty is likely to be passed on from one generation to another (Rodgers and Rodgers, 1991).

The distinction between transitory and persistent poverty enables the identification of structural conditions that reproduce ongoing poverty effects, and pushes researchers to move from poverty as a static state to poverty as a dynamic process (Green and Hulme, 2005). The distinction between transitory and persistent poverty emerges also from a critical rethinking of the usefulness of considering the poor as a homogenous category, which they are not.

From a policymaking perspective, the distinction between transitory and persistent poverty is crucial. The transitorily poor may best be served by programs that complement their own resources and help them “bridge” a crisis period, while the persistently poor may require programs that enhance their ability to accumulate private and social assets (Grootaert et al., 1995).

The persistence of poverty reflects its institutionalization within social and political norms and systems, its legitimation within political discourse and by political elites, and the failure of the poorest groups to gain political representation therein (Hickey and Bracking, 2005). The persistently poor often lack political representation and immediate or natural allies in the civil society or in economic or political spheres. Therefore, successful anti-poverty strategies should include sustained political will to reallocate existing resources and shift power relations among households.

At the individual level, different approaches have been developed to analyze poverty dynamics. Rodgers and Rodgers (1993) identify four main approaches to differentiate the persistently poor from the transitorily poor. The first is a model-based approach (Duncan and Rodgers, 1991) where individual  $i$ 's income-to-needs ratio in year  $t$  is represented by a fixed-effects model in which the individual-specific intercept is interpreted as the individual permanent income-to-needs ratio, while the error term represents the transitory component of the individual income-to-needs ratio. Hence, persistent poverty is measured by the proportion of individuals with permanent income-to-needs ratios less than one.

The second approach measures persistent poverty as the proportion of the population with a time period associated with  $n$ , such that  $n$ -year aggregate income of the population is less than  $n$ -year aggregate needs. The third approach tabulates the proportion of individuals with income below the poverty line in  $x$  out of  $n$  time periods, where  $0 \leq x \leq n$ . The prevalence of persistent versus transitory poverty is then evaluated by comparing the proportion of people who were poor in all or most periods (the persistently poor) with the proportion of people poor in just a few periods (the transitorily poor). The fourth approach consists of hazard rate models (Blane and Ellwood, 1986; Ruggles and Williams, 1989). Here persistent poverty is measured by the percentage of long spells while transitory poverty is measured by the percentage of short spells.

### 3. EMPIRICAL MODEL: THE SIMPLE DYNAMIC PANEL MODEL

As mentioned before, two main econometric approaches are used to model poverty dynamics at the individual level: fixed-effects or variance components models, and hazard rates models. The two approaches complement each other. In the first, as noted earlier, individual  $i$ 's income-to-needs ratio in year  $t$  is represented by a fixed-effects model in which the individual-specific intercept is interpreted as the individual permanent income-to-needs ratio while the error term represents its transitory component. The second approach models entry into and exit from poverty using a survival function. While variance components models help identify variables that explain changes in the well-being of poor and non-poor households, hazard rates models identify variables that cause households to transition over time from one poverty status to the other.

In this paper, I use a dynamic panel data model that is equivalent to variance components models except for the incorporation of the lagged dependent variable among explanatory variables. The model is specified as follows:

$$y_{it} = \rho y_{it-1} + X_{it}\beta + \mu_i + \varepsilon_{it}, \quad \forall i = 1, \dots, N \text{ and } t = 1, \dots, T \quad (1)$$

where  $y_{it}$  is the natural logarithm of the income-to-needs ratio used as a measure of well-being following Blackborby and Donaldson (1987);  $X_{it}$  is the matrix of individuals and location-specific attributes; and  $\beta$  is a vector of parameters to be estimated  $\mu_i \sim (\bar{\mu}, \sigma_\mu^2)$  and  $\varepsilon_{it} \sim (0, \sigma_\varepsilon^2)$ . Parameter  $\rho$  captures poverty dependence over time, and  $|\rho| < 1$ .

As pointed out by Cameron and Trivedi (2005), even if  $\mu_i$  is a random effect, Ordinary Least Squares (OLS) estimation of (1) leads to inconsistent  $\hat{\rho}$  and  $\hat{\beta}$ . This is because the lagged dependent variable in (1) is correlated with the unobserved panel-level effect  $\mu_i$ , and with the composite error term  $(\mu_i + \varepsilon_{it})$ , making  $\hat{\rho}$  and  $\hat{\beta}$  inconsistent. To address this issue, I use the Generalized Method of Moments (GMM) estimator suggested by Arellano and Bond (1991).

The literature has identified two processes which may generate a persistence of poverty over time (Giraldo, Rettore and Trivellato, 2002). First, individuals might be heterogeneous with respect to characteristics that trigger their fall into persistent poverty. As a result, an individual who is likely to experience poverty at a time  $t$  because of (possibly unobserved) adverse characteristics will also be likely to experience poverty in any subsequent periods because of the very same adverse characteristics. Secondly, experiencing poverty in a specific time period may increase the probability of being poor in subsequent periods. Such a process is said to exhibit what is known as true state dependence (TSD).

True state dependence occurs when correlations over time are mainly driven by the last period level of well-being. As shown by Cameron and Trivedi (2005), such time dependence is relatively large if the individual specific effect  $\mu_i \approx 0$  or when the variability of an individual's specific log of income-to-needs ratio is very small relative to the variability of the transitory shocks.

For Giraldo *et al.* (2002), the distinction between the two processes is crucial for policy purposes. Indeed, if the persistence of poverty is due to TSD, then efforts to move individuals out of poverty in period  $t$  will still yield positive results in subsequent periods. However, if the persistence of poverty is driven by individual unobserved heterogeneity, then cash or in-kind transfers alone will not suffice to break up the poverty trap over time.

Building on the discussion above, in the following lines I derive a measure of a permanent level of the log of income-to-needs ratio that incorporates both sources of poverty persistence. Let the expected value of the log of income-to-needs ratio be defined as:

$$\bar{y}_{it} = \rho \bar{y}_{it-1} + X_{it}\beta + \bar{\mu}, \quad (2)$$

which is a first-order difference equation.

Using a lag operator, equation (2) can be rewritten as follows:

$$(1 - \rho L)\bar{y}_{it} = X_{it}\beta + \bar{\mu} \quad (3)$$

or

$$\bar{y}_{it} = \frac{X_{it}\beta}{1 - \rho L} + \frac{\bar{\mu}}{1 - \rho L}, \quad (3')$$

which is the particular solution to equation (2) or permanent value of the log of income-to-needs ratio.

For  $|\rho| < 1$ , equation (3') can be re-written as follows:

$$\bar{y}_{it} = \sum_{j=0}^{\infty} \rho^j X_{it-j}\beta + \frac{\bar{\mu}}{1 - \rho}. \quad (4)$$

Under the present framework, persistent poverty is defined as a state in which expected permanent income is consistently below the poverty line over time. Hence, the probability of being persistently poor is equivalent to the probability that the expected log of the permanent level of the income-to-needs ratio falls below zero. Using a cumulative standard normal distribution ( $F$ ), the equation would therefore be as follows:

$$\Pr(\text{persistently poor}) = \Pr(\bar{y}_{it} < 0) = F\left(-\frac{\sum_{j=0}^{\infty} \hat{\rho}^j X_{it-j}\hat{\beta} + \frac{\bar{\mu}}{1 - \hat{\rho}}}{\hat{\sigma}_{\bar{y}}}\right). \quad (5)$$

Let us define  $p_{it}$  as individual  $i$ 's status with respect to persistent poverty in period  $t$ ,

$$p_{it} = \begin{cases} 1 & \text{if } \bar{y}_{it} < 0 \\ 0 & \text{otherwise} \end{cases}. \quad (6)$$

It thus follows that transition probabilities for persistent poverty can be defined as:

$$s_{it} \equiv \Pr(P_{it} = 1 | P_{it-1} = 1), \text{ and} \quad (7)$$

$$e_{it} \equiv \Pr(P_{it} = 0 | P_{it-1} = 1), \quad (8)$$

where  $s_{it}$  is the probability of being trapped in persistent poverty between period  $t-1$  and  $t$ ; while  $e_{it}$  is the probability of exiting from persistent poverty.

## 4. DATA AND DESCRIPTIVE ANALYSIS

The principal source of my data is a geo-coded version of the National Longitudinal Survey of Youth 1979 (NLSY79) in the United States (Bureau of Labor Statistics, 2008). This is a nationally representative sample of 12,686 individuals aged 14-21 years in 1978. This cohort was interviewed annually from 1979 to 1994, and biennially thereafter. At the county level, data were collected from the U.S. Bureau of Labor Statistics, the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce, and the Small Area Income and Poverty Estimates (SAIPE) program of the U.S. Census Bureau.

In the NLSY79 survey, income includes earnings, passive income, government transfer payments, food stamps, and income from other sources. This definition of income is much broader than the definition in the Current Population Survey (CPS), which is used by the U.S. Census Bureau to calculate the official poverty rate.

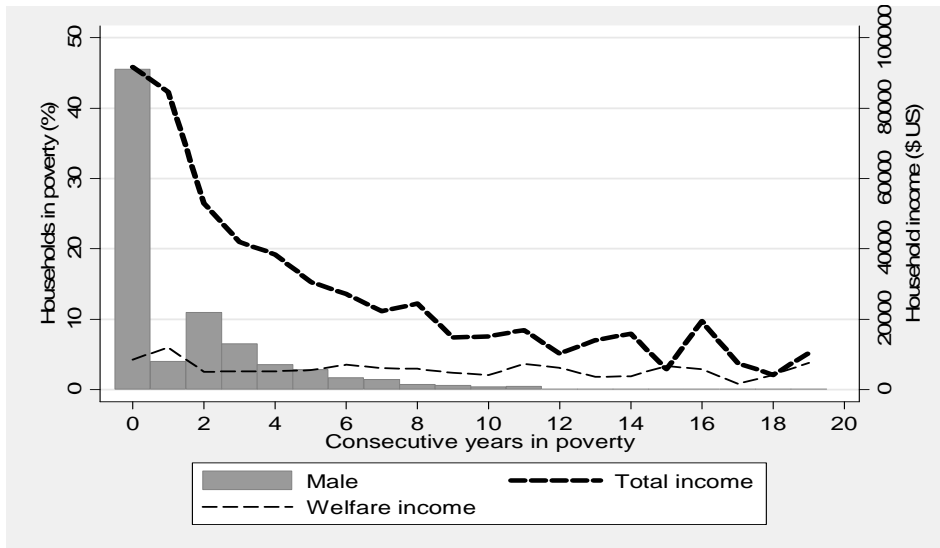
In the United States, the official measure of poverty is based on an absolute approach to poverty. An income threshold that represents the cost of acquiring a minimum basket of goods for a family of four was defined in 1963 by Orshansky (1963, 1965). Orshansky used a concept of poverty based on consumption budgets centered on a recommended diet to sustain adequate nutritional level at minimal cost using a sliding scale of income requirements for different family sizes and compositions (U.S. Department of Health, Education, and Welfare, 1976). Every year the U.S. government uses the constant dollar value of the poverty thresholds to measure poverty.

However, the official measure of poverty does not capture the change in the cost of basic goods such as food and housing relative to other goods since 1963, nor does it reflect the fact that those costs vary by geographical location. Based on these criticisms, the U.S. National Academy of Sciences (NAS) has recommended several changes (Citro and Michael, 1995) as follow:

1. Poverty thresholds should represent a budget for food, clothing, and shelter (including utilities), and a small additional amount to allow for other needs (for example, household supplies, personal care, non-work-related transportation).
2. A threshold for a two-adult, two-child reference family should be developed using actual consumer expenditure data and should be updated annually to reflect changes in expenditures on food, clothing, and shelter over the previous three years.
3. The reference family threshold should be adjusted to reflect the needs of different family types and to reflect geographic differences in housing costs.
4. Family resources should be defined as the sum of money income from all sources together with the value of near-money benefits (for example, food stamps) that are available to buy goods and services in the budget minus expenses that cannot be used to buy these goods and services. Such expenses include income and payroll taxes, child care, and other work-related expenses, child support payments to another household, and out-of-pocket medical care costs, including health insurance premiums.

Figure 1 displays the significant relationship between family per capita income and the number of years spent in poverty. The downward slope suggests that the longer a family stays in poverty, the lower its income. Inversely, families with low per capita income are more likely to spend a much longer time in poverty. Moreover, total income of families staying longer in poverty tends to converge to total welfare income. Blank (1997) found that, of those who fell below the poverty line over time, 50.9 percent were poor for three years or less; 34.5 percent were in poverty for between 4 to 9 years; and 14.6 percent fell below the poverty line for 10 of the 13 years. Of individuals who manage to escape from poverty, more than half are likely to fall below the poverty line within five years (Stevens, 1994).

**Figure 1. Income and poverty persistence over time in the United States**

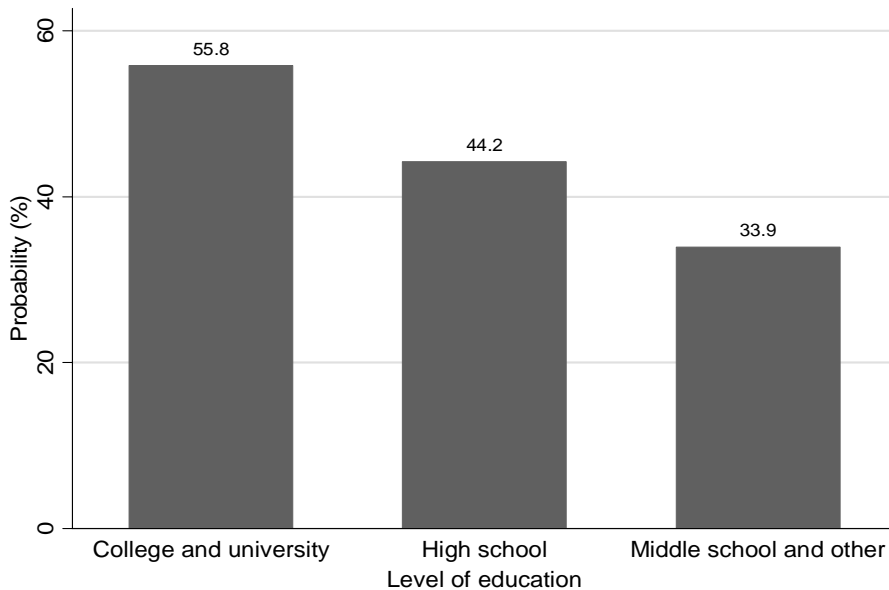


Source: Author's calculation from NLSY79 (BLS1, 2008)

Figures 2 through 5 below present the probability of exiting poverty after one year by level of education, marital status, ethnic group, and gender and employment.

Education plays an important role in poverty transition. As shown in Figure 2, the probability of exiting poverty is much higher (55.8 percent) for college graduates compared to high school graduates (44.2 percent).

**Figure 2. Probability of exiting from poverty by educational level (%)**

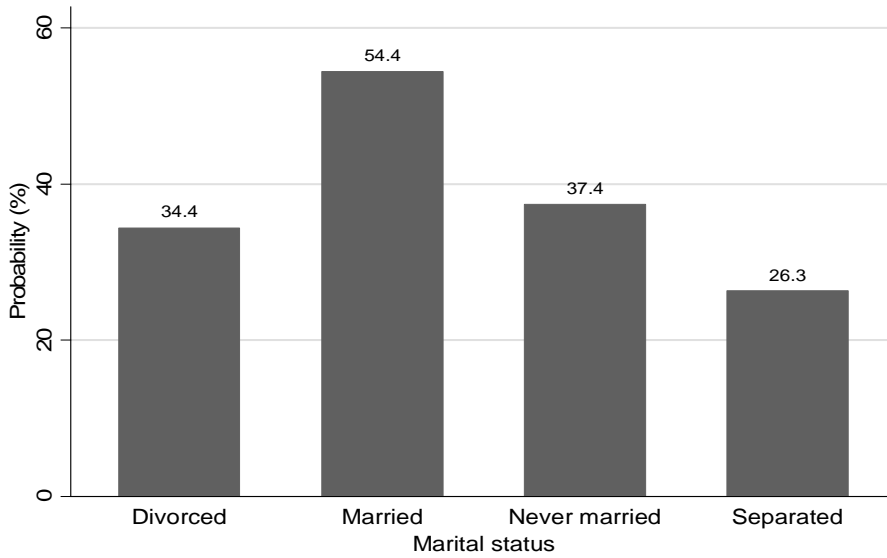


Source: Author's calculation from NLSY79 (BLS, 2008)

1 Bureau of Labor Statistics.

With respect to marital status, married couples have higher exit rates (54.4 percent) than others (see Figure 3).

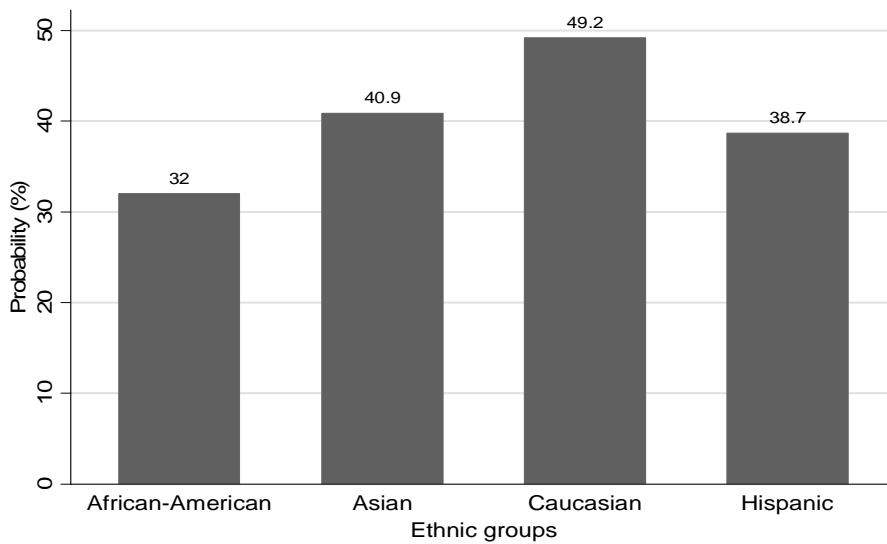
**Figure 3. Probability of exiting poverty by marital status (%)**



Source: Author's calculation from NLSY79 (BLS, 2008)

Across ethnic groups, Caucasians still have the highest exit rates (49.2 percent) from poverty, whereas the lowest probability of exiting poverty is found among African-Americans (32.0 percent) (see Figure 4).

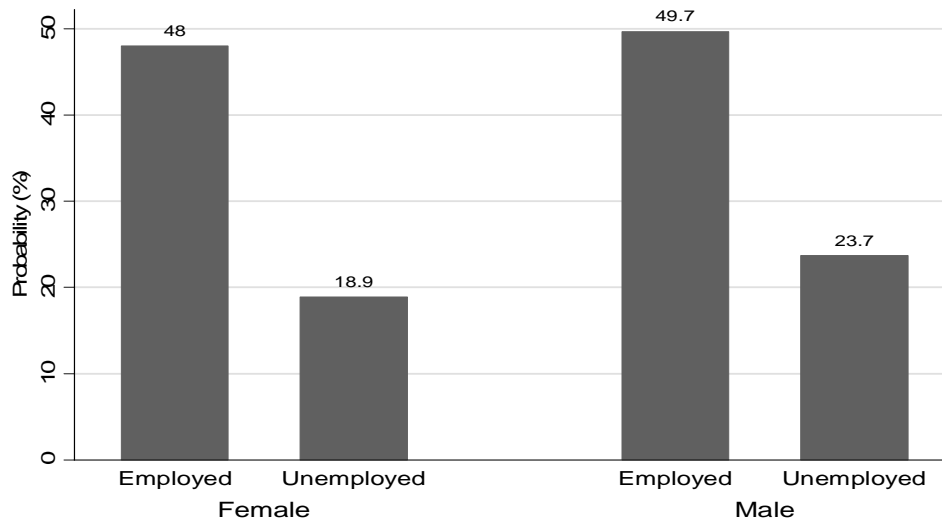
**Figure 4. Probability of exiting from poverty by ethnic group (%)**



Source: Author's calculation from NLSY79 (BLS, 2008)

Findings also suggest that being employed may foster a way out of poverty (Figure 5). Indeed, among males, jobless individuals have only a 23.7 percent probability of escaping poverty compared to a 49.7 percent likelihood for those who are employed. Similarly, among females, of those individuals without a job only 18.9 percent got out of poverty compared to 48.0 percent for those employed. Overall, regardless of job status, the odds of exiting poverty are much higher for males than females.

**Figure 5. Probability of exiting poverty by gender and employment status (%)**



Source: Author's calculation from NLSY79 (BLS, 2008)

Using sample variances, the results show that the variability of the welfare measure (log of income-to-needs ratio) is mainly driven by transitory shocks (see Table 1). Over the 1991-2004 period, the ratio of permanent shocks to transitory shocks is below 30 percent in all cases, which provides an indication that unobservable individuals and time-specific characteristics play a major role in poverty transitions. As a result, means-tested schemes such as food stamps and TANF can easily not reach eligible welfare clients. As summarized by Schoeni and Blank (2000), the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) passed in 1996 resulted in the following:

1. It ended the dependence of needy parents upon governmental benefits by promoting job preparation, work, and marriage.
2. It assisted needy families by making it possible for them to care for their children in their own homes or those of relatives.
3. It helped to prevent and reduce out-of-wedlock pregnancies and established goals for preventing and reducing their incidence.
4. It encouraged the formation and maintenance of two-parent families.

**Table 1. Variability of the log of income-to-needs ratio by components**

<b>Period</b>	<b>Overall</b>	<b>Permanent shocks</b>	<b>Transitory shocks</b>	<b>Ratio of variances</b>
1991	0.877	0.147	0.919	0.160
1992	1.137	0.174	1.179	0.147
1993	0.850	0.146	0.509	0.287
1994	0.815	0.132	0.482	0.273
1996	1.091	0.129	0.777	0.167
1998	0.967	0.127	0.673	0.189
2000	0.995	0.091	0.694	0.131
2002	0.975	0.086	0.606	0.142
2004	0.922	0.082	0.578	0.142

Source: Author's calculation from NLSY79 (BLS, 2008)

Evaluating the U.S. means-tested welfare programs, Lindert (2005) concluded that although on-demand applications are a positive feature of U.S. welfare programs, more outreach efforts are needed to bring in the self-excluded, since uptake rates for these programs have fallen to about half of the total eligible population.

## 5. PROFILING POVERTY DYNAMICS

### Demographics

Racial discrimination has been well documented in several studies on poverty in the United States (see, for example, Iceland, 2003). Using the official U.S. poverty measure, a poverty measure recommended by the National Research Council (NRC), and a relative poverty measure, Iceland found that poverty rates in 2000 among Blacks and Hispanics had between two and three times the poverty rates of non-Hispanic Whites. Overall, as the length of poverty spells increases, the percent of females living in poverty increases dramatically (Table 2). Indeed, the percent of females experiencing at least one year in poverty goes from 49.5 percent for a maximum of three years in poverty to an astonishing 84.5 percent for spells of more than ten years. This suggests that females are more prone to persistent poverty than their male counterparts.

**Table 2. Poverty spells and demographics (%)**

Years in poverty	Male	African-Americans	Caucasian	Married
Never in poverty	45.3	13.4	68.5	74.3
1-3 years	49.5	29.3	46.0	52.3
4-6 years	51.8	41.5	32.6	38.4
7-9 years	62.7	53.3	23.3	35.0
More than 10 years	84.5	58.1	23.9	23.8

Source: Author's calculation from NLSY79 (BLS, 2008)

In this study, I found that over the period 1979-2004 the African-Americans population in the United States accounts for only 13.4 percent of those who have never experienced a single year in poverty compared to 68.5 percent of Whites. As expected, Caucasian families are the majority (46.0 percent) among those living for less time in poverty—on average between one and three consecutive years in poverty. However, for spells of poverty of more than three years, most of the poor are African-Americans, whose numbers climb to 58.1 percent for those experiencing spells of poverty of ten years or more. Using a static approach, Iceland (2003) came to the conclusion that among families with children, those with married couples were less likely to be poor (7 percent) compared to those that were single-parent, male-headed families (at 18 percent) or female-headed families (35 percent). People living alone or with housemates had a poverty rate of 19 percent.

Using a longitudinal dataset, I found similar results. Indeed, families with married couples spend significantly less time in poverty compared to families with single parents or some other marital status. Of individuals with no experience of poverty, 74.3 percent were married. Among individuals who have spent consecutively ten or more years below the poverty line, only 23.8 percent have been married.

### Employment and Income

With respect to employment status, the results (Table 3) indicate that being jobless may increase individual propensity to live longer under the poverty line. Although there is a significant difference in employment rates between individuals who have been in poverty for at least a year and those who have never experienced poverty, this difference shrinks when comparing individuals who have spent one to three consecutive years in poverty and those who have been in poverty for four or more consecutive years. On average, from 1994 to 2004, of those declaring they had a job, 89.5 percent had never lived in poverty as compared to 78.2 percent for individuals with poverty spells between one and three years, and 79.8 percent for those with poverty spells of more than three years.

**Table 3. Employment rates and their relationship to poverty spells (by % employed)**

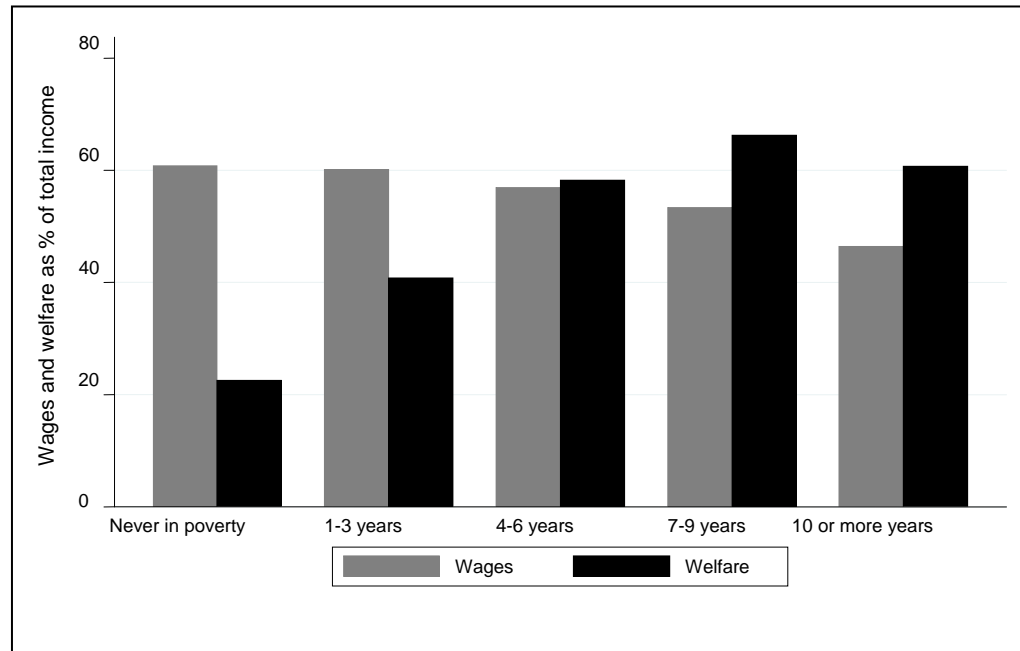
Year	Never in poverty	1-3 years in poverty	More than 3 years in poverty
1994	92.4	81.9	84.3
1996	93.5	87.0	87.4
1998	86.7	73.5	75.7
2000	88.9	75.3	77.9
2002	88.8	77.7	78.0
2004	87.0	73.9	75.2
Average	89.5	78.2	79.8

Source: Author’s calculation from NLSY79 (BLS, 2008)

It is well understood that poverty goes beyond money metric measures. However, because data on income is easy to collect and represents a valid proxy for returns to individual capabilities, it is accepted as an indicator of individual or household poverty status. Wages (monetary remuneration, including bonuses, commissions, pay in-kind, incentive payments, and tips) are important components of family income as far as poverty is concerned; thus, one can use the ratio of wages over total income as an indicator of vulnerability to events likely to drive a family below the poverty line.

The link between a wages-to-total income ratio and financial vulnerability is not always straightforward. A high percentage of wages in total income might be a source of liability to random shocks when the principal job is not secure or a family's own internal situation is prone to instability. Such instability may occur when wages are from a part-time or seasonal job, or when a wage earner is likely to leave the household through divorce or death, for example. Except for systemic shocks, families with a diversified income structure are less vulnerable to random shocks such as divorce, the birth of a child, sickness, or the collapse of financial markets.

**Figure 6. Share of wages and welfare transfers in relation to spells of poverty (%)**



Source: Author’s calculation from NLSY79 (BLS, 2008)

As might be expected, and as is confirmed in Figure 6, those in poverty rely more on welfare transfer than the non-poor. Welfare transfers represent only 22.5 percent of the non-poor's income as opposed to 60.7 percent for the persistently poor (that is to say, those with ten or more consecutive years in poverty). In contrast to the long-term poor, income from wages constitutes the main source of income for the non-poor. It accounts for the fact that 60.8 percent (among the non-poor) avoid living in poverty versus 46.4 percent in the case of the persistently poor (Figure 6). It is worth mentioning that the share of wages decreases as the length of the poverty spell increases suggesting increasing dependence on welfare transfers. In a static analysis, Schiller (2001) reports that earnings account for 98 percent of the income sources of non-poor, two-parent families compared to 76 percent for poor families. This implies that the importance of wages in total family income tends to decrease with the length of time spent in poverty.

**Table 4. Composition of non-wage income among three groups (%)**

	<b>Persistently poor</b>	<b>Transitorily poor</b>	<b>Never poor</b>
Educational benefit, scholarship	4.7	7.9	2.9
Supplemental Security Income (SSI)	11.5	1.3	0.3
Disability, veteran benefits	5.0	3.8	4.1
Aid to Families with Dependent Children (AFDC)	15.8	1.7	0.2
Child support, alimony	6.0	4.5	2.9
Unemployment compensation	6.8	9.0	11.3
Military income	3.4	8.5	9.7
Food stamps	21.1	2.8	0.4
Net farm and business income	3.2	8.6	10.9
Interest, dividends, rent	12.0	43.9	54.1
Other	10.6	8.0	3.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Author's calculation from NLSY79 (BLS, 2008)

The composition of non-wage income reveals that almost 50 percent of non-wage income of the persistently poor is made up of an accumulation from Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), and food stamps. The three programs represent 12 percent, 16 percent, and 21 percent, respectively; of non-wage income of the persistently poor (Table 4). This is an indication that ignoring government transfers, quasi-cash income or other benefits and services to people with low income not only overestimates persistent poverty, but also overlooks the importance of governmental social programs. SSI, AFDC, and food stamp transfers make no significant contribution to the overall income of the transitorily poor. Combined, they account for only 6 percent of the non-wage income of the transitorily poor.

Returns to assets (specifically, net farm and business income, interest, dividends, and rent) account for 53 percent of non-wage income of the transitorily poor, compared to only 15 percent for that of the persistently poor, and 65 percent for individuals who have never been in poverty. This confirms that poverty is related not only to lack of income or consumption, but also to lack of assets as well (Fisher and Weber, 2004). Hence, the persistently poor can be characterized as those whose wages account for less than 65 percent of total income; who fail to accumulate assets over time; and rely more on governmental social transfers compared to the transitorily poor. The significant difference in assets as a share of total income between the two groups of the poor provides a strong argument in favor of programs such as Individual Development Accounts (IDAs), which promote asset accumulation among the poor.

## **Income Gap and Government Transfers**

The main objective of government transfer programs is to guarantee a minimum level of living standards for low-income or socially vulnerable families. In this section, I discuss income gaps in relation to poverty thresholds. I define the income gap as the difference between family income and the poverty line or the amount in absolute terms to be transferred to a poor family in order to raise its income to at least the poverty threshold.

Using an expanded definition of income—even without adjusting the official poverty threshold for geographical differences in cost of living—I found that, on average, only the persistently poor fall below the poverty threshold. This provides an argument in favor of Jalan and Ravallion's (2002) approach to dynamic analysis of poverty. In their approach, persistent poverty applies to households with average income below the average poverty threshold, and transitory poverty to those with income on average above the poverty threshold, and occasionally above it.

These results also confirm that, although the transitorily poor occasionally enter poverty, they stay above the poverty line most of the time. For this reason, the transitorily poor would benefit from policies that allow them to smooth their consumption through financial markets. As for the persistently poor, their incomes fall below the poverty line for most of their life cycle. Therefore, they require policy actions that not only increase their entitlements as the current welfare programs do, but also improve their capabilities and supply adequate opportunities in terms of jobs, education, and health care.

The official U.S. poverty thresholds do not account for geographical differences in the cost of living. To evaluate the impact of such omission, income gaps from official poverty thresholds were computed and compared to those from adjusted poverty thresholds. It turns out that ignoring geographical differences in the cost of living increases the income gap for the persistently poor. In metropolitan counties, the income gap is lower when applying geographically adjusted poverty thresholds for both the persistently poor and the transitorily poor. In non-metropolitan counties, the income gap among the persistently poor increases with the adjusted poverty thresholds. As for those in transitory poverty, the income gap is also systematically overestimated when geographical differences in the cost of living are not taken into account. Although it is unclear why the difference in the cost of living across geographical locations matters more to the persistently poor than to the transitorily poor, this result implies that the official poverty measure reports fewer persistently poor households than it should.

The official poverty measure leaves out governmental transfers such as food stamps and AFDC benefits. Using the official poverty thresholds but subtracting the value of food stamps and AFDC transfers from total family income, the results suggest that the measurement of both persistent and transitory poverty is significantly affected by this type of analysis. The impact is stronger, however, among the persistently poor than for the transitorily poor. When governmental transfers are not accounted for in poverty thresholds, the persistently poor fall below the poverty line across the entire urban-rural continuum, except for those living in non-metropolitan counties with an urban population of 20,000 or more, adjacent to a metropolitan area. When government transfers are not taken into account, the gap between income and the poverty threshold is greater for the persistently poor living in metropolitan counties than for those living in non-metropolitan counties, while the gap is greater for the transitorily poor living in non-metropolitan counties than for those living in metropolitan counties. By leaving out the value of food stamps and AFDC transferred to low-income families, the U.S. Census Bureau overestimates the number of families experiencing both persistent and transitory poverty.

## **Poor People or Poor Areas?**

In defining persistent poverty counties as those that have had poverty rates of 20 percent or higher in every decennial census between 1970 and 2000, I found distribution similar to those of Miller and Weber (2003): namely, 88 percent of persistently poor counties are in non-metropolitan areas. While 17 percent of non-metropolitan counties are in the persistent poverty category, only four percent of metropolitan counties are in this category. A further disaggregation shows that counties with an urban population of

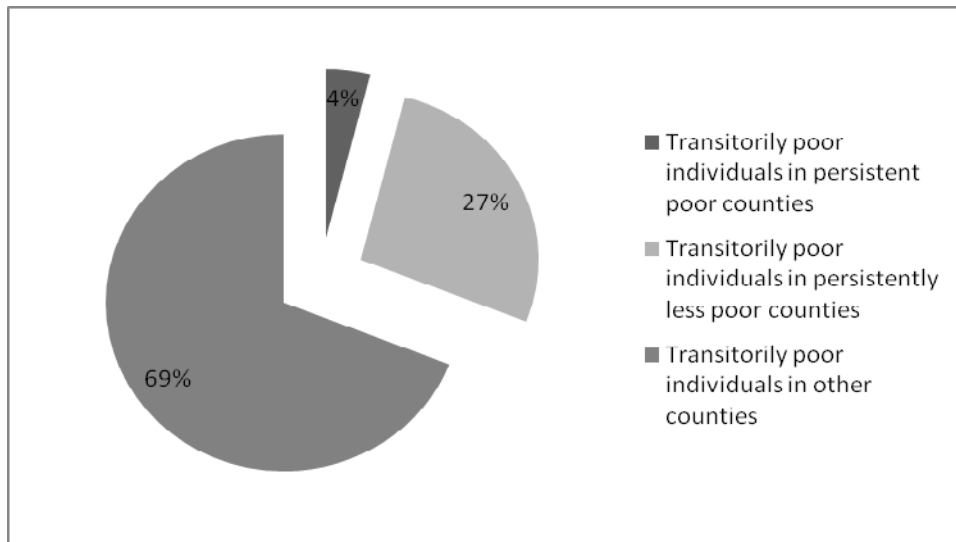
2,500 to 19,999 (48 percent) and completely rural counties (32 percent) contain 80 percent of the persistently poor counties.

In addition to analyzing income for persistently poor counties, I define "persistently less poor" counties as those whose poverty rates have been consistently at the national average poverty rate (11 percent) or lower in every decennial census between 1970 and 2000. Unlike persistently poor counties, 70 percent of the counties in this other category are in urban areas. Among the persistently poor counties, 83 percent are found in the South, whereas the Midwest (54 percent) and the Northeast (22 percent) account for 76 percent of the persistently less poor counties.

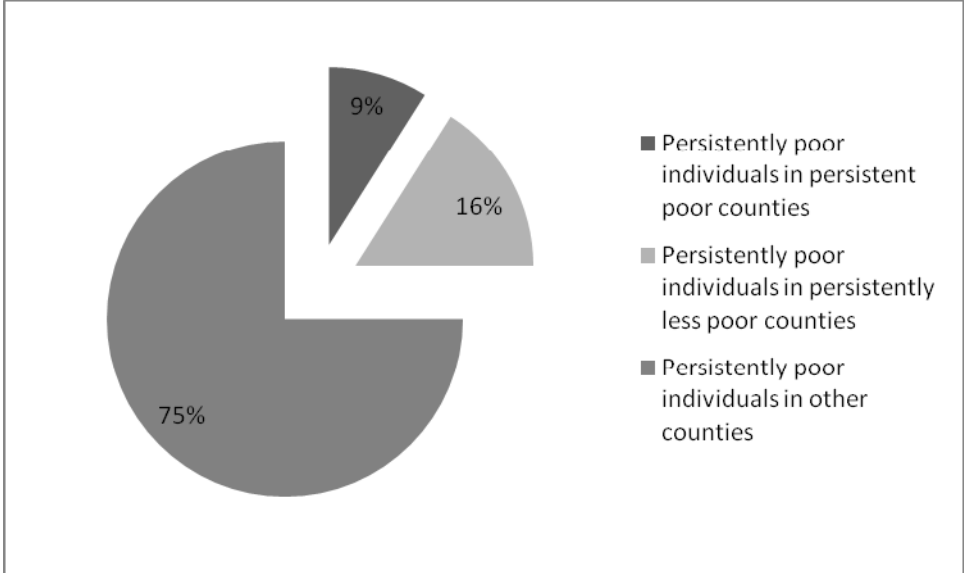
It is often suggested that the spatial concentration of persistently low living standards arises from the spatial concentration of individuals with personal attributes that inhibit improvement in their living standards (Jalan and Ravallion, 2002). Thus, the logic goes, location itself has no causal role and identical individuals will follow the same poverty path regardless of where they live. In the United States, Glaeser et al. (2000) argue that urban social problems such as crime, and divorce are not caused by urban poverty. These problems derive from the concentration of poor people in cities rather than anything intrinsic to cities themselves.

In this study, Figures 7 and 8 reveal there is no evidence that persistently poor families are concentrated in persistently poor counties: Only nine percent of persistently poor families live in persistently poor counties. As for transitorily poor families, only four percent are found in persistently poor counties. The majority of families with at least one year in poverty live in counties whose poverty rates have not been 20 percent or higher in every decennial census from 1970 to 2000 nor have they been consistently at 11 percent or less. The share of transitorily poor families (27 percent) living in persistently less poor counties is higher than that of transitorily poor families (4 percent) living in persistently poor counties. This suggests that households are not necessarily poor because they live in poor counties. Neither are counties poor necessarily because of the concentration of poor households. In other words, the forces driving "family poverty" are not necessarily the same as those behind "place poverty". It follows that any successful anti-poverty strategy should target both individual characteristics of the poor such as gender, marital status, and race as well as geographical attributes.

**Figure 7. Transitorily poor individuals in persistently poor counties**



**Figure 8. Persistently poor individuals in persistently poor counties**



## 6. ESTIMATION RESULTS

As pointed out earlier, the unobserved panel-level effects are correlated with the lagged dependent variable, making standard estimators inconsistent. To correct for that, Arellano and Bond (1991) derived a consistent generalized method-of-moments (GMM) estimator for the parameters of a Simple Dynamic Panel Model. For the variance-covariance matrix, I used White (1980) heteroskedasticity-consistent estimator.

**Table 5. Estimation results**

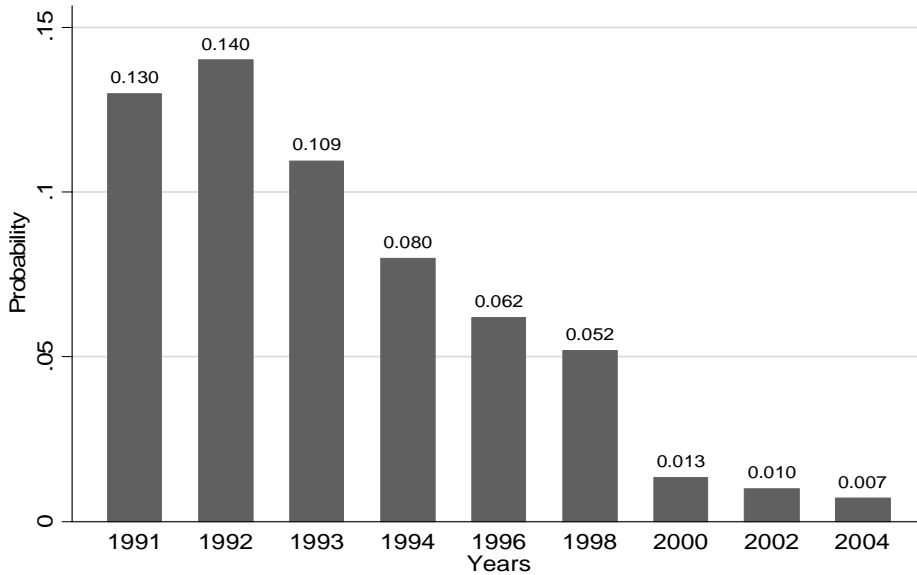
<b>Dependent variable: Log of income-to-needs ratio</b>		
Independent variables	Coefficient	S.E.
Lagged log of income-to-needs ratio	.1082*	.0159
Household size	-.1468*	.0093
Age	.0202	.0209
Age squared	-6.45e-06	.0003
Location		
Urban (1 if urban, 0 if rural)	.0235	.0648
South (1 if South, 0 otherwise)	-.0394	.0494
Employment (1 if employed, 0 otherwise)	.1049*	.0137
Marital status (1 if married, 0 otherwise)	.4993*	.0281
Intercept	.2389	.3908
Number of observations: 21,463		
Wald $\chi^2(8) = 737.3$ , p-value=0.000		

\* The numbers are significant at 1 percent. S.E. stands for Standard Error.

Estimation equation (1) (shown in Table 5) suggests the existence of state dependence in well-being as measured by log of income-to-needs ratio. About 11 percent of the past level of well-being is accounted for in its current level. As would be expected, a marginal increase in the household size reduces the log of income-to-needs ratio, in this case by 14.6 percent. Being employed reduces significantly the risk of falling below the poverty line; employed individuals enjoy a 30.5 percent higher level of well-being than unemployed individuals. Although not statistically significant, the well-being of individuals living in urban areas is slightly higher than that of those living in non-urban areas. Similarly, individuals in the South are credited with a lower measure of well-being compared to those in other regions of the United States. Married couples are far better off than non-married individuals; the log of income-to-needs ratio is 67.6 percent higher among married individuals compared to other marital groups.

The results of this analysis (as shown in Figure 9) suggest that throughout the 1990s the probability of being in persistent poverty declined at a steady pace. A significant fall is observed in 1993 as a result of an economic boom started in 1992. As pointed out by Jolliffe (2004), during the 1990s the United States experienced unprecedented economic growth, which led to a decline in the national poverty rate from a decade high of over 15.0 percent in 1993 to a low of 11.3 percent in 2000.

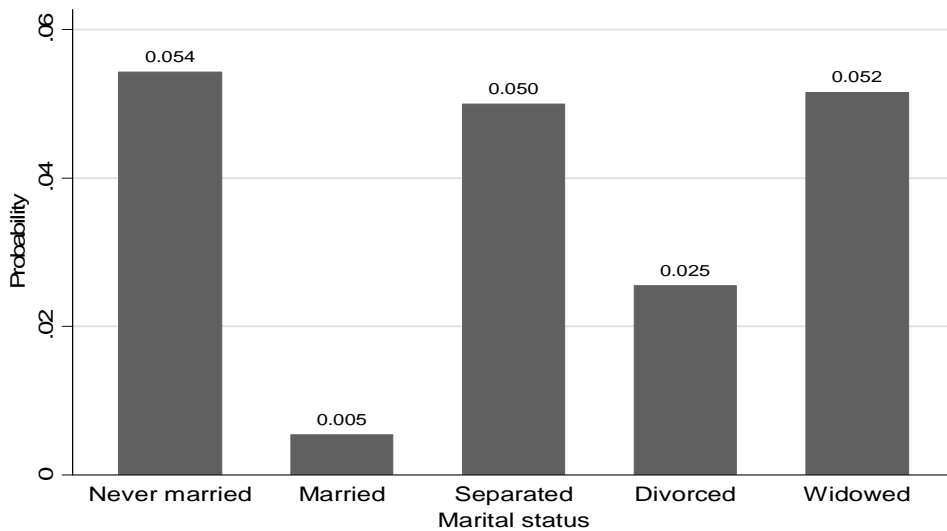
**Figure 9. Probability of being in persistent poverty over time**



Source: Author's calculation from NLSY79 (BLS, 2008)

At the individual level, there exists noticeable heterogeneity in the probability of falling into persistent poverty. Married individuals experienced the lowest probability (0.8 percent) of being persistently poor, followed by those divorced (3.7 percent), in contrast to those never married (7.4 percent), those who are separated (6.5 percent) or widowed (6.7 percent). Figure 10 displays these distinctions.

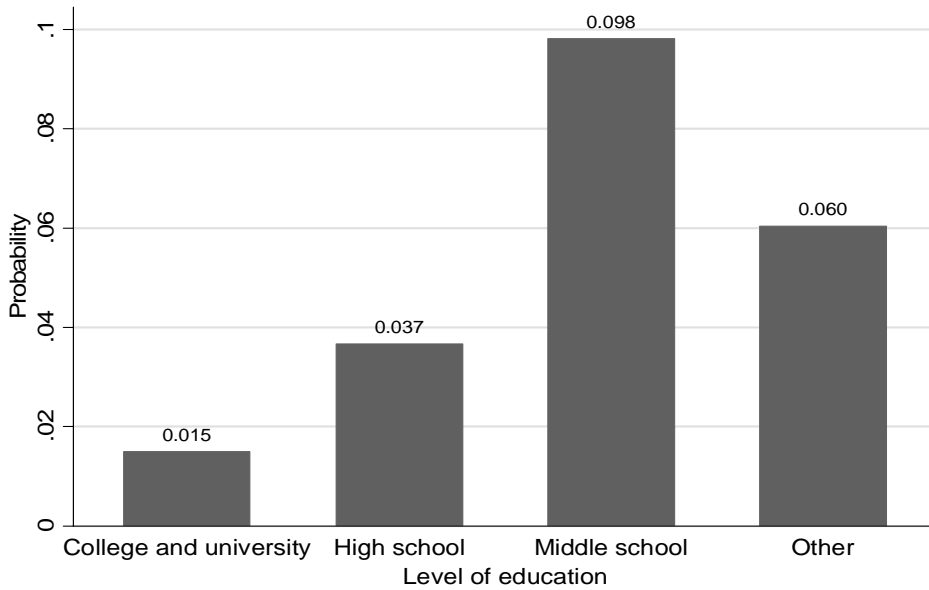
**Figure 10. Probability of being in persistent poverty by marital status**



Source: Author's calculation from NLSY79 (BLS, 2008)

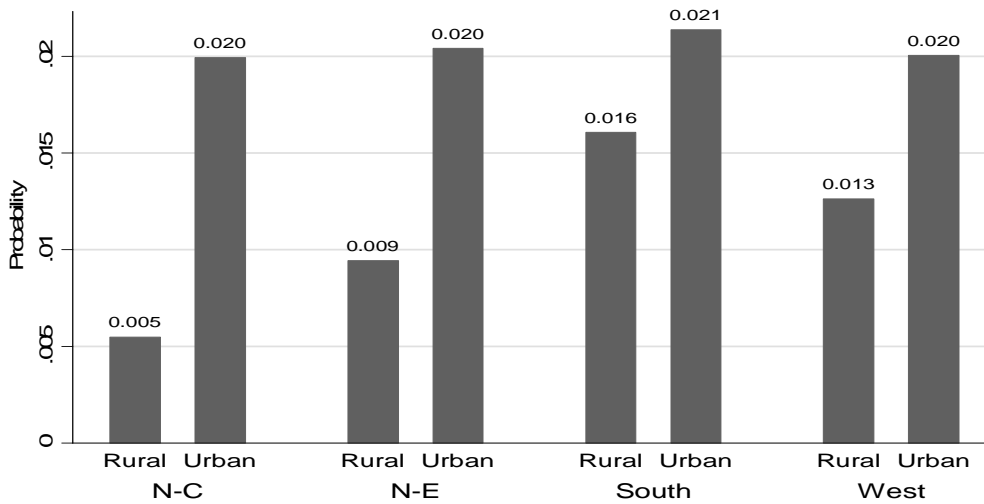
Education is found to prevent entry into persistent poverty. Indeed, individuals with a college degree are less likely to fall into persistent poverty compared to those with high school or middle school diplomas (see Figure 11).

**Figure 11. Probability of being in persistent poverty by level of education**



Source: Author's calculation from NLSY79 (BLS, 2008)

**Figure 12. Probability of being in persistent poverty by location**

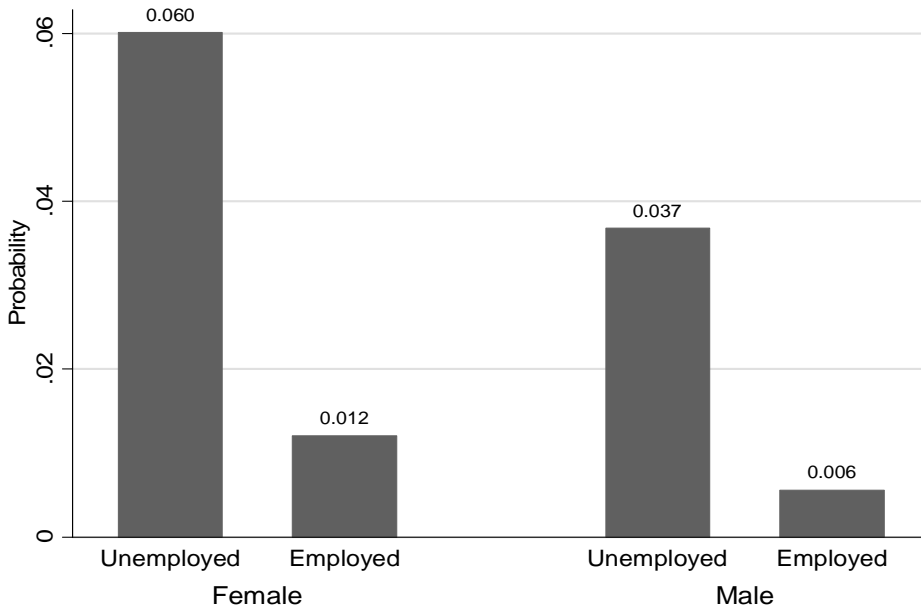


Source: Author's calculation from NLSY79 (BLS, 2008)

Note: N-C=Northcentral and N-E= Northeast.

The odds of entering persistent poverty are also spatially heterogeneous (see Figure 12). Across all regions, the probability of being persistently poor is systematically higher in urban areas compared to rural areas. The risk of living in persistent poverty is higher among individuals in southern rural areas than it is for those in the rural areas of the northeastern, north-central, or western parts of the country. Across urban areas, those living in the north central areas experience the highest probability of falling in persistent poverty.

**Figure 13. Probability of being in persistent poverty by employment and gender**



Source: Author's calculation from NLSY79 (BLS, 2008)

Overall, females are found to be more likely to live in persistent poverty than their male counterparts (Figure 13). Regardless of gender, employed individuals have a lower risk of entering persistent poverty than those who are unemployed. The gap in the odds of living in persistent poverty due to employment is higher among females than among males.

## 7. PERSISTENT POVERTY AND WELFARE PROGRAMS

Analyzing the impact of welfare transfers, Fremstad (2004) finds that:

- Most studies have found that between 50 to 75 percent of those leaving welfare remain poor two to three years after leaving welfare.
- Forty-two percent of those leaving welfare remain poor for about five years after leaving welfare compared to 55 percent who are living at the poverty rate in the first year after leaving welfare.
- A recent study of women in Michigan who received TANF in 1997 found that, by the fall of 2001, only one-quarter of them were working in “good jobs,” defined in this case as [jobs that pay at least \$7.50 per hour with health insurance or \$8.50 per hour without.
- A study of welfare reform in Wisconsin—a state often cited as having a particularly innovative welfare reform program—found that the net income of those leaving welfare in the year after they exited welfare is lower than their income prior to leaving.

Prior to the welfare reform carried out in 1996, the anti-poverty programs in the United States evolved around three main components: Aid to Family with Dependent Children (AFDC), Medicaid, and food stamp programs. The main change introduced under the new legislation was the termination of the AFDC program and its replacement by the Temporary Assistance to Needy Families block grant. TANF provides assistance and work opportunities to needy families by granting states the flexibility to develop and implement their own welfare programs.

The dynamics of the main governmental welfare programs are summarized in the following:

- TANF (formerly AFDC) provides cash transfers conditionally upon work requirements, and it funds child care subsidies and other work support services.
- Food stamps are essentially a near cash form of assistance. They are given as food coupons or electronic benefit transfer cards that can be used in authorized retail stores to purchase food.
- SSI (Supplemental Security Income) provides a minimum amount of income for low-income persons who are aged 65 or older, blind or disabled.
- Low Income Housing (also known as Section 8 housing) provides rent subsidies and vouchers.

Overall, only 45.4 percent of individuals living in persistent poverty in period *t-1* (that is to say, previous period) managed to get out of poverty in current period (as shown in Table 6). As for those on welfare programs, the probability of exiting is 45.7 percent for those with a housing subsidy; 29.5 percent for those with AFDC (29.8 percent for food stamps alone); and 55.4 percent for those participating in SSI.

**Table 6. Transition probabilities**

Persistent poverty	Current period			Total
		Out	In	
Previous period	Out	99.9	0.1	100.00
	In	45.4	54.6	100.00

Housing subsidy	Current period			Total
		Out	In	
Previous period	Out	97.7	2.3	100.00
	In	45.7	54.3	100.00

**Table 6. Continued**

<b>Persistent poverty</b>		<b>Current period</b>		<b>Total</b>
AFDC				
Previous period		Out	In	
	Out	98.7	1.3	100.00
	In	29.5	70.5	100.00
Food stamp				
		<b>Current period</b>		<b>Total</b>
Previous period		Out	In	
	Out	97.1	2.9	100.00
	In	29.8	70.2	100.00
SSI				
		<b>Current period</b>		<b>Total</b>
Previous period		Out	In	
	Out	98.5	1.5	100.00
	In	55.4	44.6	100.00

Source: Author's calculation from NLSY79 (BLS, 2008)

**Table 7. Probability of exiting from persistence poverty without welfare (%)**

<b>Type of governmental assistance program</b>	<b>Did not participate</b>	<b>Did not participate but employed</b>	<b>Did not participate and unemployed</b>
Housing subsidy	47.8	57.1	40.0
Food stamps	43.3	52.9	25.0
AFDC	45.2	55.6	25.0
SSI	36.2	NA	33.3

Source: Author's calculation from NLSY79 (BLS, 2008)

Except for the SSI program, the exit rate from persistent poverty is higher for non-welfare participants, thus suggesting some sort of welfare trap (see Table 7). However, disaggregation of exit rates for non-welfare participants reveals that non-participation would be an optimal strategy only for employed individuals. In general, employed individuals who choose not to participate in welfare programs have at least a 50 percent chance of moving out of persistent poverty. By contrast, unemployed individuals have almost no chance of escaping persistent poverty if they choose not to participate in welfare programs. Their exit rate drops down to 40.0 percent if they opt out of a housing subsidy, 25.0 percent if they choose not to participate in food stamps or (in the past) AFDC programs, and 33.3 percent if they do not receive SSI. Using a model for family labor supply, Hoynes (1996) found that work disincentive effects for Aid to Families with Dependent Children-Unemployed Parent (AFDC-UP) participants ranged from a loss of 42 to 50 hours per month for husbands, and a loss of 29 to 33 hours per month for wives. Despite the extent of these work disincentives, for those not included in the AFDC-UP most families would still fail to increase earnings sufficiently to replace any resulting loss in income as a result of their lack of participation in the program.

Overall, it is clear that the potential of U.S. welfare programs to cure persistent poverty is rather limited. As pointed out by Barrett and Swallow (2006), anti-poverty policy in the United States revolves around the provision of safety nets to bail out socially disadvantaged households in the presence of short-term shocks. What my analysis shows is that extending job opportunities to the persistently poor is not only more effective in getting them out of poverty, but also more sustainable in the long run. Devereux (2002) too argues that low labor productivity that causes chronic or persistent poverty is best addressed through productivity-enhancing interventions, not by cash or in-kind transfers. The latter are designed to address only short-term vulnerability that is associated with transient poverty.

## 8. CONCLUSION

This paper analyzes persistent poverty using a simple dynamic panel model. The main feature of the model consists of differentiating poverty persistence driven by a true state dependence from persistence led by individual unobserved heterogeneity. The distinction has an important policy implication in that persistent poverty that is completely driven by individual characteristics cannot be cured by cash or in-kind transfers alone. In addition, a dynamic panel model allows the derivation of a more accurate measure of long term log of income-to-needs ratio from which persistently poor households can be identified.

The estimation results suggest that during the 1990s, and following sustained economic growth, the probability of being in persistent poverty was declining at a steady pace. They also confirm the existence of poverty persistence where past level of well-being affects significantly its current level. As expected, a marginal increase in the household size reduces significantly the log of income-to-needs ratio. Being employed reduces significantly the risk of falling below the poverty line. Employed individuals enjoy higher level of well-being than unemployed individuals.

The results also suggest that participation in the job market accelerates exit from persistent poverty compared to participation in the welfare programs. Indeed, employed individuals who are off of welfare programs have at least a 50 percent chance of moving out of persistent poverty, regardless of the type of welfare programs they forego.

For future research, apart from adding explicit geographical attributes such as the level of local employment, I would encourage similar studies at regional, state or county level as opposed to just the national level. Indeed, the assumption of geographical homogeneity embedded in aggregate national studies often hides geographical characteristics. Understanding such geographical distinctions is crucial for optimal policy targeting of the poor.

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