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## Chapter 9

# Household income dynamics: mobility out of and into low income over the life-course

*Johan Fritzell and Ursula Henz*

## Introduction

Ever since Rowntree's famous observations on the life cycle of poverty (Rowntree, 1901), it has been widely recognised that living standards can vary significantly over the life-course. Rowntree's study of all working-class families in York pinpointed three life-course periods with greater risks of poverty: one's own childhood, when one has underage children, and old age. The first two were mainly caused by high needs in the family and the third by lower work capacity and inadequate pensions.

Since that time, welfare state expansion has taken place in all industrialised countries, the intention being to modify the distributional outcomes of market forces (Briggs, 1961). Welfare state programmes are intended to secure for everyone the possibility of a decent life irrespective of their own value in the market place, and one way of achieving this is to smooth out the variability in the level of living associated with life-course changes. For example, with reference to Rowntree's conception of alternating periods of want and plenty, old age is now less synonymous with poverty than was the case among the working class in York nearly a hundred years ago (cf. Kangas and Palme, 2000).

The structure and functioning of family life have also experienced quite profound changes, especially in the latter part of the twentieth century. It is obvious, for example, that family types such as dual-earner couples and households headed by single parents have become more numerous. Another salient change is the growing instability of marriage and cohabitation. Changes in household composition and the level of participation of household members in the labour market are likely to lead to significant variability in living standards over the life-course.

Though historical poverty patterns may have been attenuated, it is possible that they have merely been replaced by new life-course cycles. This leads to questions such as how the birth of a child, or an exit from the labour market, is associated with the incidence of relative poverty in a country like Sweden, which has an extensive and sophisticated redistributive welfare state. Similarly, what roles do life-cycle and labour-market events play in escapes from relative poverty? As pointed out by Atkinson (1995: 71), it is not only the extent of mobility in income distribution that is of interest: 'Some parts of the observed exits from poverty may be due to the life-cycle of family needs and we may regard these

differently from a situation where there has been an improvement in, say, earning power of the family head'.

A prerequisite for answering these and related questions is the use of longitudinal income data such as those from the Swedish Level-of-Living Survey (LNU), further described in Chapter 11. One advantage of these data is the existence of information on household income dynamics over an unusually long time period (18 consecutive years). This gives us the opportunity to fruitfully apply techniques of event history modelling to tease out the interconnections between family events, labour-market events and income status.

The structure of the chapter is as follows. In the next section, we discuss some earlier research on income and poverty mobility, with regard both to methods of data analysis and to empirical findings. Following this we state our own research questions more precisely. Thereafter follows a discussion of our data and methods. The empirical section consists of three parts. We first present some basic descriptive information on the data set concerning entry into and exit from low-income states. Then follows a section in which we focus attention on simultaneous changes of family composition and income. In the third part, we present multivariate event history analyses. The final section contains a summary and discussion.

## Research on income and poverty dynamics

There are different strands of research on income and poverty dynamics, but due to the lack of longitudinal data spanning many years, a large portion of it focuses on positional and absolute changes in income over a two-year window, typically addressing how large a fraction of the poor in year  $t$  leave this state in year  $t + 1$ . Some of the early studies using the US Panel Study of Income Dynamics (PSID) showed what was regarded as a high degree of mobility into and out of poverty from one year to another (Duncan, 1984). A more fully dynamic perspective was introduced in an influential article by Bane and Ellwood (1986), who studied the duration of poverty spells over a ten-year period. They were able to show that, despite the rather high degree of poverty turnover from one year to another, most poor people, at a given time, experience a fairly long spell of poverty before leaving it. In more recent studies, authors have presented hazard models for transitions into and out of poverty (Hill *et al.*, 1998; Stevens, 1999). Questions of persistence and transience have been addressed by incorporating unobserved heterogeneity components. The results highlight the importance of taking multiple spells into account.

Another approach to taking time into consideration within poverty measurement has been to construct measures of long-term poverty either by summing income over a span of years to calculate a more permanent poverty threshold (e.g. Duncan and Rodgers, 1991), or by simply summing poverty prevalence over several years and defining the permanently poor as those who are poor in most of the annual observations (e.g. Devine *et al.*, 1992; Hill, 1981). While these measures give a good impression of poverty persistence, they are less suitable for multivariate analyses of poverty transitions.

A further approach used in research on income dynamics has been to link the extent of mobility to the degree of income inequality. This raises questions as to how much of the inequality in incomes is merely temporal variation and thus decreases if we expand the time unit from the ordinary annual snapshot to a measure of longer run income (for a recent study see Aaberge *et al.*, 1999).<sup>1</sup> A relatively high degree of cross-sectional inequality could be regarded as more sustainable provided everyone has a possibility to climb up the income ladder, and provided one has a high degree of mobility within the income distribution. On the other hand, the same degree of inequality coupled with a rigid structure of immobility is more likely to result in problems associated with social exclusion, two-thirds societies, etc., thereby also having an obvious social policy relevance.

Our methodological approach follows in the footsteps of Bane and Ellwood (1986) by analysing spells of low income in Sweden between 1974 and 1991. Earlier studies have underlined that, besides the obvious influence of earnings and labour-market characteristics, family composition changes are of great importance. We will therefore study, in particular, how transitions into and out of low income are associated with family events.

### Research questions about state, labour market and family impact

The main questions raised in this chapter concern entry into and exit out of low-income states. In particular, we will look at how demographic and labour-market events influence these transitions. As a first approach to this topic, we will look at the degree of poverty persistence *per se*. There are a number of fashionable accounts of the structure of social stratification in postindustrial societies that make implicit or explicit claims about the growing persistence of inferior living conditions for a minority of the population. In the US, this discussion has partly centred on inner-city problems, poverty among the employed, and the issue of a disappearing middle class. In Europe, the focus is more on long-term unemployment and concepts such as the two-thirds society (Headey *et al.*, 1994) and the issue of social exclusion (e.g. Berghman, 1996). This raises the obvious empirical question of the extent to which we can find such persistence in Sweden.

Our second, and major, set of questions concerns entries into and exits from relative poverty and how these are linked to family changes and positions in the labour market. In particular, we will scrutinise how, and to what extent, such effects differ between women and men. For example, there is a large body of evidence indicating that various family events are more important for women's than for men's economic well-being. Thus, for women, divorce tends to have a more detrimental income effect than for men, whereas marriage has often been seen as a key factor in exiting poverty. Such patterns have been observed in earlier Swedish research (e.g. Fritzell, 1990; Gähler, 1998), but have also been observed for other countries, e.g. Germany and the US (DiPrete and McManus, 1998), or Great Britain (Jarvis and Jenkins, 1997). Consequently, we expect family changes to be more linked with entries into and exits from relative poverty for women than for men.

In the present study, the effects of labour-market behaviour are more indirectly measured than is the case in most poverty analyses. The standard method in studying poverty dynamics has been to compare, for example, the impact of an earnings increase by the head of household to that of a family event on the chance of climbing out of poverty (see for example Bane and Ellwood, 1986; Jenkins, 1998). Instead, we will measure labour-market position in terms of participation and class, which is of course related, but not necessarily identical, to earnings. The structure of our data set allows measurement of these positions from a strictly individualistic perspective. Thus, for men, labour-market position is measured independent of the wife, and the labour-market position of women is measured independent of the husband. Due to gender differentials in earnings and labour supply, we predict a reverse pattern for men and women concerning the importance of labour-market position. In other words, the effects of labour-market position are assumed to be stronger for men than for women, since a woman's economic status is more likely to be influenced by the labour-market position of the husband than is the husband's status by the wife's position.

A third overall question concerns the effectiveness of the welfare state in smoothing income trajectories over the life-course. As mentioned above, it seems likely that a major part of welfare state redistribution (taxes and transfers) is concerned with intrapersonal redistribution. Different parts of the benefit system have as explicit goals the smoothing of life-course income variability resulting either from demographic or labour-market events, i.e. what is often referred to as horizontal redistribution. We will make an analysis of how the Swedish welfare state works by comparing results from different models in which our basic income data are shifted between a market (pretax and pretransfer) definition and a post-tax and post-transfer definition (see below). As a first overall hypothesis, we expect smaller effects in the models in which we take welfare state redistribution into account compared to the effects in the 'market models'. In particular, we suggest that the welfare state should counterbalance the risk of falling into relative poverty depending on family circumstances. In other words, the welfare state should dampen income variability that reflects life-cycle position. We believe that this effect should be more pronounced when analysing the risks of entering as opposed to exiting relative poverty. Roughly speaking, the argumentation underlying this expectation is that the intention of many welfare state programmes is to prevent income losses due to family changes leading to higher needs, such as the birth of a child, rather than to keep families in low income when, for example, needs become lower when a child leaves the family.

### Data, methods and variables

In keeping with most chapters in this volume, we base our analysis on data from the Swedish Level-of-Living Survey (*Levnadsnivåundersökningen*, LNU). Since the general structure of these data is described in Chapter 11, we will restrict ourselves to describing the income data that are the focal point of this chapter. It is clearly difficult, using survey methods, to collect retrospective

data on personal or household income, and this was not attempted in the 1991 LNU. However, the Swedish person number system, which assigns every inhabitant a unique means of identification for all transactions with the state, gives us the opportunity to match annual income data from tax records and other official registers to each individual (including spouses of respondents) in the survey.

### *The measurement of income*

The annual household income data we use pertain to those aged 26–64 in 1991, and their income is measured from 1974 to 1991. In order to avoid the possibly misleading effects of income variation among younger people (when they enter and leave full-time or part-time education), we start our analysis at the age of 26. This means that we have a sample of those born between 1927 and 1965 (though we observe the younger cohorts for a shorter timespan, see below).

Our basic measure of income is based on total after-tax income or the sum of such incomes for spouses. This income includes, where relevant, the three major non-taxable transfer payments (in Sweden many income transfers are taxable), namely housing benefits, child benefits and income maintenance for single parents.<sup>2</sup> This measure will henceforth be labelled 'disposable income' (or rather, equivalent disposable income), even though some minor transfers normally covered by this concept are left out.<sup>3</sup> In order to take account of differences in household size and composition, all incomes are adjusted with an equivalence scale. The reason for using an equivalence scale is that needs differ depending on various factors related to household structure. The scale we adopt considers only family size, and has recently been used in several income distribution studies. It is simply the square root of the number of persons within the household (see Atkinson *et al.*, 1995).<sup>4</sup> This scale, for example, assumes that a four-person household needs twice the disposable income of a single-person household in order for the two households to have the same equivalent income. All incomes have been adjusted to the price level in 1980, i.e. changes are expressed in real rather than monetary terms.

Since we will focus on transitions in the lower end of the income distribution, we must construct a division line – a threshold – to distinguish low income. Our strategy here is to use a fixed (real) value for all years. This value is derived from the complete sample of households with respondents aged 26–64 in 1980, which is representative of the Swedish population. From an analysis of these cross-sectional income data, we have drawn the line at the first decile value. This threshold is then used for all years. We do not calculate calendar-year-specific thresholds because the average age in our sample increases over calendar years. In 1973, our oldest respondents are 46 years old, and the age range increases successively in the following years. By using the fixed threshold, we avoid a possible confounding influence from the special age pattern in our data.

In order to count only non-trivial income changes around the threshold as low-income exits or entries, we have made a further qualification: only changes that result in an income level of at least 110 per cent of the threshold are counted as exits from relative poverty (cf. Duncan *et al.*, 1993; Jenkins, 1998). The same strategy, basically, is followed in the analysis of entry into poverty, i.e. the

drop in income must, in order to be counted as an entry, result in an income level of no more than 90 per cent of the threshold. As for the threshold itself, it should further be stressed that our 'poverty' line is fairly generous. In other words, according to standard methods used in income poverty research, a rather substantial fraction of those we categorise as having a low income would not be counted as relatively poor. The 10 per cent threshold we use for 1980 corresponds approximately to 70 per cent of the median income for that year.

At this point, we should say something about the concept of poverty as it relates to our analysis. Although we would argue that all income poverty thresholds could be criticised on the grounds that it remains to be proved whether there is a specific qualitative dividing line distinguishing the poor from the non-poor, we prefer to work with the concept of low income rather than poverty *per se*. The analysis can still be said to concern exits from and entries into a state of meagre income, and for readers who are comfortable with the concept of relative income poverty, it can still be seen to concern falling into and climbing out of relative poverty, albeit with a fairly generous poverty line.

As mentioned above, we will also examine results based on a more exclusive income concept, namely what will be referred to as equivalent household market income. This concept includes earnings (for both spouses in the case of couples), but also income from capital, capital gains, and self-employment. It should also be noted that it includes a number of earnings-related transfers, such as sick pay, parental leave payments and unemployment compensation. Therefore, strictly speaking, it is not income before all transfers (in Swedish the concept is known as *sammanräknad inkomst*). From this income measure we have then created a low-income category using the same income threshold as in the case of equivalent disposable income, and followed the same procedures as discussed above when measuring exits from and entries into the low-income spells. We stated earlier that, when comparing the outcomes of our analyses with these two different dependent variables, we expect that effects will generally be smaller when the disposable income as opposed to the market income measure is used. We can now qualify this statement. Given the fact that some market-related transfers are already included in the measurement of market income, we expect this 'equalisation' to be mainly visible when discussing family events and states, whereas our definitions presumably only lead to minor changes in the effects of various variables related to the labour market.

As in all analysis of change, the issue of measurement error becomes extremely important. To minimise error, we have performed considerable inspection and correction of our data before proceeding with the analysis.

### *Methods*

As our analysis is based on yearly household income, transitions in and out of low income can only occur from one year to another during the 18 years of observation. We estimate discrete time event history models for entry into low income and exit from low income (Arjas and Kangas, 1992; Yamaguchi, 1991). Let  $t_i = 1, 2, \dots$  denote the discrete time points when an individual is at risk for the event in question. The hazard at  $t_i$  is the conditional probability of having the event at  $t_i$  if the event did not happen prior to time  $t_i$ , that is:

$$\lambda(t_i) = P(T = t_i | T \geq t_i) \quad (9.1)$$

The logit of the conditional probability at  $t_i$  (9.1) is expressed as a linear function of the time-independent and time-dependent covariates  $X(t_i)$ :

$$\ln \left( \frac{\lambda(t_i | X(t_i))}{1 - \lambda(t_i | X(t_i))} \right) = \alpha_i + \sum \beta_k X_k(t_i) \quad \text{or} \quad (9.2)$$

$$\frac{\lambda(t_i | X(t_i))}{1 - \lambda(t_i | X(t_i))} = \exp(\alpha_i) * \exp(\sum \beta_k X_k(t_i)) \quad (9.3)$$

$\exp(\alpha_i)$  gives the odds for the conditional probability of having an event at  $t_i$  for an individual with the covariate vector  $X(t_i)$  equal to zero. In the tables, we list the exponentials of the estimated parameters  $\beta_k$ . An increase in the covariate value  $X_k(t_i)$  by one unit implies a change in the odds of having an event at  $t_i$  by a factor of  $\exp(\beta_k)$ .

In the models, time is duration since entry into the current state or, for the first episode of an individual, since age 26. Thus the duration dependence in the episodes that start at age 26 may differ from the duration dependence in other episodes. We took this into account in our initial model estimations by including an indicator for episodes starting at age 26. We later discarded this indicator from the models because it had no effect once an indicator for earlier low-income experience was added to the model. Another problem arises from the design of the sample. At the start of our observation period in 1973, many individuals were in the middle of an episode of low or 'non-low' income. We do not know when these episodes started and cannot determine their durations. Without additional information, we have little choice but to exclude these episodes from the analyses (Guo, 1993; Hamerle, 1991; Heckman and Singer, 1984).

Some individuals experience several episodes of low income. We apply a modulated renewal process by assuming that the multiple spells for each individual are conditionally independent and identically distributed given the covariates in the model (Yamaguchi, 1991). For an earlier application of this model in poverty research, see Hill *et al.* (1998). When looking at an individual, we take possible dependence among several spells in or out of low income into account by including an indicator for earlier low-income experience. We have also estimated models with individual unobserved heterogeneity terms. The results show rather small changes in our parameters of interest.<sup>5</sup>

Several covariates in our models may vary by calendar year. The rather crude measurement of time implies that many changes that actually occurred in succession are reported as simultaneous changes in our data. For example, if a child is born into a household, the household income changes in the same year according to the new household composition. Likewise entry into low income often occurs in the same year as, say, a divorce, because for the year of the divorce the household income calculation is based exclusively on the respondent's income. This simultaneity causes problems when we study entries into or exits

out of low income, because the covariates must be based only on information available at or prior to time  $t_{i-1}$ . We therefore split the analysis into two parts.

Firstly, we present the odds for transitions into and out of low income that occur *simultaneously* with changes in household composition. In this part of the study, the estimated effects of the family situation can result from the mere change in the number of household members, as explained above. In addition, changes in the labour market may occur in the same year and cause the low-income transition. For example, a woman may reduce her labour-market participation in connection with childbirth. The potential drop into low income is then not only due to the increased number of household members, but also to the income loss.

Secondly, for transitions into and out of low income that do not occur simultaneously with changes in family composition, we estimate the event history models. The measurement of the covariates refers to the year  $t_{i-1}$  and earlier. In these models, the effects of the family situation should reflect changes in the labour market that can be regarded as a reaction to the needs of the family, or to constraints in relation to the labour market. This may comprise the totality of changes in hours worked, job changes, and a rise or drop of income in the same job for any spouse.

A change in household composition at time  $t_{i-1}$  can stimulate a further change in household composition at time  $t_i$ . For example, a marriage in year  $t_{i-1}$  may be followed by childbirth in year  $t_i$ . If entry into low income also occurs at  $t_i$ , it is analysed as a simultaneous change in the family and the household income in the first part of the analyses, but it is not considered in the event history models.

#### **Definition of demographic and labour-market variables**

The information on household composition is mainly taken from register data. It indicates the presence of a partner and/or children in the household at a certain time during the calendar year. Short-term relationships occurring between two adjacent measurement points are not visible in the data. The same is true for children who left the household within their first year of life. Additionally, separations occurring between measurement points cannot be identified from the register data if a new partnership had already begun at the next measurement point. From a comparison with the biographies collected in the LNU data, we know that this only affects 30 cases.<sup>6</sup>

Income information for household members is available for married and unmarried couples with children and for all married couples. For childless consensual unions, the register data do not normally provide information about the partner. To overcome this problem, we use the biography schema in the LNU and find 4,292 person-years (out of a total of about 34,800 person-years) in which a respondent has a partner according to the biography schema but no partner according to the register data. If an unmarried respondent was cohabiting at one of the interviews, the information on the partner's income is available. This means that we have complete income information for the partner for 2,771 person-years, and the household income and the equivalence scale are adjusted accordingly. In the remaining cases, our measure of household income is based on the respondent's income alone. We do not know how this shortcoming affects

our results. For some respondents, it may even give better information about low-income transitions, because survey data suggest that Swedish unmarried couples without children are less likely than married couples to pool their incomes (Bernhardt, 1998).

As mentioned above, the information on family events is mostly taken from the register data. Due to the construction of the register data, there may be a lag in the timing of information on certain family events. An advantage of using register data is the absence of recall errors in information on household composition.

While most income information is available at the household level, other information, such as employment status and social class, is available only for the respondent. In some cases, therefore, we cannot include characteristics of all household members, just those of the respondent. The information on respondents' employment status and social class is taken from the survey and based on monthly measurements.

The variables included in the analyses of an event at time  $t_i$  are listed below.

- *Duration.* The duration of the current episode including year  $t_{i-1}$ . The variable is grouped into four categories that differ for the two types of transitions.
- *Age.* Measures the age of the individual at  $t_{i-1}$ . The variable is categorised into: upto 30, 31–35, 36–40, above 40 years of age.
- *Period.* Three roughly equal periods (in terms of length) are distinguished: upto 1980, 1981–85, 1986– for the year  $t_{i-1}$ .
- *Previous low-income spell.* Dummy variable with value one for the second and higher order spells in low income, value zero for no previous low-income spell, and missing value for the first episode(s) of left-censored income histories.
- *Marital status.* The variable has four categories: the individual is married/cohabiting in both year  $t_{i-2}$  and  $t_{i-1}$  (reference category); the individual is single in years  $t_{i-2}$  and  $t_{i-1}$ ; the individual starts a marriage or cohabitation in year  $t_{i-1}$ ; the individual ends a marriage or cohabitation in year  $t_{i-1}$ .
- *Number of children.* Number of children in the household in year  $t_{i-1}$ .
- *Childbirth.* Dummy variable: at least one new child, typically via birth but also possible via cohabitation, joins the individual's household in year  $t_{i-1}$ .
- *Child leaves.* Dummy variable: at least one child leaves the household in year  $t_{i-1}$ .
- *Employment status.* The variable has basically three categories: gainfully employed (reference); unemployed; other non-employed. Note that this variable only refers to the individual and is measured as shares of the year  $t_{i-1}$ .
- *Social class.* The class of the (gainfully employed) individual according to the EGP class schema (Erikson and Goldthorpe, 1992). The following seven categories are separated: upper service class (I); lower service class (II); routine non-manual employees (III); self-employed and farmers (IV); skilled manual workers (V–VI); unskilled manual workers (VII) (reference); those not classified. This variable is also measured as shares of the year  $t_{i-1}$ .<sup>7</sup>

Finally, it should be mentioned that separate analyses for women and men will be conducted since we assume, as discussed above, that the impact of different factors will vary systematically with gender.

## Empirical results

We begin with some basic description of the income measures in our sample. In Figure 9.1a, the average (equivalent) market and disposable income measures are shown for 18 consecutive years. The first observation is the rather large difference between the means of our two income measures. This is basically produced by two factors. First, some transfer income (see above) is already included in market income. Second and more importantly, we are following the

Figure 9.1a Sample means of household equivalent market and disposable income by calendar year (in hundreds of SEK at 1980 prices)

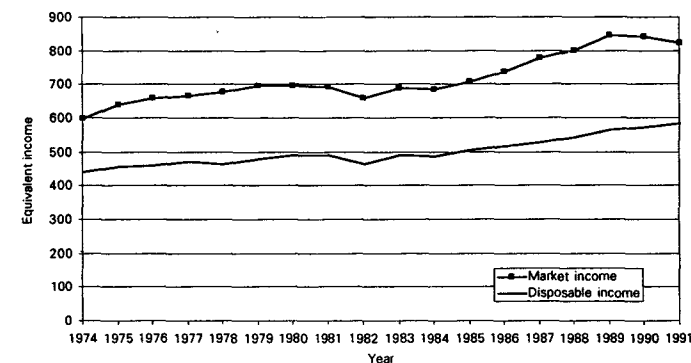
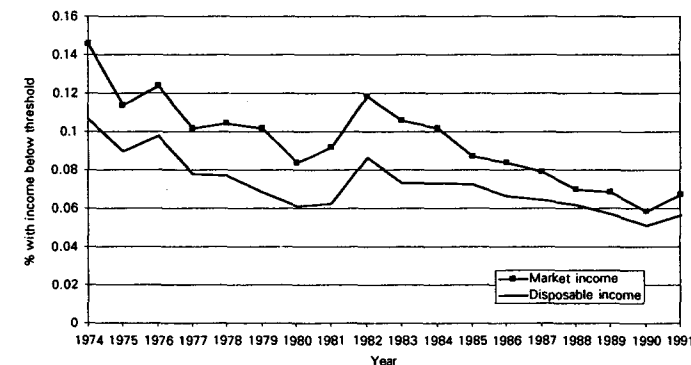


Figure 9.1b Per cent with low income according to household equivalent market and disposable income by calendar year



income trajectories of a sample of individuals during their prime years of labour-market participation. As part of the welfare redistribution, a large part of the tax revenue is taken from these age groups and given to the elderly (and to a lesser extent to young adults). Both these factors will of course lead to an underestimation of the full impact of the welfare state or, to put it differently, we follow individuals over that part of the life-course in which most people are 'givers' and not 'receivers'. It is important to stress that we present Figures 9.1a and 9.1b purely as a first description of our data. As already mentioned, the specific character of our sample means that, from these figures, one cannot draw inferences about changes in average income for Sweden or about trends in the size of relative poverty during this period.

Our next step is to identify the proportion of our sample with income below the threshold value. In Figure 9.1b, we show the proportion of individuals belonging to the low-income category according to our definition. Because the market income average is much higher than that of disposable income, one might imagine that many fewer persons would be categorised as relatively poor with respect to their market income than with respect to their disposable income. As shown by Figure 9.1b, however, the difference is quite small. The proportion with low income is only slightly lower for the market income measure.<sup>8</sup> The trends revealed by both graphs are fairly similar, indicating that, on average, incomes have increased over the years. This obviously holds also at the lower end of the distribution, as the share of the sample with low income also decreases over the years.

So far we have described our sample by giving the mean income and low-income share over calendar years. We now change our perspective and examine flows into and out of low income. Henceforth, the units of observation are episodes in and out of low income. One person can contribute several episodes to the sample. Table 9.1 contains the frequency distribution of the number of

Table 9.1 Distribution of low-income spells per person.

	Market income		Disposable income	
	Frequency	%	Frequency	%
No spell	2,759	75.1	2,513	68.4
1 spell	720	19.6	911	24.8
2 spells	160	4.4	204	5.6
3 spells	25	0.7	35	1.0
4 spells	8	0.2	7	0.2
5 spells	0	0.0	2	0.1
Total	3,672	100	3,672	100

spells in low income per person in the sample. During our study period, 75 per cent of all individuals never have a market income below the threshold. Another 20 per cent experience one low market income episode. About 5 per cent have several episodes with low market income. As predicted, for disposable income, we find more spells of low income due to our threshold choice. Only 68 per cent of all individuals never have a low disposable income and about 7 per cent experience more than one low disposable income spell.

Figure 9.2 gives the survivor functions for entries into and exits out of low income. They are based on spells of all orders, but spells starting in or before 1974 are excluded because they are left censored. While the exit rates are nearly identical for both income types, we find a slightly higher risk that disposable income will fall below the threshold than is the case for market income. According to the survivor function, 10 per cent of all spells end in low income within the first three years of duration. For longer durations, entry into low income decelerates further. After 17 years, 20 per cent of the spells have ended with a transition to low income. Exit from low income occurs much faster. More than 40 per cent of all spells last only one year. The median survival time is 1.5 years for both income types. The probability that a low-income spell will end before the eighth year is 0.9.

Before turning to our multivariate analysis, we show the degree of persistence in itself. Figures 9.3a and 9.3b show the turnover of the low-income group in each calendar year for our two income types. Even though there are some ups and downs in these figures there is no obvious trend. If anything, the movement out of low income is somewhat higher in the later period. Preliminarily, we might give a negative answer to our first question: the chances of upward mobility, in this sense, have not decreased over time.

Figure 9.2 Survivor functions for entry into and exit from low income

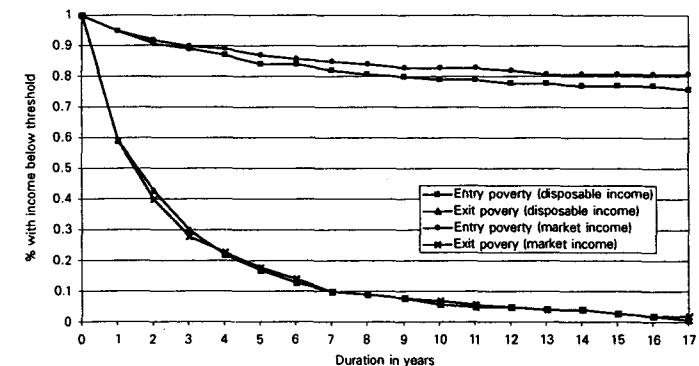


Figure 9.3a Exits from low disposable income: proportion not poor in next year of all poor in current

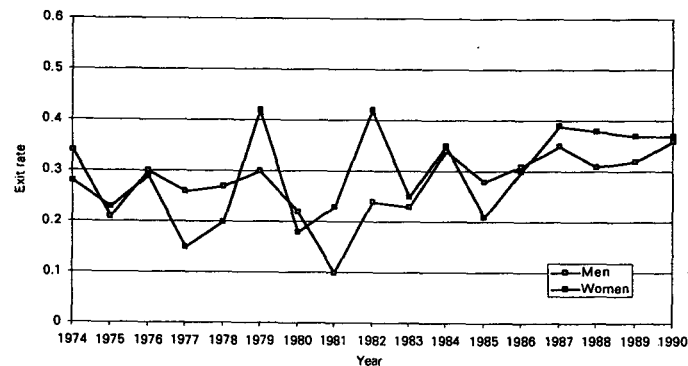
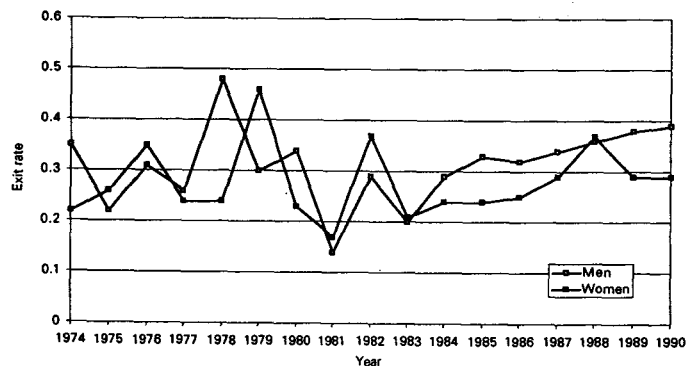


Figure 9.3b Exits from low market income: proportion not poor in next year of all poor in current



### Simultaneous changes in family and income

As described above, our first analyses refer to low-income transitions that occur simultaneously with changes in the family. From Table 9.2 Panel A (market income) and Panel B (disposable income), we see that the bulk of all transitions into and out of low income do not coincide with a family event. However, 22.1 (17.7) per cent of men's and 31.5 (26.6) per cent of women's entries into low market (disposable) income occur in the same year as a change in household composition. Most of the entries into low income occur simultaneously with the birth of a child or a child leaving the home, and for women also with divorce (for market income). As regards exits, the most common simultaneous family changes are marriage, the birth of a child and a child leaving the home.

The distributions in Table 9.2 show the number of low-income transitions

Table 9.2 Distribution of entries and exits of low income by simultaneously occurring family events (%).

#### Panel A: Market income

	Low market income			
	Entry		Exit	
	Men	Women	Men	Women
No change in family	77.9	68.5	77.3	69.5
Marriage, child no change	3.4	2.8	6.9	7.7
Divorce, child no change	2.1	8.0	0.7	0.7
New child, single both years	0.9	5.6	0.7	0.0
New child, partner both years	8.1	9.8	5.3	4.4
Child leaves, no change of partner	6.0	3.5	6.6	12.8
Child and partner change	1.7	1.7	2.6	4.9
n = 100%	235	286	304	430

#### Panel B: Disposable income

	Low disposable income			
	Entry		Exit	
	Men	Women	Men	Women
No change in family	82.3	73.4	75.2	73.2
Marriage, child no change	4.0	3.8	6.1	5.7
Divorce, child no change	2.0	3.6	3.1	2.4
New child, single both years	0.7	2.5	0.5	0.0
New child, partner both years	5.4	7.9	5.2	5.5
Child leaves, no change of partner	4.3	5.8	7.8	9.4
Child and partner change	1.3	3.0	2.1	3.7
n = 100%	299	365	423	542

occurring in connection with family changes, but they do not tell us whether these numbers are higher or lower than average. To investigate this, we estimate logit models for low-income transitions. Table 9.3 reports the estimated odds ratios for a low-income transition for those with a simultaneous change in family and income relative to when no family event takes place. Apparently, the odds for entries are somewhat higher in connection with all family events apart from a child leaving the household. For entry into low income, the odds ratios for most family events are higher for women than for men. This could be seen as supporting one of our initial hypotheses, namely that women are more influenced by family composition changes than are men.

Examining the estimated odds in more detail, we find that marriage is connected to entry into low income both for men and for women, and the estimated odds are even higher for women than for men, contrary to our



Table 9.3 Estimated odds ratios for entry into and exit out of low income by simultaneously occurring family events relative to no family events. Results from logit models. Constant term gives odds of entry and exit.

Panel A: Market income

	Low market income			
	Entry		Exit	
	Men	Women	Men	Women
Constant	0.011	0.012	0.431	0.345
Marriage, child no change	2.10**	3.61***	6.96***	6.83***
Divorce, child no change	3.08**	11.66***	0.93	0.29**
New child, single both years	3.99*	21.54***	4.64	0.01
New child, partner both years	1.86**	3.30***	1.00	1.49
Child leaves, no change of partner	1.05	0.60	1.01	2.70***
Child and partner change	3.70**	6.08***	6.18***	8.69***
-2(L <sub>0</sub> -L)	18.8	168.7	32.4	101.7

Panel B: Disposable income

	Low disposable income			
	Entry		Exit	
	Men	Women	Men	Women
Constant	0.015	0.017	0.343	0.411
Marriage, child no change	2.38***	4.66***	5.41***	5.02***
Divorce, child no change	2.92**	4.70***	6.32***	1.09
New child, single both years	2.87	7.08***	5.83	0.01
New child, partner both years	1.14	2.56***	1.34	1.40
Child leaves, no change of partner	0.72	0.91	1.41	2.10***
Child and partner change	2.84**	9.56***	4.16***	5.40***
-2(L <sub>0</sub> -L)	17.6	99.6	51.0	61.0

Note: \* = significant at the 10% level, \*\* = at 5%; \*\*\* = at 1%.

expectation.<sup>9</sup> To some degree the effect could be caused by a reduction in the couple's working hours, as was common in the first half of the last century. If marriage included removal of one of the partners from employment, this could also cause the higher low-income odds. Men and women should be affected in the same way by this decrease in labour-market participation. After further examination of the data, we find no obvious explanation for the higher odds of entering low income on marriage. In constructing a possible explanation, it may be important to look at outcomes of partner selection patterns. It may be the case that women who marry men with low incomes more easily drop into low income than do men who marry women with low incomes. This is because men's incomes are more often high enough to prevent the couple from falling

below the income threshold. Further studies are necessary to evaluate this hypothesis.

Divorce has the expected negative consequences, especially for women, and the higher odds among women should be partly due to the children usually staying in the mother's household, but of course also due to the fact that the incomes of the former husbands normally exceed those of the wives. Furthermore, becoming a lone parent is often connected with entry into low income, especially among women. Note though that the estimate in Table 9.3 only refers to non-cohabiting persons with a new child. This situation is quite rare. Single motherhood is largely achieved through divorce, not by having a child while single. But, even if a child is born into a union, household income often drops below the low-income threshold, possibly due to the simple increase in household members or to changes in hours worked. The estimated odds are higher among women, but interestingly, both men's and women's odds are about 1.5 if respondents' age and labour-market status in the previous year are taken into account (results not shown). Simultaneous changes in partnership composition and number of children are connected with high odds of low-income transitions for both sexes, but there are too few cases in this category to discuss single constellations.

Exits from low income occur for both sexes in connection with marriage, the odds being about the same for men and for women. Divorce has disparate effects on men and women in low income. Women often exit low income when a child leaves the home. Interestingly, childbirth does not lower the odds of leaving low income for men or women. This could imply that many children born into low-income households are planned, and the parents expect to be able to afford the child, that is they anticipate a change in labour-market participation or income level at the time of childbirth.

Of particular interest are also the changes in the odds ratio when comparing the risks of entries into low-market income to those of disposable income. When welfare state redistribution is taken into account, the odds ratios of simultaneously experiencing either childbirth for single mothers or divorce and a fall into the low-income category are lower. In both cases, the odds ratios decrease by about two-thirds. For women, the welfare state transfers obviously balance some of the negative change in income associated with childbirth and divorce.

### Entries into low income

So far we have only reported the incidences of transitions into and out of low income that occur simultaneously with family changes. We now turn to the estimation of event history models. In line with our earlier discussion, we only take into account independent factors preceding exits and entries by at least one year. In Table 9.4, we report the results from six discrete time models concerning the odds for entry into low market income. All models include the basic measures of age, period and duration. The set of variables is extended in the first model by the family variables, in the second model by the indicators of labour-market status, and in the third model by variables on both family circumstance and employment status. Separate analyses for men and women are reported.

Table 9.4 Discrete time models for entry into low income for men and women (market income, odds ratios).

	Men			Women		
	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Baseline odds	0.014	0.028	0.012	0.014***	0.008***	0.004***
Duration (ref. years 1 and 2):						
3-5 years	0.34***	0.37***	0.38***	0.58***	0.63**	0.62**
6-10 years	0.17***	0.22***	0.23***	0.32***	0.36***	0.36***
>10 years	0.09***	0.12***	0.13***	0.21***	0.22***	0.23***
Age (ref. up to 30 years):						
31-35 years	1.72*	1.24	1.30	1.00	1.09	0.96
36-40 years	1.35	0.94	0.94	0.72	0.83	0.73
>40 years	2.42**	1.36	1.48	1.11	0.84	0.94
Period (ref. up to 1980):						
1981-85	0.91	0.96	0.96	1.15	1.20	1.21
1986-91	0.69	0.74	0.75	0.87	0.87	0.89
Previous low-income spell (ref. no):						
Yes	2.91***	2.29***	2.26***	2.17***	2.11***	2.00***
Missing	1.51	1.29	1.33	1.93**	1.81*	1.76*
Marital status (ref. married/married):						
Single/single	3.32***		3.34***	1.98***		2.63***
Single/married	1.13		1.03	0.63		0.69
Married/single	2.05		1.80	1.71		2.40
Number of children in household	1.26**		1.24**	1.31***		1.33***
New child in household	1.61		1.69*	1.52		1.29
Child leaves household	1.65		1.71	0.47		0.51
Employment status (ref. Class VII):						
Unemployed		2.23	2.01		20.13***	21.44***
Other, non-employed		3.50***	3.46***		4.92***	5.21***
Class I		0.53	0.56		2.48*	2.53*
Class II		0.49	0.52		1.47	1.45
Class III		0.87	0.88		2.30**	2.29**
Class IV		3.82***	4.09***		8.78***	10.65***
Class V + VI		0.69	0.70		2.73**	2.68**
Other employment		2.44	2.13		7.56***	7.60***
Number of person-years	8,551		8,243			
Number of events	142		144			
-2(L <sub>0</sub> -L)	185.7	226.1	258.4	97.3	127.6	154.8
df	16	18	24	16	18	24

Note: \* = significant at the 10% level, \*\* = at 5%; \*\*\* = at 1%.

Starting with duration, we do indeed find strong effects for both men and women, whereas somewhat surprisingly the age variable turns out to be of no importance. It should be mentioned that the duration variable 'absorbs' some of the age effects, since longer durations can only be observed for persons at higher ages.<sup>10</sup> For both sexes, having had a previous spell of low income turns out to be clearly indicative of the risk of falling into the low-income group. The importance of earlier spells stresses the fact that, in poverty analyses, one should not focus solely on duration, but also on the incidence of repeated movements into and out of poverty (cf. Stevens, 1999; Walker, 1994). Contrary to our expectation, the family situation affects men and women in a similar way. Compared to men who are married both years, men who are single both years have odds that are three-and-a-third times as high of entering low income. For women, the comparable figure is around two. The odds for recently married men and women as well as recently divorced men lie between those of the stable groups. Recently married men and women have a much lower probability of falling into low market income compared to those who remain single. The estimated odds for recently separated men and women are quite high, but not significantly different from the reference group. Thus, overall, it does not seem to be the event of partnership formation as such, but rather the state of having a partner that reduces the risk of entering a low-income spell. For both men and women, we observe higher odds for low income if the household contains any children. For each additional child, the odds increase by about 30 per cent.

The employment status of the year preceding the beginning of a low-income spell has somewhat different effects for men and for women. For men, the highest odds are for unemployed, other non-employed, self-employed and those unclassified, but gainfully employed, in our data (although not all of them are statistically significant). The fact that the self-employed have such a high risk is partly dependent on well-known difficulties in correctly grasping their economic standard by measuring income, but may of course also be related to the more generally turbulent economic situation of being self-employed. Then follow the unskilled manual workers (set to one in the models). They have a substantially lower risk than the self-employed, but at the same time a higher risk than men in all other positions in the class structure. It is perhaps surprising that we do not find a more clear gradient among the employed categories, but remember that we are focusing on the lower end of the income distribution and including all persons irrespective of whether they participate in the labour market or not. If, instead, we were to analyse the chance of entering the higher end of the income distribution, it seems likely we would find stronger variation among classes I, II, III, V and VI.

For women, the estimated differences in low-income entries are quite similar concerning the high risks of the unemployed, the non-employed, the unclassified employed and the self-employed. Contrary to men, however, unskilled female manual workers have the lowest odds of entry into low income among the remaining groups.

Finally, one should bear in mind that we probably underestimate the differences among employment states, since some labour-market-related transfers are already included in the measurement of market income. Obviously this does not totally offset the higher odds for those not participating in the labour market, but if we had used a more exclusive measure of market income, it would certainly have led to an additional increase in the relative odds for these categories.

We now turn to our disposable income measure (Table 9.5). The structure of Table 9.5 is identical to that of Table 9.4, but we are now basing our definition of low income on disposable income, i.e. subtracting income taxes and adding various transfers mostly related to the arena of the family. Without going into detail on all estimates in this table, we note several important differences. We predicted earlier that the results should show smaller family effects when comparing the estimates in these models with those reported in Table 9.4, and this is supported to some extent. For example, marital status is of less importance. For men, the difference between the odds of individuals who are single in both years and those of the stable married is smaller compared to Table 9.4, and for women there is hardly any difference between the two groups. Number of children no longer has a significant effect on entry into low income, either for women or for men. On the other hand, we find that a new child in the household exerts a stronger influence on low-income entries than in the previous models. Finally, for men, the pattern of the effects of employment status is fairly similar when comparing Tables 9.4 and 9.5. Considering the transfers added to disposable income that are already included in our measure of market income, this result is not so unexpected. For women, on the other hand, the pattern of the effects of the employment variables changes and becomes more similar to that of men.

### Exits from low income

How, then, do the probabilities of climbing out of the low-income group differ? In Table 9.6 we report discrete time models of this process in the same manner as above, starting with market income. First, one should note that, since most people in most years do not belong to a low-income household, the analyses are based on a much smaller number of person years compared with the earlier analyses. Starting with duration, we find a fairly strong and expected pattern. Most people tend to end a low-income spell rather quickly, and the exit probabilities decrease strongly with duration. On the one hand, the effects of duration could be a true state dependence as, for example, indicated in the Lewis culture of poverty thesis (Lewis, 1966), according to which a separate culture of poor people prevents them from claiming or achieving the wealth that is available to others. On the other hand, the duration effects could reflect a selection process that makes leaving low income easier for people with more desirable resources than for those with fewer resources. On the basis of our models, it is not possible to distinguish between the two explanations, but the weakening of the duration effects in models with an unobserved heterogeneity term indicates that part of the duration effects is indeed related to unobserved

Table 9.5 Discrete time models for entry into low income for men and women (disposable income, odds ratios).

	Men			Women		
	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Baseline odds	0.021***	0.028***	0.018***	0.020***	0.016***	0.014***
Duration (ref. years 1 and 2):						
3-5 years	0.49***	0.53***	0.54***	0.69**	0.80	0.76
6-10 years	0.24***	0.27***	0.28***	0.29***	0.38***	0.36***
>10 years	0.13***	0.16***	0.18***	0.24***	0.33***	0.31***
Age (ref. up to 30 years):						
31-35 years	2.02***	1.64*	1.74**	0.98	0.92	0.93
36-40 years	2.28***	1.63	1.70	1.05	0.96	1.08
>40 years	2.79***	1.77*	1.82*	0.98	0.69	0.85
Period (ref. up to 1980):						
1981-85	0.82	0.86	0.86	1.72**	1.83***	1.79***
1986-91	0.61**	0.66*	0.66*	1.17	1.15	1.13
Previous low-income spell (ref. no):						
Yes	1.85**	1.43	1.49	1.41	1.44	1.42
Missing	1.22	1.13	1.18	1.61	1.52	1.52
Marital status (ref. married/married):						
Single/single	2.14***		2.11***	1.16		1.38
Single/married	0.98		0.88	0.97		1.02
Married/single	1.52		1.48	0.29		0.38
Number of children in household	1.05		1.03	1.10		1.07
New child in household	1.71**		1.78**	2.51***		2.01***
Child leaves household	1.81*		1.80*	0.47		0.48
Employment status (ref. Class VII):						
Unemployed		2.38	2.02		5.75*	4.94*
Other, non-employed		3.70***	3.60***		3.37***	2.95***
Class I		0.78	0.81		1.47	1.43
Class II		0.43**	0.44*		0.63	0.62
Class III		0.75	0.74		1.15	1.13
Class IV		3.58***	3.78***		3.24***	3.33***
Class V + VI		1.02	1.06		0.54	0.54
Other employment		2.59*	2.38*		3.09**	2.93**
Number of person-years	8,198			8,029		
Number of events	186			187		
-2(L <sub>0</sub> -L)	150.0	204.1	226.1	99.7	128.2	148.8
df	16	18	24	16	18	24

Note: \* = significant at the 10% level, \*\* = at 5%; \*\*\* = at 1%.

Table 9.6 Discrete time models for exit from low income for men and women (market income, odds ratios).

	Men			Women		
	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Baseline odds	1.067	0.864	0.832	1.55*	0.595*	1.80*
Duration (ref. year 1):						
Year 2	0.58**	0.62**	0.61**	0.56***	0.53***	0.57***
Year 3	0.33***	0.35***	0.33***	0.69	0.60**	0.70
Later years	0.20***	0.20***	0.20***	0.45***	0.33***	0.45***
Age (ref. up to 30 years):						
31-35 years	0.70	0.59*	0.63	1.01	0.89	1.12
36-40 years	1.16	0.94	1.03	0.94	0.79	1.03
>40 years	1.13	1.02	1.04	1.18	1.88**	1.54
Period (ref. up to 1980):						
1981-85	0.76	0.76	0.78	0.82	0.86	0.81
1986-91	1.26	1.20	1.26	1.10	1.17	1.11
Previous low-income spell (ref. no):						
Yes	0.70	0.72	0.72	1.16	0.93	1.01
Missing	0.93	0.90	0.98	0.79	0.78	0.71
Marital status (ref. married/married):						
Single/single	1.09		1.12	0.50***		0.47***
Single/married	4.02**		4.30**	0.52		0.46*
Married/single	0.81		0.82	0.33***		0.31***
Number of children in household	0.91		0.93	0.62***		0.62***
New child in household	0.32**		0.30**	1.41		1.47
Child leaves household	0.97		0.89	1.22		1.29
Employment status (ref. Class VIII):						
Unemployed		13.48***	14.57***		1.38	1.54
Other, non-employed		1.08	1.02		0.81	0.66
Class I		1.18	1.34		2.28	2.38
Class II		1.20	1.15		1.88*	1.35
Class III		1.45	1.30		1.01	0.85
Class IV		1.17	1.24		0.80	0.61
Class V + VI		2.08*	2.13*		2.28*	2.03
Other employment		1.21	1.21		1.16	0.82
Number of person-years	680			999		
Number of events	194			242		
-2(L <sub>0</sub> -L)	86.2	78.2	98.5	94.3	61.8	110.2
df	16	18	24	16	18	24

Note: \* = significant at the 10% level, \*\* = at 5%; \*\*\* = at 1%.

respondent characteristics (see also Note 5). The age effects are surprisingly small here as well, but note, once again, that this could partly be a result of the simultaneous estimation of duration and age.

The period effect is basically similar to what was already seen in Figure 9.3. It is not significant in any of the models in Table 9.6. If anything, the point estimate shows an increase in the odds for the latter period. Accordingly, the hypothesis of a higher degree of persistence receives no support.<sup>11</sup>

Turning to the family variables, we find quite different patterns for men and women. For men, the odds of the stable married and stable singles are not statistically different. However, starting a marriage or cohabitation increases the odds of leaving low income by a factor of four, whereas separation has no effect. For women, the stable married have higher odds of leaving low income than do all other groups. A surprisingly low estimate is obtained for those starting a cohabitation, though it is not significantly different from the stable married.

As for the labour-market variables, the high odds of leaving low income among the unemployed may be unexpected. It is, however, not terribly surprising in the Swedish context, where long-term unemployment was unusual in the decades studied in our analysis. Therefore, low income due to unemployment was a rather short-term condition that only very rarely extended longer than a year. Because our employment categories indicate states prior to the event (leaving low income), an individual already unemployed has a high chance of leaving unemployment in the following year and becoming better financially situated. Individuals already gainfully employed and still below the income threshold cannot use that strategy, and it may be relatively more difficult to either increase labour supply (at least for most men who already work full-time) or become upwardly mobile in the class structure. One might wonder, then, why this explanation does not also hold for other non-employed. The most likely reason is that this category largely consists of men who have left the labour market (due to early retirement, etc.). Since the latter state is much more stable than unemployment, the non-employed have a much lower probability of exit compared to the unemployed.

Lastly, we turn to the variation in exiting from low disposable income. In Table 9.7, we find mixed evidence concerning our expectation that the provisions of the welfare state should lead to a redistribution of risks and that we, therefore, should expect lesser effects of family events and states in this analysis than in the market income analysis.

The basic pattern of the effects of marital status does not change, but the differences between groups become somewhat smaller for both men and women. For men, the effect of a new child in the household weakens. Regarding labour-market status for men, we find the same pattern for the unemployed versus others, but observe that the magnitude is much smaller. A plausible reason for the latter finding is that the welfare state takes back via taxation some of the monetary advantages of getting a job, thereby decreasing the difference between the unemployed and all others in our analysis.

Table 9.7 Discrete time models for exit from low income for men and women (disposable income, odds ratios).

	Men			Women		
	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Baseline odds	0.809	0.543**	0.650	0.865	0.685	0.959
Duration (ref. year 1):						
Year 2	0.63**	0.63**	0.64**	0.43***	0.42***	0.43***
Year 3	0.74	0.74	0.74	0.49***	0.50***	0.51***
Later years	0.41***	0.39***	0.41***	0.49***	0.44***	0.49***
Age (ref. up to 30 years):						
31-35 years	1.02	0.89	0.99	1.22	1.18	1.29
36-40 years	0.93	0.78	0.86	1.25	1.10	1.25
>40 years	0.98	0.83	0.90	1.00	1.46	1.26
Period (ref. up to 1980):						
1981-85	0.80	0.78	0.79	1.09	1.21	1.13
1986-91	1.20	1.22	1.19	1.42*	1.61**	1.51**
Previous low-income spell (ref. no):						
Yes	0.76	0.80	0.78	1.18	1.04	1.12
Missing	0.92	1.04	0.99	0.70	0.66*	0.69
Marital status (ref. married/married):						
Single/single	0.73		0.71*	0.76		0.73*
Single/married	1.86		1.88	0.57		0.52*
Married/single	0.55		0.55	0.80		0.81
Number of children in household	0.86*		0.87	0.76***		0.79***
New child in household	0.98		0.96	1.80***		1.86***
Child leaves household	0.81		0.77	1.21		1.32
Employment status (ref. Class VIII):						
Unemployed		5.90***	5.38***		3.01	3.78*
Other, non-employed		1.09	1.11		0.56***	0.58**
Class I		1.33	1.37		1.69	1.91
Class II		1.73	1.89		1.78*	1.52
Class III		1.50	1.43		0.95	0.94
Class IV		1.11	1.13		0.52**	0.50**
Class V + VI		1.71**	1.80**		0.87	0.88
Other employment		1.31	1.49		0.76	0.77
Number of person-years	1,008			1,182		
Number of events	261			338		
-2(L <sub>0</sub> -L)	44.6	47.8	57.4	69.6	82.0	98.0
df	16	18	24	16	18	24

Note: \* = significant at the 10% level, \*\* = at 5%; \*\*\* = at 1%.

## Concluding discussion

We began by posing three research questions in relation to our analysis. The first is quite easily answered: we find no indication of a higher degree of persistence of low income over the years covered by our analysis. The period effects in our exit models are mostly insignificant, although there is a slight tendency for a higher chance of leaving the low-income group in the most recent period covered. Thus, the result runs, if anything, counter to the hypothesis.

The second question referred to the relative importance of the labour market versus the family in explaining transitions into and out of low income. We focused on gender differentials in these respects and hypothesised much stronger effects of our family variables for women and stronger labour-market effects for men. The odds of transitions into and out of low income that occur simultaneously with changes in the household composition support the hypothesis. Women have relatively higher odds of entering low income in connection with divorce and with the arrival of a new child, and a child leaving the home raises women's odds of exiting low income much more than it does men's. For transitions into and out of low income that are not accompanied by changes in household composition, our results are not as easily summarised. We can state with certainty that family events and states are of importance also for men, and that the individual labour-market position is highly relevant also for women. From the previous analyses, it is not clear whether these findings are affected by the rather crude measurement of the timing of changes in income and the family or by the fact that we took only the respondents' labour-market status into account.

Another conclusion from our analyses is that it is difficult to disentangle pure family effects on poverty transitions. Changes in family composition are related to an increased dynamic in many fields of life. It was shown in the logit models that most family events, both for men and for women, are connected with higher odds for a transition into or out of the low-income group. These individuals are probably going through important changes in their lives that also influence their labour-market behaviour and their incomes.

As regards our third general question, we have found several indications that welfare state redistribution is important in intervening in the processes analysed. In general, both the results from the analyses of simultaneous events and from the event history models support our hypothesis that welfare state redistribution systems do indeed smooth income trajectories. For example, the odds ratios of entering low income simultaneously with divorce for women, and with childbirth for both couples and lone parents, are lower when we look at disposable income instead of market income. In the multivariate models, we find substantive changes in the effects when comparing our market models to our post-tax and post-transfer models. Most of them indicate that the welfare state redistribution system in Sweden does indeed serve to equalise the distribution of risks (of relatively low income in our case) that either stem from the market place or from changes in the family sphere (cf. Breen, 1997).

Finally, we would like to stress the importance of the context, in particular, the time period we have covered in this study. The results we have presented

concern a period in which labour-market participation among women gradually increased and the generosity of many welfare state programmes was raised. It is by no means self-evident that these findings on income dynamics also prevailed during the 1990s, a decade which saw a dramatic decline in employment, for both men and women, and important cutbacks in many welfare state transfers.

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### Notes

- 1 In fact, one of the most widely used measures of stability in the distribution of income, the Shorrocks (1978) immobility index, is the ratio of the Gini coefficient of the distribution of longer run (more permanent) income to the weighted average of the annual Gini coefficient.
- 2 We want to express our gratitude to Anders Björklund, who was responsible for collecting and constructing our basic income data file (see further Björklund and Palme, 1997). We have, though, made some modifications to this file.
- 3 The most important income categories left out are educational benefits and social assistance. These income sources are left out because we do not have this information for all years covered by our study. One could take the standpoint that the exclusion of social assistance is a major drawback of our study. One should, however, note that a) on an aggregate level this income source is very small in Sweden during this time period; and b) we do not intend to measure the proportion with low income but rather exits from and entries into a problematic income situation, which makes this exclusion less severe.
- 4 It should be noted that our household definition is somewhat narrow. It contains couples, and children below 18 years of age. Thus, in line with common Swedish official definitions, other adults and older children are not counted. The basic reason is that we do not know their income. Consider, however, that households including other adults are extremely rare in Sweden. For example, according to the 1991 Swedish Level-of-Living Survey, less than 0.3 per cent of the total sample are living in three-generation households (Swedish Institute for Social Research, 1998).
- 5 The results of the models with unobserved heterogeneity show rather small changes in the estimated parameters, most of the significant effects being somewhat stronger than in the models presented here. The only exceptions to this are the duration effects in the models for exit from low market income for both sexes and exit from low disposable income for men. Most of these duration effects lose significance, indicating that long-term stays in low income are related to some extent to unobserved individual characteristics. They should, thus, not be regarded as true state dependence (Heckman and Borjas, 1980). Interestingly, this is not true for the duration effects for women leaving low disposable income, where we observe little difference between the two model estimations. Women's chances of leaving low disposable income are therefore not related to unobserved individual characteristics.
- 6 According to the LNU biographies, the number of partnerships formed in the same year as a partnership is dissolved is much higher. Typically, at least one of the partnerships is a childless consensual union that is not reported in the tax register (see next paragraph).
- 7 In the analyses, employment status and social class are combined into one categorical variable with unskilled manual workers as the reference category.

- 8 The low-income threshold has been calculated as the lowest decile of the equivalence disposable income distribution in 1980 of the 1981 LNU sample for all households of respondents aged 26–64. In Figure 9.1b, the proportion in low disposable income is lower because our sample there is between 26 and 53 years of age. A further difference is that only persons interviewed in 1991 are included in the present analysis.
- 9 The pattern remains if we control for respondent's labour market status and age in the year before entry into low income (no table shown).
- 10 When plotting the bivariate relation between entry probability and age, we indeed find the expected pattern of decreasing probabilities with age. In line with our results in Table 9.4, however, this negative age gradient seems to be steeper for women than for men.
- 11 This confirms an earlier analysis based solely on individual incomes (Fritzell, 1998).

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