SLIPPING INTO AND OUT OF POVERTY:
THE DYNAMICS OF SPELLS

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ABSTRACT

This paper examines the dynamics of poverty. Previous analyses have examined either fluctuations in the male heads' earnings or the frequency of poverty periods over a fixed time frame. Our approach depends on a definition of spells of poverty. Using this methodology we find that the majority of poor persons at any time are in the midst of a rather long spell of poverty. The methodology also allows us to estimate that less than 40 percent of poverty spells begin because of a drop in the heads' earnings, while 60 percent of the spells end when the heads' earnings increase. Thus, researchers must focus on household formation decisions and on the behavior of secondary family members.

There has been a dramatic resurgence recently of discussion of the "underclass." The discussion is reminiscent of debates about poverty during the 1960s, when the notions of a "culture of poverty," particularly as popularized by Michael Harrington's *Other America* (1962), dominated both intellectual and policy thinking.

The idea of an underclass seems inconsistent, however, with much of the research on the dynamics of poverty during the 1970s. That research, using new longitudinal data, seemed to show that the bulk of the poor were poor for only a few years. The research also showed that the poor were a very heterogeneous group, including a small minority of persistently poor.

The persistence of poverty is of interest both for understanding the phenomenon and for developing policy. Claims about dependency and separate life styles among the poor rest on assumptions about the long-term nature of poverty. Questions

about the allocation of resources can better be answered when the characteristics of the poor are understood.

To answer all these questions it is important to be able to describe the experience both of people who ever slip into poverty and of people who currently are poor. We shall show that the distinction between the ever-poor (or the newly poor) and the poor at a particular time is crucial in understanding poverty and in shedding light on the question of culture, dependency, and allocation of resources.

The availability of longitudinal income and poverty data now spanning more than a decade makes possible comprehensive analyses of the durations, beginnings, and endings of spells of poverty. The preliminary analyses we report in this article lead us to conclude that the seemingly inconsistent findings on permanent and transitory poverty from the sixties and seventies can indeed be reconciled. Our primary finding is that although many people have very short spells of poverty, the few with very long spells account for the bulk of all poverty and represent the majority of the poor at any given time. We also report some analyses of events leading to the beginnings and endings of spells of poverty which help to explain the ways in which the poor slip into poverty and escape it.

I. DESCRIBING DYNAMICS—PREVIOUS RESEARCH

There are three primary approaches which have been followed in recent years to describe the dynamics of various types of behavior. These include statistical methods which model the level of some variable such as income, allowing for a complex lag or error structure to capture dynamics; methods using spell durations and exit probabilities; and finally tabulations of the frequency of the event over some fixed time frame. The bulk of the literature on the dynamics of poverty uses the first and third methods. We employ the second. We begin by briefly considering the advantages and disadvantages of each approach.

Any model of income estimated with longitudinal data implicitly or explicitly provides a model of intertemporal dynamics. Typically the dynamics are subsumed in the error structure. In their classic paper Lillard and Willis (1978) model the level of earnings of a group of prime-age men and pay close attention to the error structure, allowing for both permanent and transitory components in the error. After estimating such a model it is possible to examine the frequency and duration of periods of poverty by asking what fraction of the population is likely to be below the poverty line and for how long, based on the estimated structure of earnings.

This approach has appeal. First it largely mirrors the famous Friedman theoretical decomposition of permanent and transitory income. Moreover it deals explicitly with the problem that the poverty line is an arbitrarily defined standard, around which income can fluctuate randomly. Permanent income can be

estimated and the poor can be decomposed into the groups which are permanently and transitorily poor. And the expected durations in poverty can be inferred for any arbitrary poverty line. Both Levy (1977) and Gottschalk (1982) also emphasize the importance of the permanent/transitory decomposition, although they use different methodologies from those of Lillard and Willis.

Although the Lillard and Willis approach has great appeal for ascertaining the income dynamics of prime-age males, it has shortcomings as a method for understanding the nature and dynamics of poverty for the entire population. It is exceptionally difficult to cope with the fact that "poverty" is a concept that applies to families—and that family membership changes. One can certainly speak of permanent and transitory components in earnings for prime age males, but how should one treat the income pattern that results when a family splits up and the former wife who was previously out of the labor force goes to work to help support her children? How should one characterize changes in income and economic status caused by the household formation choices of young people who leave well-to-do homes and are poor for a period while they make the complete transition to the labor market? In principle the income of each family member could be modeled individually, allowing for simultaneous influences from and to family structure, and allowing for life cycle changes. In fact such models are difficult to develop.

Alternatively, one could model not just personal income but *family* income relative to the poverty line for each individual. When the membership of the individual's family changed, both family income and family needs would be adjusted to reflect a new situation. This income-to-needs ratio might be hypothesized to have a permanent and a transitory component just as in the case of individual earnings. Yet this approach also has weaknesses. Changes in the income-needs ratio caused by the departure or entrance of another family member, those caused by variations in earnings of the individual, and those caused by variation in other sources of income are all treated equivalently. While it may make sense to talk of a permanent component in earnings, it is far less clear that there is a permanent component of income-to-needs where family situations are changing rapidly.

The notion of a permanent income is easier to implement empirically for able-bodied prime-age males than it is for women, children, the elderly, or the disabled. Both Lillard and Willis and Gottschalk limit their analyses to prime-age males, and Levy did not actually implement a permanent income model. In 1981, however, males aged 22–64 made up only 15.5 percent of the officially defined poor (U.S. Bureau of the Census 1982). The experience of the rest of the poor may not be well described by the permanent income notion.

Perhaps even more fundamentally, all deviations from permanent income tend to be treated as random and behaviorally equivalent in those models. Typically all "disturbances" in income lead to the same temporal path of income in the future. But all changes in family income are not likely to lead to the same sort of long-run dynamics. The worker who is poor because he was temporarily laid

off from his job is unlikely to have the same prospect of long-term poverty as one who lost his job when he became disabled.

Quite often these disturbances are of great interest in their own right. Indeed if dynamics are being considered, the changes themselves really are the driving force. Presumably those interested in understanding poverty are interested in knowing what sorts of adverse events lead people into poverty, whether the duration of a poverty stay varies depending on how it began, and how (if ever) families escape poverty. When the events leading into and out of poverty are a source of considerable interest it seems strange and unfortunate to treat these as homogeneous and largely unobservable disturbance terms. Of course these could be modeled explicitly, but at great cost in complexity.

Another approach has been adopted by Duncan (1984), Coe, Duncan, and Hill (1982), Coe (1978), Rainwater (1982), and others. They look at the proportion of the number of persons who are poor by some definition over a fixed time frame—typically eight or ten years. One can tabulate how many people were poor for, say, ten out of ten years, or five out of ten, or one out of ten. The approach is very simple to use—it need involve no more than simple tabulation. Changing family structures cause no problems. The unit of analysis is typically the individual and his or her poverty status at any time and the poverty status of his or her family at that time. For purposes of tabulation it does not matter if poverty status changes because family structure changes or because income of a family changes.

The approach also has some of the appeal of methods based more explicitly on permanent income notions, because those who were transitorily poor will seemingly show up as people with very little poverty over the period, those who have very low permanent income will be poor for most of the period, and those whose incomes fluctuate back and forth across the poverty line will be the intermediate group. But in this case again, no attention is focused on the events which lead people into and out of poverty. It is very difficult to trace processes whereby persons may gradually or suddenly escape from poverty.

But more importantly, this method can be misleading. Consider an extreme example. Suppose all poverty occurs in spells lasting exactly ten years. If we were to ask how many persons who were poor over a ten-year survey period remained poor the entire time, only those people who happened to begin their ten-year spell in the first year of the survey would be counted. Those who began spells in the year prior to or the year after the survey began would have nine-year episodes in the survey. Those who began nine years before or after the survey started would have one-year episodes. Thus even though all spells lasted exactly ten years, because completed spells cannot be observed in the survey, one will find that roughly equal numbers of people were poor for one survey year, two survey years, and so forth. Obviously any conclusion that only a small number of poor persons remained in poverty for a long time would be quite misleading because of the censored spells.

We propose instead to model spells of poverty. While we acknowledge and address the problems caused by the crossing of an artificial threshold[1], we think a spell approach provides a simple and compact way to understand the dynamics of poverty. One advantage of using spells is that information can be summarized in a comprehensible manner. Indeed Lillard and Willis and many others impose the artificial poverty line on their structurally estimated income dynamics, and report durations of spells and the probability of moving from poverty. All we propose is to examine those issues directly.

Other researchers have looked at movements into and out of poverty, both to estimate the amount of movement and to examine the characteristics of those who do and do not move. Hill (1981) and Levy (1977) have calculated exit probabilities for those who enter and exit from poverty. Boskin and Nold (1975), Hutchins (1981), Plotnick (1983), and Wiseman (1976) have explored movements on and off of welfare.

We follow this line of research, and extend it in three ways: by looking at a variety of distributions, by allowing for duration-dependent exit probabilities, and by identifying beginning and ending events. None of the research has reported the full set of distributions that are important for understanding the dynamics of poverty: completed spell distributions for people beginning a spell of poverty and for those poor at a given time; and the uncompleted spell distribution for people poor at a given time. The importance of the distinctions between these distributions has been emphasized by several scholars. Kaitz (1970), Salant (1977), Clark and Summers (1979), and Akerlof and Main (1982), for example, have pointed out that while most people who become unemployed are in that state for only a short period of time, the bulk of unemployment is long term. As we explain in our next section, we believe these distinctions are important for understanding poverty as well.

Moreover, little of the research on flows into and out of poverty has looked explicitly at differences in exit probabilities by time in poverty. Levy (1977) reported no differences in exit probabilities over time, but his analysis included all the people who were poor in his beginning year, regardless of how long they had been poor before being observed. Much of the research on movements on and off of welfare, for example Plotnick's (1983) event history analysis, as well as Hutchins's (1981) and Wiseman's (1976) assumes constant exit probabilities. It's worth noting that a permanent income model predicts that exit probabilities will decline with duration because those who are temporarily poor will leave early, leaving behind those who will never exit.

Finally, there has been little research on the events associated with movements into and out of poverty. Levy (1977) and Gottschalk (1982), for example, dismiss the importance of family composition changes, noting that most people do not

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1 It is worth noting that nearly all logit or probit models use an artificial threshold to model behavior.

change their family composition very often and that most income changes are not associated with family compositions changes. While this is true generally, we do not believe it is so true for the poverty population, especially looking over rather long periods of time, and thus we deal with it here as an important topic for empirical investigation. A key innovation of this study is our characterization of the events which lead to the beginnings and endings of spells of poverty.

II. METHODOLOGY

The ideal methodology for examining durations of spells of poverty and the characteristics of spells of various lengths would utilize an extremely large data set covering a very long period of time. With such a data set, one could simply tabulate the actual distribution of completed spells for people who began a spell in some previous year long in the past. One could also tabulate the distribution of completed spells for those people who were poor at some time in the past.

Unfortunately, such a data set does not exist. The data we used, from the fifteen-year sample of the Panel Study of Income Dynamics (PSID), are the best available for examining poverty dynamics. The original study design oversampled low-income households and thus generated reasonable sample sizes.[2] Detailed income data were collected each year.[3] We were able to use twelve years of data for studying poverty dynamics, from 1970 to 1982. To make full use of the data, our analyses are based on exit probabilities tabulated from the data, which were then used to derive the various distributions we report.

Our basic methodology for estimating the durations of spells of poverty has three parts. We first identify "spells"—continuous periods during which income falls below the poverty line. We then calculate exit probabilities (or hazard functions, or death rates), and then use exit probabilities to generate distributions of spell lengths for new spells, and for completed and uncompleted spells observed at a point in time.

A. Definition of Spells

We first defined poverty in each given year as income below a needs standard calculated on the basis of household size. We included all cash transfers in the definition of income but excluded in-kind transfers as is done in the standard poverty definitions. The PSID provides a need standard that is essentially equivalent to that used by the Census Bureau and OMB in calculating poverty. Largely because the PSID finds more income than the Current Population Survey, however, the reported poverty rate is lower in PSID data. In order to make our

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2   The oversampling does not introduce bias so long as correct weights are used.
3   The PSID is described in detail in Survey Research Center 1983.

figures comparable to the published figures we inflated the needs standard by 1.25.[4] Using the uninflated definition changes our results very little. It leaves us with slightly smaller sample sizes and slightly shorter spells of poverty.

In all of our tabulations we excluded persons who began a spell of poverty when they were 65 or over. The public use PSID tape has one unfortunate feature: persons who die during the sample period are excluded from the sample even for the years when they were alive. It was impossible for us to track people who ended a spell of poverty when they died. Thus we used the over-64 exclusion.

Normally, we defined a spell of poverty as beginning in the first year that income was below the poverty line after having been above it, and as ending when income was above the poverty line after having been below. The problem as we have noted already is that unlike employment or even welfare use, poverty is not a clear-cut state. The poverty line is an arbitrarily defined concept, and small "random" changes in income can move people across the line, creating a "spell" even though no change of any significance to the individual involved has occurred. Moreover, measurement error can cause a false beginning or end.

Yet the spell concept has so many advantages that we chose to make some simple adjustments for pure randomness or measurement error. One-year spells either into or out of poverty were eliminated if they either began or ended with an income change that was less than one-half the needs standard. No spell lasting more than one year was affected. This adjustment had very little impact on the number of people who were ever poor. We reduced the number of persons who were ever-poor in our sample by only 5.5 percent by eliminating these selected one-year spells of poverty. It did help to reduce the number of multiple spells among the ever-poor. Without the adjustment, 43 percent of the ever-poor had multiple spells over the thirteen-year sample period, while with the adjustment 31 percent did.

B. Calculation of Exit Probabilities

The exit probabilities reported in our various tables were calculated by combining years of data from the PSID. We used data on all spells for which we observed beginnings, regardless of whether we also observed endings. Spells with an observed beginning, which were censored at the end of the sample period, were properly included in the calculations of exit probabilities in all but the censored year. The exit probabilities are based on beginnings and continuations summed over all years. For example, the exit probability for the first year of a spell is based on data for all the spells of poverty that began between 1970 and 1981. (Data limitations and several features of our methodology preclude the use of 1968 and 1969 data.) The exit probability for the second year is based on all the spells for which a second year was observed: such spells could have begun

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4   Actually the needs standard reported on the PSID is already 25 percent higher than the traditional OMB standard, thus we used the value included on the file without further adjustment.

in any year between 1970 and 1980. Since the unit of observation is a person in a spell of poverty, persons with multiple spells during the sample period were included each time they had a spell.

This procedure means that the sample sizes are quite large for calculating exit probabilities for the first several years. After that, they become smaller and less reliable. We chose to calculate exit probabilities for up to nine years. Beyond that, sample sizes became rather small. Obviously some spells last longer than that, so we need estimates of exit probabilities in later years in order to calculate the full distributions. We assumed that the exit probabilities for year ten and beyond were stable and approximately equal to the calculated exit probabilities for years seven through nine. We regard this as a very reasonable assumption since exit rates in the later years seem relatively stable and show no clear pattern. We also assumed, primarily for ease of calculation, that no spells lasted longer than 30 years.

C. Beginning and Ending Events

For all spells for which we observed a beginning or an ending, we attempted to identify a beginning or ending event. We decided to classify beginning and ending events into mutually exclusive categories. Thus we looked for the primary reason the family's poverty situation changed. We developed a hierarchical classification system. We first looked for a significant family structure change— defined as a change in the head of household—within the previous two years.[5] If such a family structure change had occurred, we associated the beginning or ending to that event. Although other factors may have simultaneously changed which accounted for a family's movement into or out of poverty, we felt that the change of headship is significant enough to warrant its special treatment. Indeed many behavioral changes which might account for a higher or lower level of family income may be the direct result of the headship change, as in the case where a family breakup forces a woman to quit working.

In families where there had been no headship change, we determined whether the change in the income/needs ratio was more influenced by the income numerator or by the needs denominator. Needs-dominated changes were rare and they were typically brought about by the birth of children or by the departure of members from the household. The remaining changes were income changes. To further classify these we determined which component of family income changed the most: head's earnings, wife's earnings, others' earnings, or transfer income.

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5 Because family structure is defined at the time of the survey whereas income is reported for the previous year, it is possible that income changes would not show up until the year after a family structure change is observed.

III. EXIT PROBABILITIES

Table 1 displays the exit probabilities derived from the PSID, the sample sizes, and standard errors. It is clear that the longer a person has been poor, the less likely it is that he or she will escape poverty. The probability of exiting poverty declines as time in the poverty spell increases. If a person is in the first year of a spell of poverty, the probability of exiting is 0.45. If he or she is in the fourth year, however, the probability of exiting has fallen to 0.21. These declines could come about for either of two reasons. One possibility is that poverty itself makes it more difficult to leave. Long spells of poverty may, for example, make it increasingly difficult to get the kind of jobs that generate income above the poverty line.

A second possibility is that declining exit probabilities are simply a result of the heterogeneity of the poverty population. People who are "long-termers" may be different in various ways from people who are poor only a short time. Long-termers' exit probabilities are always low, no matter how long or short a time they have been poor. Over time, people with these long-termer characteristics make up a larger and larger proportion of the poverty population. An interpretation consistent with the permanent income context would be that those with temporarily low incomes are gradually selected out, leaving only those who are permanently poor. Without imposing functional form assumptions on these data

TABLE 1

POVERTY SPELL EXIT PROBABILITIES, SAMPLE SIZES, AND STANDARD ERRORS
BY LENGTH OF SPELL TO DATE

Spell Length to Date (years)	Exit Probability	Standard Error	Sample Size
1	0.445	0.010	5,872
2	0.285	0.012	3,220
3	0.246	0.013	2,145
4	0.208	0.016	1,504
5	0.197	0.018	1,096
6	0.145	0.017	759
7	0.128	0.019	516
8	0.074	0.016	334
9	0.083	0.024	223
9–29	0.100*	—	—
30	1.000*	—	—

Source: Probabilities and standard errors are derived from the Panel Study of Income Dynamics and are weighted.
* Value assumed

it is virtually impossible to decompose the extent to which declines in exit probabilities reflect heterogeneity or "duration dependence."

One important conclusion which follows directly from these exit probabilities is that persons who have been poor for three years are far less likely to escape poverty. Some 60 percent of those persons just beginning a spell of poverty will exit within two years. But only 36 percent of those who have been poor for three years will escape within the next two.

With these exit probabilities, we can say quite a bit more about the dynamics of poverty. As we noted earlier, however, in order to make such calculations, exit probabilities had to be assumed for years beyond the maximum eight years we could observe. We chose to use 0.10 in all our calculations. This number seems conservative to us. The true probabilities are well below 0.10 in the eighth and ninth years of spells. And it is reasonable to believe that these probabilities continue to fall. If so, the results we report would be even more dramatic.

IV. CALCULATION OF DISTRIBUTIONS

If the probability that a person who has been poor for t years will not be poor in the next year is given by the exit probability $p(t)$, then three important distributions are easily derived.

Let $D(t)$ describe the fraction of the number of people who have spells which last exactly t years. Then

$$D(1) = p(1),$$

(1) $$D(t) = p(t)[1 - \sum_{j=1}^{t-1} D(j)], \text{ for } T > t > 1,$$

$$D(T) = 1 - \sum_{j=1}^{T-1} D(j), \text{ D}(T) \text{ where } T \text{ is maximum length of spells.}$$

The first term in equation (1) is simply the exit probability, the second is the fraction surviving to year $t - 1$.

The distribution of completed spells at a point in time can be derived provided one assumes a no-growth steady state.[6] If $F(t)$ gives the fraction of the number of all persons on the program at a given time who will be poor for exactly t years, then

(2) $$F(t) = tD(t) / \sum_{j=1}^{T} jD(j)$$

Finally the distribution of uncompleted spells for persons poor at a given time, $G(t)$, is derived by calculating the fraction of the number of persons who began spells t years earlier who would still be on the program (and renormalizing) assuming a steady state.[7]

$$(3) \qquad G(t) = [1 - \sum_{j=1}^{t-1} D(j)] / \sum_{s=1}^{T} [1 - \sum_{k=1}^{s-1} D(k)]$$

These three distributions offer considerable insights into the persistence of poverty.

V. THE PERSISTENCE OF POVERTY

Just how long does poverty (or unemployment, or welfare receipt, or employment) last? The answer depends on whether we are interested in the group of people who ever enter poverty or the group that is poor at a given time. A non-poverty example can help make the point.

Consider the situation in a typical hospital. Most of the persons admitted in any year will require only a very short spell of hospitalization. But a few of the newly admitted patients are chronically ill and will have extended stays in the hospital. If we ask what proportion of all admissions are people who are chronically ill, the answer is relatively few. On the other hand, if we ask what fraction of the number of the hospital's beds at any one time are occupied by the chronically ill, the answer is much larger. The reason is simple. Although the chronically ill account for only a small fraction of all admissions, because they stay so long they end up being a sizable part of the hospital population and they consume a sizable proportion of the hospital's resources.

The same basic lesson applies to poverty. Only a small fraction of those who enter poverty in any given year will be chronically poor. But people who will have long spells of poverty represent a sizable portion of the group we label "the poor" at any one time.

The point is illustrated in the distributions in Table 2, all of which are derived from the exit probabilities reported in the previous table. Column 1 corresponds to admissions in our hospital example. It shows the prospective distribution of completed spells of poverty for those just beginning a spell; i.e., for those who were not poor last year but who are poor this year. Here we see that most spells of poverty are quite short. Nearly 45 percent end within one year and 70 percent are over within three years. Only 12 percent last ten years or more.

Column 2 reports the distribution of completed spells for persons who are poor at a particular point in time, assuming the number and distribution of new spells are constant over time. It is comparable to reporting prospective completed hospital stays for all those now in the hospital as opposed to those who have just been admitted. These results suggest that more than 50 percent of those who would

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7   The time period is somewhat more troublesome in calculating uncompleted spell distributions.

TABLE 2
DISTRIBUTIONS OF COMPLETED AND UNCOMPLETED
SPELLS OF POVERTY FOR NONELDERLY PERSONS

Spell Length (Years)	Persons Beginning a Spell	Persons Poor at a Given Time*	
	(1) Completed Spell Distribution	(2) Completed Spell Distribution	(3) Uncompleted Spell Distribution
1	44.5	10.6	23.9
2	15.8	7.6	13.3
3	9.8	7.0	9.5
4	6.2	5.9	7.1
5	4.7	5.6	5.7
6	2.8	4.0	4.5
7	2.1	3.5	3.9
8	1.0	2.0	3.4
9	1.1	2.3	3.1
Over 9	12.0	51.5	25.6
Totals	100.0	100.0	100.0
Average	4.2	12.3	6.2

Source: Table derived from exit probabilities reported on Table 1.
* Distributions derived assuming no growth steady state.

be identified as the poor in a cross-sectional survey are in the midst of a spell of poverty which will last ten years or more.

Just as in the hospital example where the chronically ill are only a small part of those admitted to the hospital but represent a large portion of the patients in the hospital at any time, those who will be chronically poor are but a small fraction of those entering poverty but a large part of the poor at any time. The long-term poor account for a very large portion of all the person-years of poverty. Most people who slip into poverty are quite successful in getting out. But precisely because this is true, the people who escape quickly account for only a small fraction of all poverty and a small fraction of the poor at any point in time.

This dual nature of the poverty population can easily be missed if one looks only at the distribution of new spells or of those who are ever poor. Another tempting distribution can also be quite misleading. Since it can be difficult even with existing longitudinal data sources to collect reliable information on completed spell lengths, one might choose instead to report the length of time those

in poverty in some year have been poor up to that time.[8] The distribution of uncompleted spells of poverty for the poor at a point in time are reported in Column 3.

The uncompleted spell durations do have some interest, but they must not be treated as being equivalent to completed durations. We cannot conclude from column 3 that because only 25 percent of poor persons have been poor for more than nine years that only one-quarter of those in poverty will be poor for over eight years. That would be comparable to observing the age distribution at one time and concluding that only 12 percent of the current population will live past age 65.

Thus it is not appropriate to conclude that the poor—poor in the sense that they would be identified as poor in a particular year—are a group that generally has brief stays in poverty. Most people who are ever poor have short spells. Most people who are just beginning a spell of poverty will have a short spell. But the bulk of those poor at a given time and the bulk of the person-years of poverty are accounted for by the long-term poor. If the long-term poor use at least as many government resources per year of poverty as the short-term poor do, then the long-term poor consume the majority of the resources devoted to aiding the poor (see, for example, Bane and Ellwood 1983). Let us now turn to the events which are associated with movements into and out of poverty.

VI. BEGINNING EVENTS

Table 3 shows our basic findings on the beginnings of spells of poverty among the nonelderly, by family status at the beginning of the spell and by beginning type. This table shows distributions for those who are just beginning a spell of poverty. Later, we report distributions of beginning types for those poor at a given time along with durations by beginning type. The table shows that male-headed households with children accounted for about 45 percent of all poverty-spell beginnings. Female-headed households with children began another 26 percent of spells of poverty. Married and unmarried adults without children account for the remainder.

A decline in a head's earnings was the single largest cause of movement into poverty in our sample; 38 percent of all the spells of poverty whose beginnings we observed began with a decline in the labor income of the household head. The figure is perhaps significant not because it is large, rather because it is small. It suggests that most poverty is not explained simply by fluctuations in earnings of the head.

The importance of the decline in heads' earnings differs across groups. For male-headed households with children, such changes account for nearly 60 per-

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8   The uncompleted spell distribution is quite commonly reported for unemployment and welfare
    receipt. It is less common in the poverty literature.

TABLE 3
BEGINNING TYPES BY FAMILY RELATIONSHIP IN FIRST YEAR OF POVERTY SPELL

Beginning Type: Primary Reason for Beginning	All Persons	Members of Families with Children					Married Couples With No Children		Single Heads With No Children		Other Relative Of Head
		Male Headed			Female Headed						
		Heads	Wives	Children	Heads	Children	Heads	Wives	Males	Females	
Earnings of head fell	37.9	58.1	57.5	57.1	14.1	14.5	40.1	38.9	32.4	24.6	8.5
Earnings of wife fell	3.7	6.5	6.8	5.6	—	—	7.0	11.4	1.6	—	2.2
Earnings of others fell	7.7	4.5	4.7	4.9	10.1	14.0	3.6	8.5	3.5	8.1	19.5
Unearned income fell	8.0	4.6	7.0	6.1	9.7	11.0	6.7	9.3	4.3	9.9	15.2
Needs/poverty level rose	8.2	15.7	8.7	10.9	7.1	7.6	10.0	2.7	3.8	0.7	7.6
Child* became head or wife	14.7	10.6	13.4	—	20.7	—	32.6	29.2	54.5	41.9	—

Wife became female head	4.7	—	1.9	—	38.3	—	—	—	—	—	14.8	—
Child of male head became child of female head	6.4	—	—	1.5	—	33.9	—	—	—	—	—	—
Child was born into poverty	8.6	—	—	13.8	—	19.0	—	—	—	—	—	47.0
Percent of all beginnings	100.0	8.8	9.5	26.4	8.1	17.8	4.2	4.7	7.3	9.8	3.4

* Includes child and grandchild and other relative of head.

cent of all beginnings. By contrast, only 14 percent of spells for those in female-headed families begin when earnings of the head drop. Adults without children fall in between.

In addition some 11 percent of all spells of poverty began with changes in the earnings of wives or other household members, with others somewhat more important than wives. For male-headed families with children, declines in wives' earnings accounted for 7 percent of transitions into poverty. Declines in others' earnings, usually adult children, were associated with another 5 percent of poverty spell beginnings. Among female heads with children, declines in others' earnings—again, usually adult children—accounted for about 10 percent of beginnings.

Thus earnings changes of all sorts account for about half of all spells of poverty. Another 8 percent are accounted for by changes in unearned income. This category includes those who lost a variety of benefits (such as Unemployment Compensation, Workman's Compensation, disability benefits, welfare) and aid from others, such as child support or gifts from relatives. The remainder of poverty beginnings can be traced to family changes.

The transition to a female-headed family is an important event precipitating transitions into poverty, accounting for about 11 percent of all beginnings and 59 percent of the beginnings for female heads with children. Among this latter group, about 38 percent of their poverty-spell beginnings come from marital breakup, a move from being a wife to being a female head, and another 21 percent from what is most likely unmarried motherhood.[9] Another 8 percent of all beginnings are created by a changing need standard typically caused by the arrival of a new family member.

A very large fraction of all poverty beginnings for children occur when they are born into a poor family. Over 8 percent of all spells of poverty begin with birth, and 20 percent of all the spells of poverty of children (in both male- and female-headed families) begin this way. Almost half of the spells for "other relatives" begin with births; these are mostly children who are living with their grandparents.

Finally, a sizable proportion of all spells of poverty begin with the movement of a young man or woman out of a parent's home into an independent household. Nearly 15 percent of all poverty spells began when a child moved out of his or her home and became a head, a wife, or a female head without a child. This beginning type is most important for unmarried male heads, accounting for nearly 55 percent of their starts in poverty. It is also a very prominent event for all the other groups without children. Much of this poverty is probably the "getting started" phenomenon, no doubt also associated for some people with getting further education or training, and for others with a decision that it is better to be poor than to live at home.

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9   This category includes both women who were formerly living independently who had a child and women who were formerly living in their parents' home who left along with a child.

What emerges, then, is a picture of a rather heterogeneous poor population. The male-headed families most commonly have suffered a fall in earnings, though one-quarter of the beginnings for this group are for other reasons. Female-headed poverty typically begins when the female-headed family is formed, either through separation/divorce or when an unmarried woman has a child. The poverty patterns for children not surprisingly mirror those of their families, though a sizable fraction are born into poverty. Adults without children are an extremely diverse group. Some are clearly "getting started" after leaving home. Others suffer earnings falls. Still others are probably older. Fluctuations in transfer income are important.

VII. DURATIONS BY BEGINNING TYPES

Using the methods based on exit probabilities that are described in earlier sections, it is possible to estimate the expected durations of spells of poverty by beginning type. Table 4 presents the results. The table shows the mean duration of completed spells for persons who are beginning spells of poverty and for persons poor at a given time. It also shows the distribution of beginning types for persons who are poor at a given time.

The table shows that spell durations differ depending on how the spell begins. The shortest spells are those which begin when a child became a head or wife. The average duration of a spell of poverty which begins this way is less than three years. Spells that begin with declines in heads' and wives' earnings are also relatively short, with average durations for new spells of 3.3 and 3.1 years. Earnings falls seem to lead on average to temporary periods of poverty.

Poverty spells are longer when the reason that they begin is that a woman has become a female head with a child. The spells that begin for children when their families change from male- to female-headed are longer still, with a mean duration for a new spell of four years and for spells observed at a given time of about eleven years.[10] Spells of poverty that begin with birth are the longest of all, averaging almost eight years for a new spell and nearly 17 years for a spell observed at a point in time. Children who are born into poverty seem to be faced with an extremely long period of disadvantage.

In tabulations not reported here, we also looked at how exit probabilities and expected spell durations varied by other characteristics. The most striking differences were by race. We estimated the average duration of a completed new spell for blacks at 6.5 years, compared with 3.4 years for whites. Black children whose spells began with birth had expected poverty durations of 9.7 years. For some groups poverty looks quite long term.

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10 The difference in average duration between female heads and their children suggests that female-headed families with more children have longer spells.

TABLE 4

DISTRIBUTION OF BEGINNING TYPES AND MEAN DURATION OF COMPLETED SPELLS
FOR PERSONS BEGINNING A SPELL AND FOR PERSONS POOR AT A GIVEN TIME

Beginning Type: Primary Reason for Beginning	Persons Beginning a Spell of Poverty		Persons Poor at a Given Time**	
	Percent of Beginnings	Mean Duration of Completed Spell (years)	Percent of Beginnings	Mean Duration of Completed Spell (years)
Earnings of head fell	37.9	3.3	30.1	9.8
Earnings of wife fell	3.7	3.1	2.8	11.6
Earnings of others fell	7.7	6.5	12.1	15.0
Transfer income fell	8.0	5.2	10.0	14.3
Needs/poverty level rose	8.2	5.3	10.5	13.4
Child* became head or wife	14.7	2.4	8.5	6.9
Wife became female head	4.7	3.7	4.2	11.8
Child of male head became child of female head	6.4	4.0	6.2	10.8
Child was born into poverty	8.6	7.6	15.7	16.9
Total/Average	100.0	4.2	100.0	12.3

For all beginning types exit probabilities are assumed constant at 0.15 after the ninth year.
* Includes child and grandchild and other relative of head.
** Assuming no-growth steady state.

VIII. ENDING EVENTS

Our analysis of ending events proceeded in exactly the same way as our analysis
of beginnings. The results reported here are for all endings that we observed,
regardless of whether the spell began within the sample period. Table 5 shows
the distribution of observed endings by ending type and by family status in the
last year of the poverty spell.

   Ending types look rather different from beginning types. More spells end than
begin with a change in head's earnings. Some 38 percent of spells began with
a fall in head's earnings. But over 50 percent of spells ended with a rise. For
male heads, the high proportion of spells that end by earnings increases is not
surprising, since few other routes out of poverty are open. In addition, however,
a very sizable proportion of female heads with children—33 percent—escape
poverty by working. It is simply not the case that the only routes out of poverty
for women family heads are marriage or transfers.

TABLE 5
ENDING TYPES BY FAMILY RELATIONSHIP IN LAST YEAR OF POVERTY SPELL

Ending Type: Primary Reason for Ending	All Persons	Members of Families with Children									Other Relative Of Head
		Male Headed			Female Headed		Married Couples With No Children		Single Heads With No Children		
		Heads	Wives	Children	Heads	Children	Heads	Wives	Males	Females	
Earnings of head rose	50.2	64.4	59.7	56.2	33.0	26.1	63.8	48.7	80.2	48.7	16.3
Earnings of wife rose	7.2	10.6	12.2	11.7	—	—	12.0	13.8	3.8	0.9	3.5
Earnings of others rose	15.8	12.8	12.1	18.6	18.4	26.2	3.1	5.1	2.7	8.5	37.3
Unearned income rose	13.8	7.7	8.6	8.0	19.0	20.1	16.8	24.4	9.0	20.8	25.4
Needs/poverty level fell	2.5	4.2	0.9	0.9	3.3	3.4	4.4	3.6	4.3	2.3	2.9
Female head became wife	4.7	—	5.9	—	26.4	—	—	3.6	—	18.9	—
Child of female head became child of male head	5.4	—	—	4.7	—	23.2	—	—	—	—	10.7
Child* became head or wife	0.4	0.3	0.5	0.0	—	1.1	0.0	0.8	0.0	0.0	3.9
Percent of all endings	100.0	9.5	10.3	28.2	7.9	16.3	4.5	4.8	6.1	9.6	2.7

* Includes child and grandchild and other relative of head.

The earnings of wives and other household members are surprisingly important in moving people out of poverty. Twenty-three percent of all the spells of poverty ended with changes in the earnings of wives or other household members. The behavior of such persons is rarely examined or modeled in the statistical literature on the dynamics of poverty.[11] Yet these secondary earners are often critical to a family's escape from poverty. For female-headed families with children, changes in the earnings of others were especially important, alone accounting for 18 percent of movements out of poverty. Some of these may really be household structure changes—the moving in of a husband surrogate who does not get classed as the head, although the PSID tried to classify as couples those unmarried persons who lived together as husband and wife.

Overall, then, although earnings changes of some sort account for only half of all beginnings, they explain 75 percent of all endings. In many respects this is not surprising. There are many routes into poverty associated with life-cycle events which are essentially irreversible. Birth is the obvious example, but the departure of an adolescent child from his or her parents' household is rarely reversed. Thus, except for an increase in transfer payments of some sort, for most families the only route out of poverty must be through the earnings of one or more of its members.

The one exception, of course, is marriage or remarriage in the case of female-headed families. And marriage is an important road out of poverty for persons in these families, though not as important as work. For female heads with children, 26 percent of all movements out of poverty came through marriage. Similarly 23 percent of children in female-headed households escape poverty when their mother marries. Overall about 10 percent of all observed spells of poverty were brought to an end this way.

Increased transfer payments are only modestly important in ending spells of poverty, even for female heads and their children. About 14 percent of all the endings of spells of poverty that we observed were brought about by increases in transfer payments. About 19 percent of the movements out of poverty by female heads with children were associated with increased transfer payments.

In interpreting this finding it is important to keep two things in mind. First, the definition of poverty we used in defining spells is posttransfer poverty, including all cash transfers in the definition of income. Our analysis thus gives us no information on the importance of transfers in making people who are pre-transfer poor into those who are post-transfer poor. The second is that spells of poverty that began when a person was over 64 were excluded from this analysis. We feel certain that Social Security is important in moving some of those excluded persons out of poverty.

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11 The dependence of many poor families on the earnings of people other than the head, and the dynamic nature of household composition in these families, has been noted in several anthropological studies, for example Stack (1974).

IX. CONCLUSIONS

In this paper we develop and exploit the notion of spells of poverty, using exit probabilities to examine the length of time that people are poor and beginning and ending events to understand why people move into and out of poverty. We found that most of those who ever become poor will have only a short stay in poverty. At the same time, the majority of people who are poor at a given time will have very long spells of poverty before they escape.

   These findings suggest, and others based on welfare use (Bane and Ellwood, 1983) suggest even more strongly, that most of the people helped by programs to aid the economically disadvantaged use them only briefly. But the bulk of resources almost certainly go to a much smaller group of people who have very long stays in poverty. The policy dilemmas that this finding poses are serious indeed. Our current policies are probably quite helpful in providing short-term relief to the temporarily poor, and they may be an essential part of life for the chronically poor. Unfortunately, the results also open the possibility that dependency may be a serious problem.

   We also found that a fall in a head's earnings explained spell beginning in only a minority of cases. In nearly half the cases family structure and life cycle events were associated with the start of a poverty stay. Our research suggests, therefore, that models which concentrate only on the earnings dynamics of household heads will miss a great deal of the dynamics of poverty.

   At the same time we found that increased earnings of all household members was the primary route out of poverty, and earnings falls accounted for half of beginnings. If effective labor-market policies could be implemented which improved the earnings of those near or below the poverty line, it seems likely that they would dampen movements into poverty and hasten movements out, though obviously the record of current policies is mixed. Moreover, the substantial role played by ''others'' in moving families into and out of poverty implies that this long-neglected group deserves some attention, both in research and policy.

   Finally and perhaps most importantly, our results suggest that the poverty population is extremely heterogeneous. Some groups such as youngsters who are ''getting started'' have relatively short spells of poverty and may not merit great concern. But some groups, particularly children and many blacks, often have very long stays in poverty. Some 20 percent of poverty spells of children begin with birth. When they do, they tend to last for ten years. The average poor black child today appears to be in the midst of a poverty spell which will last for almost two decades.

   We believe the spell methodology offers important advantages. Clearly by using hazard functions and other multivariate techniques, we will be able to glean still further information about those factors that influence dynamics. Yet we believe the straightforward methods exploited here offer the appeal of simplicity and still provide powerful insights into the dynamics of poverty.

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