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# WORK CAREER DEFINED BY AUTONOMY IN WORK

*Abstract*

*A work career can be defined as series of different working states. Since autonomy in work is one of the main characteristics that influence the quality of working life, we have defined the work career of an individual as a sequence of different states of work autonomy. Two jobs differ only when they differ in autonomy. In this paper, data collected retrospectively for the period 1974-1994 are examined. Event history analysis is used to describe the process of changing work autonomy. To determine how long autonomy episodes are and how they end, the Kaplan-Meier method for estimating survivor function was applied.*

*Most of the autonomy episodes are of very long duration. During their work careers individuals generate only one episode, which ends in inactivity. Since episodes are long, we presume that these episodes indicate the leaving of the labour market and retirement. The probability of changing autonomy status is somehow higher in the first five years, after which changes are rare. Younger and more educated individuals are more likely to achieve jobs which afford more autonomy. It seems that quality of working life defined in terms of work autonomy doesn't improve during a career.*

*Keywords: work career, autonomy status, Slovenia, event history analysis*

## INTRODUCTION

The quality of working life essentially determines the quality of life. Work, a basic and ever more important source of national wealth, is thus also a source of the wealth of each individual. Since systems of social institutions are mainly based on work, the social status of an individual depends above all on his working activities and employment status (Svetlik, 1991).

There are different forms of work and employment, for example temporary employment, contractual work, work at home, directly paid (unregistered) jobs, etc. Of these, is probably the paid employment, the working place, that contemporary society most systematically offers the individual. It provides him with a regular wage, status and various social and legal rights. Employment is also a means of satisfying the needs that are not only instrumental (e.g. the need for autonomy at work, responsibility and initiative, etc.) and are related to occupational values. The hypothesis regarding relationship between occupational values and work career is well known, it

states that a work career is a sequence of occupational positions through which individual convergates towards a state of employment which corresponds to his working values (Antončič, 1985).

One of the main characteristics of occupational/professional work[1] from the individuals' perspective (labour supply) is undoubtedly work autonomy. The importance of autonomy as a key job characteristics is supported by numerous writers writing about the quality of working life (Breaugh, 1985). People who have no or only little autonomy over their work will usually be less satisfied with his work career than those who have chances to make their own decisions and influence what happens in the job. Greater satisfaction with work undoubtedly contributes to a higher quality of working life and thus to quality of life.

## CONCEPTUAL AND METHODOLOGICAL ASPECTS OF ANALYSIS

In this article we shall study the state of work autonomy in Slovenia. We shall focus on the following questions: Do individuals during their work careers convergate toward more autonomous employment status? Do they attain greater autonomy, or do they stay more or less on the same working place with the same autonomy status? How long it takes to achieve higher level autonomy? Do characteristics such as age, gender and education create different opportunities for promotion toward more autonomous work?

To address these questions the work career of an individual is studied. We define it as a transition from one autonomy state to another. A work career is thus described as a series of states which are defined by change of autonomy at work.

**Figure 1:**
**WORK CAREER DEFINED BY WORK AUTONOMY**
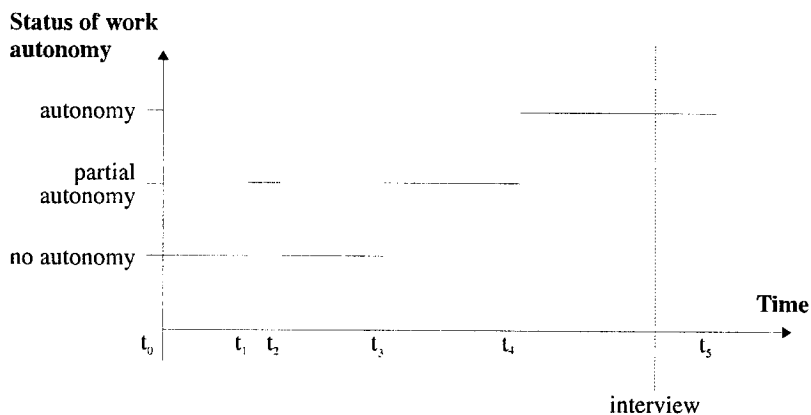
To analyse the process of autonomy change, the usual data, which describe the state of autonomy only in one single point in time, are not enough. It is necessary to determine every change of state and the exact time of change. Therefore retrospective data which define the work career of an individual are used.[2]

As an appropriate (legitimated) indicator of somebody's autonomy at work the chance to determine what the job consisted of and how it would be done was used. For each employment that the respondent had had in the observed period the autonomy status was reported. If a change of working place was accompanied by a change of autonomy status, this indicates a new employment status in the working career. The level of autonomy possessed by an individual was estimated on the basis of the following question:

Who decided what you had to do and how you had to do it in that job?
Decisions at work
1. Respondent himself decided what he had to do and how he would do it at work.

2. Others decided what he had to do, he decided how to do it.
3. In most cases others decided what he had to do and how he had to do it.
If the working status was self-employed or farmer we assumed that the respondent himself decided what he was doing in his work and how he was doing it.

Autonomy defined in this way determines the following state space: 1. autonomy, 2. partial autonomy, 3. no autonomy, which respondent can possesses during his work career. Number of states is then fine $\{Y_k : k=1,2,3\}$ (there are three possible autonomy states), an event or change of state may occur in any time point in the observed period $(0=T_0 \leq T_1 \leq T_2 \leq ...)$. Therefore the process of transitions from one autonomy state to another (work career) can be written as a stochastic process (Blossfeld, 1989):

$$(Y,T)=\{(Y_k,T_k) : k=1,2,....\},$$

which can be described as

$$Y=\{Z(t) : t \geq 0\},$$

with $Z(t) = Y_k-1$ for $T_k-1 \leq t < T_k$, $k =1,2...$ which is a continuous time, discrete state stochastic process.

To describe this process event history methods are used. The basic statistical model of an event history analysis examines the length of time intervals between consecutive changes of states. In other words, in event history analysis we examine the time intervals between events. The time interval from event N-1 to event N is called the waiting time. The unit of our analysis is no longer individual but episode or spell.

The term episode denotes the period of time between successive events. The basic information that is needed to describe an episode is: a) starting point in time, b) end point in time, c) initial state and d) final (destination) state.

In studying the duration of an "autonomy" episode, a single spell model is involved. The observation is of the transition from an initial state to a final state, there is no discrimination between different possible states. It is only important that the state of autonomy changes. The duration of an episode is represented in the statistical model by a nonnegative stochastic variable T. The distribution of such a variable can be described as a distribution function

$$F(t)=P(T<t),$$

which specifies the probability that the episode's duration is less than t.

The density function is then

$$f(t)=dF/dt.$$

Equivalently, we can describe the probability distribution of T by a survivor function, defined by:

$$S(t)=P(T \geq t)$$

This is the probability that the episode's duration is at least t, that the event by which the current episode comes to an end occurs later than t. In other words the survivor function expresses the probability that an individual remains in the state ("survives") until time t, that is, that an event has not yet occurred and the episode is still continuing.

The survivor function is just one of the alternative ways to specify the distribution of random value T. It is related to the distribution function F(t) in the following way: $S(t)= 1 - F(t)$. In our analysis we use the survivor function since it allows for more intuitive description and it facilitates the estimation of the parameters of the model.

To estimate the survivor function two nonparametric estimation methods can be used (Rohwer, 1994):

- Life Table Method
- Kaplan - Meier Estimator (Product Limit Estimatior).

Another possible analysis is when transitions in multiple end states are considered. When there are two or more destination states that can be reached from a single given origin state, we speak of competing risks of reaching each of a number of different destination states from the given origin state. In our case we have episodes which describe the beginning of an autonomy state until a change of autonomy status occurs (until the moment when the origin state changes) and the episode ends. An episode can end in different ways: autonomy can increase, it can decrease, or the individual who generates the episode might become inactive. The respondent might become unemployed, retired, a "student" or enter the military service, etc. And when the working status is "inactivity" no autonomy sta-

tus can be defined. To find out the probability that an episode ends in certain way, specific rates for each possible transition must be calculated. The sum of these specific rates gives us a risk rate for the change of autonomy status.

Since the termination of the entire observation period is, as a rule, exogenous (e.g. due to the time point of the retrospective collection of the data), the endpoint of the last episode of an individual or subject may not be observed. In such situations, event history data are said to be right censored. There is also the possibility that event history data are left censored. This happens when the length of time that an individual or a subject has already resided in an origin state is unknown. The data set we use in our analysis is right censored. The observation ended with the retrospective interview, at which time many episodes were still in progress.[3] Therefore the maximum likelihood method is used for the estimation of the models. This method also takes into account the right censored episodes under the assumption that the same stochastic model is valid for all episodes, for censored and non-censored (regularly ended) episodes.

# RESULTS

The results are based on autonomy episodes which were generated by individuals who were present in the labour market in the period from 1974 to 1994. The sample totals 1508 such persons who were either employed, self-employed, unemployed or farming during the observed period. Together they generate 2255 autonomy episodes. Because of incomplete and/or incorrect data, 22 episodes had to be excluded from the analysis. Thus 2233 autonomy episodes remained.[4]

In Table 1 the number of episodes is presented with respect to sociodemographic groups of respondents. Numerous analyses of the labour market showed that the characteristics such as gender, education and age are important factors which influence individual behaviour in the labour market and existing employment patterns. Therefore we assume that these factors also influence the duration of autonomy episodes.

**Table 1:**
**NUMBER OF AUTONOMY EPISODES[5]**

|  |  | number of episodes | % | average number of episodes per person |
|---|---|---|---|---|
| total |  | 2233 | 100 | 1.5 |
| gender | male | 1192 | 53,4 | 1.5 |
|  | female | 1040 | 46,6 | 1.4 |
| age groups | 18 - 30 years | 488 | 21,9 | 1.6 |
|  | 31 - 40 years | 691 | 30,9 | 1.8 |
|  | 41 - 50 years | 453 | 20,3 | 1.5 |
|  | 51 and more years | 600 | 26,9 | 1.1 |
| educational groups | primary | 676 | 30,3 | 1.4 |
|  | vocational | 672 | 30,1 | 1.5 |
|  | secondary | 576 | 25,8 | 1.6 |
|  | high | 308 | 13,8 | 1.6 |

For each of the 2233 episodes the starting time is known. Respondents reported the year and month in which the event occurred (change of autonomy status). Since we were asking about events that might have happened 20 years ago or even earlier, some respondents were not able to remember the exact month in which the event occurred. In such case they were only able to report the season of the year when the event happened. There were also cases where only the year of the event was known. In such cases we arbitrarily assigned 7 as the month value (the middle of the year). 1080 episodes ended within the observed period. For these episodes the ending time is also known. Since the time was reported in months, the month is the time unit used for measuring duration.

To find the length of autonomy episodes, regardless of how they terminate, the Kaplan-Meier estimation[6] of survivor function was used. This estimate enables us to also include censored episodes in the analysis. In our data set there are 1153 censored episodes.

## CHANGE OF AUTONOMY STATUS

As we have already established, 1080 episodes ended within the observed period. On average they last almost 12 years (143.48 months). The longest recorded episode was even 59 years long.

The process of changing autonomy status in the work place can be seen in Figure 2. How quickly episodes end is presented with survivor function, which shows the probability that an individual stays in a given state.
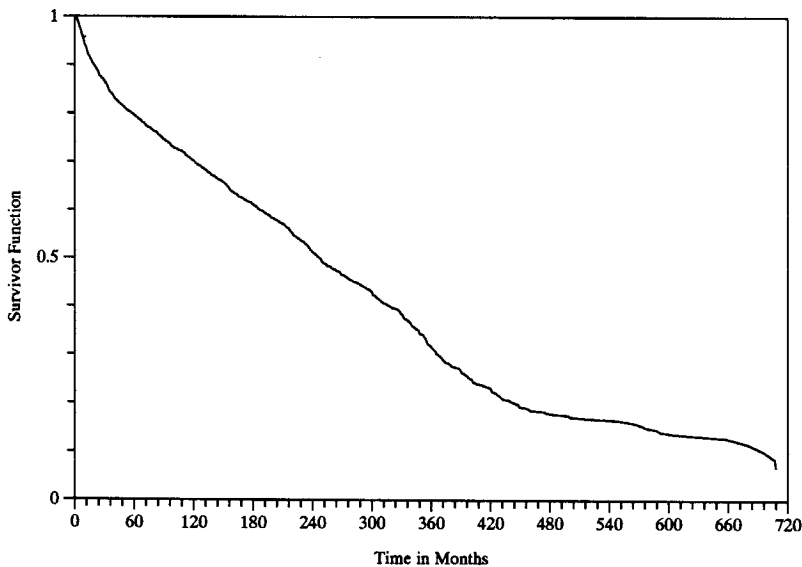


**Figure 2:**
**DURATION OF AUTONOMY EPISODE (PRODUCT LIMIT SURVIVOR FUNCTION)**

It can be seen that in the beginning the function decreases more quickly, especially in first the five years. The median duration of an autonomy episode is 246.8 months, which means that half the episodes end after 20 1/2 years. After this period the function again starts to decrease more quickly (approximately till the 420th month) and thereafter the probability remains more or less the same.

Autonomy episodes are very long. Half the employed keep the same autonomy status during their whole work career. On average an individual generates 1.5 autonomy episodes in his career (see Table 1). The function decrease, which begins after 300 months, indicates both the ending of work careers and the ending of autonomy episodes. This is the period when most people retire and leave the labour market. If there is a change in autonomy at work, it most probably happens in the first five years. In this period 20 % of episodes change. Therefore we can assume that these are likely to be episodes that are generated by persons in their first employment and designate the period of apprenticeship. The end of the apprenticeship period usually also means a change of autonomy. The individual becomes more independent.

CHANGE OF AUTONOMY STATUS AND GENDER

In most countries substantial differences between males and females in the labour market are apparent. Women are usually referred to as a secondary labour force. Their employment careers are essentially different from those of men (very often interrupted, for example, by childbirth). But
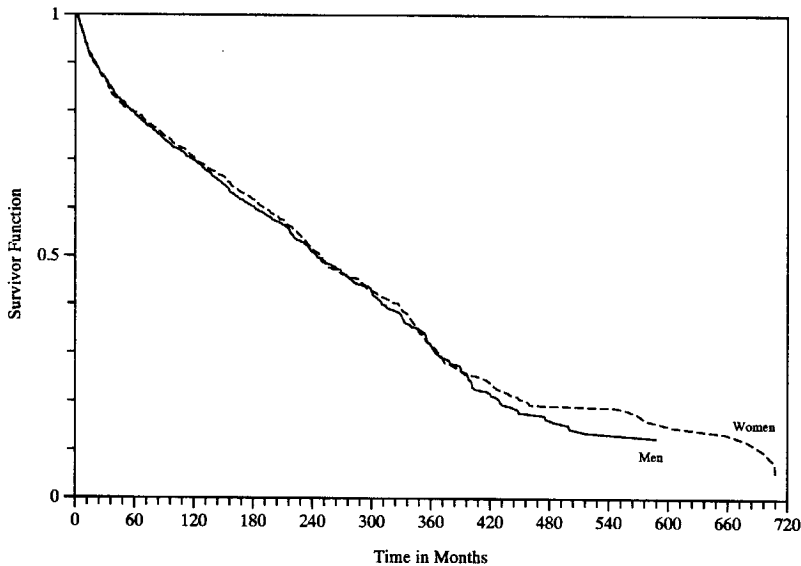


**Figure 3:**
**DURATION OF AUTONOMY EPISODE AND GENDER**

this is not the case in Slovenia. The surveys showed that the differences are not that great (e.g. Labour Force Survey, 1994). In Figure 3 survivor functions for men and women are presented.

As can be seen, also in the case of autonomy status, there are no major differences between men and women. The probability that a person keeps the origin status, is the same for men and women (minor differences occur with very long episodes, when the probability of surviving is higher for women). The median duration differs by only half a year (men: 243.9 months, women: 250.6 months).

Statistical tests have also shown that there are no statistically significant differences between the male and female populations[7].

CHANGE OF AUTONOMY STATUS AND EDUCATION

Does the level of education influence the duration of autonomy episode? Episodes were classified in four groups according to the attained educational level of the person that generated the episode (see Table 1). All the groups are about the same size, which allows the calculation of test statistics for differences among groups.

A look at the average duration of episodes shows that longer episodes are more frequently found at lower educational levels. Thus the median duration for the group with primary education is 27 years, for the group with vocational training the figure is 20 years, for secondary education 17 years and for the group with high education 16 years. People with lower levels of
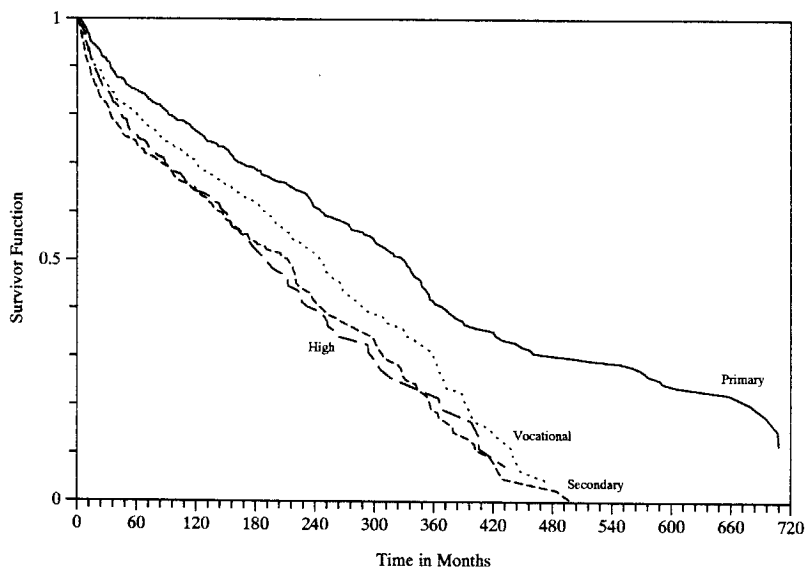


**Figure 4:**
**DURATION OF AUTONOMY EPISODE AND EDUCATION**

education change their autonomy status later than members of the other three educational groups. The differences between these three groups are not that great.

Survivor functions are shown in Figure 4.

Test statistics showed that there are significant statistical differences between educational groups. In the first five years survivor functions are very similar: for all groups episodes end most quickly in this period (successfully completed apprentice period). After five years greater differences can be seen: the group with primary education especially differs from others, changes of autonomy status are very rare in this group (40 % never change their autonomy status). Also among episodes generated by those with vocational training, after a certain period there are no changes. Survivor function slowly decreases to the point in which a career ends. The average duration of episodes in the other two groups are not substantially different, but still there are some differences. Till the 180th month (15 years) episodes generated by people with secondary education end sooner. Afterwards it is people with higher education who change their autonomy status more quickly. People with higher education most often get jobs which afford a relatively high degree of work autonomy at the very beginning of their career. Chances for "promotion" are thus smaller, since better jobs are less available. More effort is needed to get such jobs and more effort means more time needed to achieve change. Therefore people with higher education change their autonomy status more often then others at the end of their careers.

CHANGE OF AUTONOMY AND AGE

We also classified episodes into four groups in the case of age. We differentiate between episodes which are generated by people of up to 30 years, 31 - 40 years, 41- 50 years and by people that are 51 or more years old. In Figure 5 survivor functions are presented.

Differences between survivor functions are most evident in the case of age groups. This was also proved with test statistics. The older people are the longer the autonomy episodes, and older people generate fewer episodes on average than other age groups (Table 1). Younger people change their autonomy status much more quickly: in the first three years one third of autonomy episodes end. The average number of episodes also indicates a faster rate of change (Table 1), the average duration in this group is 97.2 months and half the episodes end in about 8 years. In the next age group (31-40 years) the average duration is longer, 156.47 months. In this group changes are also faster in the first period, afterwards episodes become longer and longer. As could be expected, the average durations of the other two groups are longer, since these people have been present in the labour market for a longer period. In the third group (41-50 years) the episode lasts on average 297.47 months (about 25 years) and in the oldest group the duration is about 28 years. Averages alone are not especially revealing, however, we see more, if we look at the survivor functions. In the oldest group the probability of keeping the same autonomy status is very high, in

the first 10 years only one tenth of episodes are ended; In the same period in the third group one fifth of episodes are ended. After a certain period differences become small (survivor functions have the same shape).
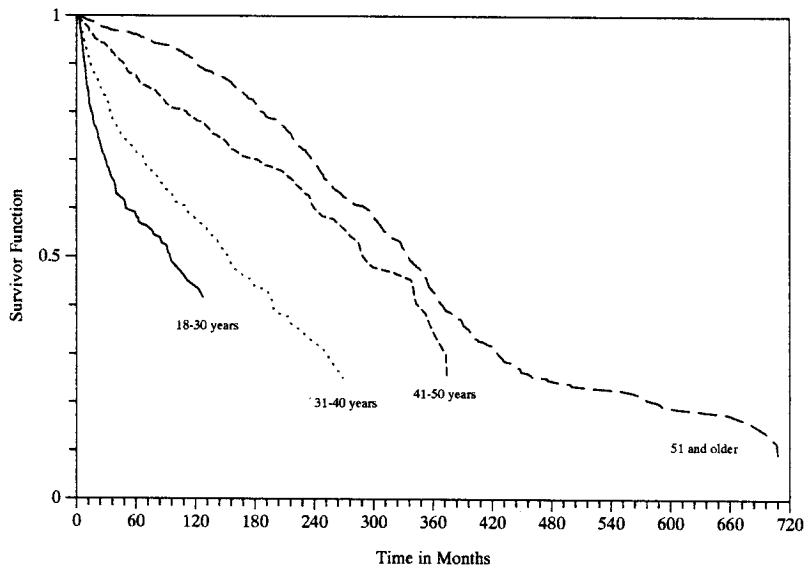


**Figure 5:**
**DURATION OF AUTONOMY EPISODE AND AGE**

The younger the people the shorter the autonomy episodes. Probably their readiness and desire for changes are stronger then those of older people. But change itself doesn't mean that there is a transition to a higher autonomy status. In order to find out what kind of a change occurs, we need to know how each episode ends. In the analysis which we have presented thus far, we haven't differentiated between different possible types of termination. Therefore, in the next stage of analysis different possible destination states are considered.

## DESTINATION STATE OF AUTONOMY EPISODE

An autonomy episode, defined as the basic unit of an employment career, can terminate in different ways. It can terminate with a new working place which allows a higher degree of autonomy, or an individual can retrograde and get a job which affords him less autonomy. When an episode is ended with unemployment, autonomy status can not be determined; neither can autonomy status be determined when an episode terminates with the conclusion of a work career and leaving the labour market.

How episodes terminated in the observed period in the case of the Quality of Life survey can be seen in Table 2. Many of the episodes (almost half of them) ended in inactivity. Those episodes average about 215.94 months long (about 18 years), which might be expected considering the fact that

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individuals generate on average of 1.5 episode during their careers. On average an individual generates one episode during his work career which ends in inactivity. Therefore we can assume that these are the last episodes in someone's career and that transitions to inactivity usually denote leaving the labour market and retirement.

**Table 2:**
**DESTINATION STATES OF AUTONOMY EPISODES**

| | | Higher autonomy | | Lower autonomy | | Unemploy- ment | | Inactivity | |
|---|---|---|---|---|---|---|---|---|---|
| | | n.o.e. | a.n. p.p. | n.o.e. | a.n. p.p. | n.o.e. | a.n. p.p. | n.o.e. | a.n. p.p. |
| total | | 271 | 1.26 | 78 | 1.32 | 203 | 1.83 | 528 | 1.23 |
| **gender** | male | 163 | 1.27 | 51 | 1.31 | 95 | 1.98 | 254 | 1.27 |
| | female | 108 | 1.24 | 26 | 1.37 | 108 | 1.71 | 274 | 1.20 |
| **age** | 18 - 30 years | 35 | 1.30 | 10 | 1.11 | 86 | 1.56 | 58 | 1.61 |
| **groups** | 31 - 40 years | 121 | 1.33 | 42 | 1.50 | 84 | 1.87 | 82 | 1.86 |
| | 41 - 50 years | 79 | 1.22 | 17 | 1.21 | 19 | 2.71 | 62 | 1.27 |
| | 51 and older | 35 | 1.13 | 9 | 1.13 | 14 | 3.50 | 326 | 1.09 |
| **educa** | primary | 42 | 0.76 | 16 | 1.14 | 63 | 2.03 | 222 | 1.20 |
| **tional** | vocational | 78 | 1.24 | 23 | 1.35 | 59 | 1.74 | 140 | 1.18 |
| **groups** | secondary | 81 | 1.25 | 27 | 1.35 | 65 | 1.86 | 118 | 1.30 |
| | high | 69 | 1.28 | 12 | 1.50 | 16 | 1.45 | 48 | 1.45 |

LEGEND: n.o.e. = number of episodes

a.n.p.p. = average number of episodes per person

203 episodes are terminated with unemployment. These episodes are much shorter than those which end in leaving the labour market, on average lasting 27.49 months (2.5 years). The other third of the episodes (349) end in states of higher or lower autonomy status at new working places. Of these episodes, the majority terminate with higher autonomy status (transition to a better working place). On average such episodes last 107.2 months (approximately 9 years). There are only 78 retrograde episodes, and these are shorter, with an average duration of 80.86 months (6.5 years).

The probability that an episode ends in a certain destination state is shown in Figure 6. Kaplan - Meier estimator was again used for estimation, thus censored episodes were also included in the analysis.

The analysis of duration has already shown that autonomy episodes are long. The same thing can be seen in Figure 6: the changes are slow; In the average after 120 months (10 years) only one tenth of all episodes change.

Rather faster changes can be seen when an episode ends in transition to unemployment.[8] The probability of someone becoming unemployed is very high in the first five years (steeper slope), thereafter there are no major transitions to unemployment. As could be expected, the lowest probability is of entering a state of lower autonomy. It doesn't often happen that an
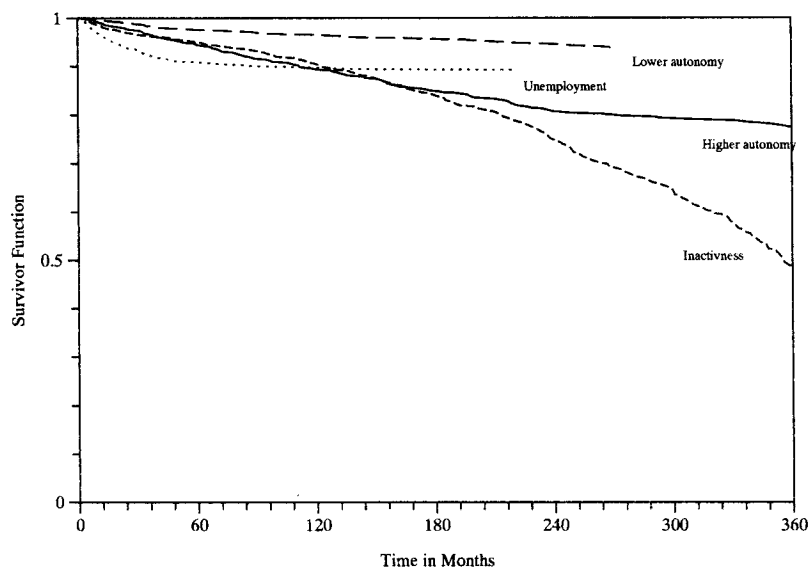
**Figure 6:**
**DURATION OF AUTONOMY EPISODE ACCORDING TO DESTINATION STATES**

individual possesses less autonomy at a new working place and the probability of this type of transition is more or less constant. In the case of transition to a state of higher autonomy, the situation is about the same. Changes happen a little faster than in the case of transition to a state of lower autonomy, but the probability for transition also increases very slowly here. Thus in the first few years only 10% of episodes change. Transition happens a little faster in the period between the 70th and the 150th month, when individuals have some work experience and more chances for promotion. After this period the probability is again less distinct until the moment when a career ends. If we finally take a look at slope denoting the process of transition to inactivity, we see that in the first 15 years (180 months) the rate is about the same as in the case of transition to higher autonomy. But after 20 years transition to inactivity happens much faster. The probability of this transition becomes greater and greater, since the longer the episode the closer the time of retirement.

DESTINATION STATE OF EPISODE AND GENDER

We have already found out that there are no significant statistical differences between men and women as far as duration of episodes is concerned. Does the same apply to different possible terminations? The first impression can be obtained from Table 2. We see that most of the episodes that are generated by women end in unemployment or in inactivity, while those generated by men are more likely to take the other two forms. To find out whether these differences are also statistically significant, survivor functions for all possible transition were calculated separately for women and men. In Table 3 values of survivor functions for each fifth year are reported.

**Table 3:**
**DESTINATION STATE OF EPISODE AND GENDER[9]**

| Duration of episode (months) | Higher autonomy | | Lower autonomy | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| 60 | 93.91 | 94.95 | 96.76 | 98.45 |
| 120 | 87.50 | 91.58 | 95.71 | 97.23 |
| 180 | 82.15 | 88.00 | 94.91 | 96.29 |
| 240 | 78.22 | 83.52 | - | - |
| 300 | 76.49 | 82.16 | - | - |
| 360 | 75.59 | 79.58 | - | - |

Test statistics showed that the differences between men and women are statistically significant[10] only in the case of transition to higher or lower autonomy. Considering first transition to higher autonomy status: survivor function for women is higher throughout and differences become more obvious especially after the fifth year. Therefore it seems safe to conclude that men are more quickly promoted to higher autonomous states than women. In the first ten years 12.5 % of men and only 8.4 % of women are thus promoted. The same situation can be found in the case of transition to lower autonomy. The probability of such transition is again higher for men, though differences grow smaller in time.

DESTINATION STATE OF EPISODE AND EDUCATION

The thesis about education being one of the basic channels of vertical mobility is well known. Its value especially comes into prominence in the labour market. In principle, people with higher education possess jobs which afford them better working conditions, higher wages and better opportunities to decide what to do in a job and how to do it. Do autonomy episodes confirm this?

In the group of episodes generated by people with primary education, two thirds of the episodes (222 out of 343) end in inactivity (see Table 2). These are followed by episodes which end in unemployment (18,3%), whereas the other two states don't appear very often. In the case of the group with vocational education episodes which end in inactivity are also in a majority, but in this group more episodes end with higher autonomy status.[11] Roughly the same applies to the group with secondary school education, although in this group transitions to unemployment are also quite noticeable. In the last group, the group with higher education, the likeliest episodes are those which end in promotion. Half the episodes generated in this group end with transition to higher autonomy status.

For each possible destination state statistically significant differences between different educational groups were found.[12] Values for survivor functions are reported in Table 4.

**Table 4:**
**DESTINATIONS STATES OF EPISODES AND EDUCATION**

| End (destination) state | Duration of episode (months) | Level of education | | | |
|---|---|---|---|---|---|
| | | Primary | Vocational | Secondary | High |
| Higher | 60 | 98.52 | 94.79 | 93.10 | 85.62 |
| autonomy | 120 | 96.40 | 89.11 | 85.62 | 78.55 |
| | 180 | 94.44 | 84.61 | 80.16 | 68.07 |
| | 240 | 92.13 | 78.96 | 74.68 | 62.04 |
| | 300 | 91.41 | 77.35 | 70.81 | - |
| | 360 | 88.91 | 74.36 | 65.96 | - |
| Lower | 60 | 98.31 | 97.39 | 96.77 | 96.88 |
| autonomy | 120 | 97.55 | 96.43 | 94.75 | 95.36 |
| | 180 | 97.18 | 95.31 | 93.82 | 93.35 |
| | 240 | 96.92 | 94.15 | 90.24 | - |
| | 300 | - | - | - | - |
| | 360 | - | - | - | - |
| Unemploy- | 60 | 91.56 | 91.54 | 87.51 | 93.97 |
| ment | 120 | 90.07 | 89.67 | 87.25 | - |
| | 180 | - | - | 86.99 | - |
| | 240 | - | - | - | - |
| | 300 | - | - | - | - |
| | 360 | - | - | - | - |
| Inactivity | 60 | 95.64 | 94.43 | 93.54 | 96.35 |
| | 120 | 90.14 | 90.60 | 90.26 | 91.10 |
| | 180 | 83.62 | 85.46 | 81.29 | 86.28 |
| | 240 | 76.01 | 76.54 | 70.38 | 72.48 |
| | 300 | 68.00 | 59.98 | 60.18 | 57.84 |
| | 360 | 53.40 | 46.16 | 35.11 | 43.17 |

Highly educated individuals are most quickly promoted to states of higher autonomy. After five years 15 % of them get new jobs which afford higher autonomy at work. In the group with secondary education 10 years, and in the group with vocational education 15 years, are needed for this. The survivor function in group with primary education remains high. In a period of 25 years less then 10 % of the episodes end in higher autonomy. The lowest survivor functions for "lower autonomy" can be found in the group with secondary education, where the probability for downward moves is highest. But differences between groups in the case of transition to lower autonomy are not great. Individuals with secondary education also tend to have the quickest transitions to unemployment. In the case of transition to inactivity there are almost no differences between groups. The survivor function in the group with high education is highest in the first five years and lowest five years later. Episodes which last 15 years or more most probably end in

inactivity in the group with secondary education. The same is true for the other two groups, especially in the first period (later differences become greater).

DESTINATION STATE OF EPISODE AND AGE

In the analysis of duration of autonomy episodes the greatest differences were found between different age groups. Is this also the case with different possible destinations? The types of episode generated in different age groups are shown in Table 2. In the youngest group the most numerous episodes are those which end in unemployment. Almost half of them (45.5%) end in this way. The two middle groups are most strongly represented by episodes which end in higher or lower autonomy. Thus 36.8% episodes generated in the group of 31 to 40 years and 44.6% generated in the group of 41 to 50 years end in higher autonomy. In the case of lower autonomy status the inverse applies: more such episodes can be found in first group (12.8%; in the other group 9.6%). Almost all the episodes which generated by the oldest group end in inactivity.

In different age groups different possible destinations prevail. Test statistics also proved that there are statistically significant differences.13 The probabilities of the various transitions are reported in Table 5.

**Table 5:**
**DESTINATION STATES OF EPISODES AND AGE GROUPS**

| End (destination) state | Duration of episode (months) | Age groups | | | |
|---|---|---|---|---|---|
| | | 18-30 years | 31-40 years | 41-50 years | 51 and older |
| Higher autonomy | 60 | 90.32 | 91.46 | 93.93 | 99.26 |
| | 120 | - | 81.63 | 88.92 | 98.07 |
| | 180 | - | 58.76 | 83.44 | 96.20 |
| | 240 | - | - | 78.02 | 94.45 |
| | 300 | - | - | 73.05 | 93.88 |
| | 360 | - | - | 66.76 | 92.32 |
| Lower autonomy | 60 | 96.87 | 94.64 | 98.50 | 99.52 |
| | 120 | - | 93.03 | 96.67 | 99.39 |
| | 180 | - | 89.63 | 96.01 | 99.28 |
| | 240 | - | - | - | 98.79 |
| | 300 | - | - | - | |
| | 360 | - | - | - | |
| Unemployment | 60 | 76.50 | 87.98 | 87.51 | 98.41 |
| | 120 | - | 85.40 | 87.25 | 98.11 |
| | 180 | - | - | 86.99 | 97.60 |
| | 240 | - | - | - | - |
| | 300 | - | - | - | - |
| | 360 | - | - | - | - |
| Inactivity | 60 | 86.44 | 93.99 | 97.97 | 98.47 |
| | 120 | 74.10 | 88.61 | 95.49 | 94.45 |
| | 180 | - | 79.91 | 91.49 | 87.42 |
| | 240 | - | 69.71 | 85.26 | 76.10 |
| | 300 | - | - | 72.72 | 65.53 |
| | 360 | - | - | 55.70 | 48.70 |

The highest probabilities of transition to new autonomy state can be found in the youngest group. Only in the case of transition to lower autonomy is the probability higher in the group of 31 to 40 years. As could be expected, the lowest probabilities of transition are found in the oldest group, where the probability of transition to each possible state is the lowest (survivor function is the highest). For this group transition to inactivity is most likely. The younger the group more likely the transition is to occur.

# CONCLUSIONS

We can consider there to be two sides in the labour market: on one side there are people and their characteristics, on the other working places, positions, companies (social structures, institution, etc.) . In our analysis we studied changes of work autonomy and its relationship to personal characteristics such as gender, age and education.

Single episode analysis showed that autonomy episodes are very long. Half of them last more than 20 years. Thus individuals on average generate one episode in their work careers, and this ends in inactivity. The probability of  there being a change of status is higher in the first period. Usually this happens at the end of a period of apprenticeship.

Since autonomy episodes are very long, almost half of them end in inactivity. These are especially episodes which end in retirement and leaving the labour market. Very few episodes end in a status of lower autonomy (about 7%). Usually someone decides to change working place when he gets the opportunity for a new job which affords him more autonomy.

There are no major differences with respect to gender. Usually men and women stay in the same states equally long. The only difference was found in transition to higher (or lower) autonomy status, where men more quickly experience change. More substantial differences are found when different age groups are considered. Younger change their autonomy status people much more quickly than older people. Education also plays an important part in transitions from one state to another: education is the capital which enables easier promotion to a  more autonomous working place.

Since changes of work autonomy rarely occur - the autonomy status of an individual changes only once during his work career - and  since episodes usually end with transition to inactivity, seems safe to conclude that the quality of working life (at least with respect to autonomy) does not improve.

NOTES

1 We refer to institutionalised work, to work in which some job is done.

2 The data used are obtained with the questionnaire  "Quality of Life in Slovenia - 1994", which covers the period of the last 20 years (1974 -1994).

3 For example the fifth episode in Figure 1. The episode ends in time point $t_5$, which is unknown since our inquiry ends earlier.

4 The whole sample consisted of 2520 persons from which 1806 were successfully interviewed. In our analysis 1487 persons were included. 21 persons had to be excluded. We assume that this exclusion was not systematic and that was not caused by some characteristic of a respondent which is relevant for our analysis. Thus we assume that the sample is still unbiased.

5 There is a difference between the number of episodes in the total sample and the number of episodes according to various socio-demographic groups, since for one of the autonomy episodes the basic information (gender, age and education) about the respondent who generated this episode is not known.

6 A nonparametric method, where no presumptions about the distribution of a process are required. Therefore it is appropriate for the first exploratory analysis.

7 The following test statistics were used: a) Log-Rank (Savage), b) Wilcoxon (Breslow), c) Wilcoxon (Tarone-Ware), d) Wilcoxon (Prentice). All these statistics are included in TDA programme package.

8 The average number of episodes per person is also the biggest in the case of unemployment (1.83; see Table 2).

9 In tables 3, 4 and 5 survivor functions (estimated by the Kaplan-Meier method) are reported. They are multiplied by 100, therefore they can be interpreted as shares of persons who stay (survive) in certain state.

10 Hypotheses about differences between men and women can be accepted at significant level $\alpha = 0.05$.

11 The average number of persons per episode also shows that individuals with primary education more rarely enter a state of higher autonomy.

12 Hypotheses about differences among groups can be accepted in the case of transition to higher autonomy, with significant level $\alpha = 0.001$. In the other three transitions the significant level is $\alpha = 0.05$.

13 Hypotheses about differences among groups can be accepted at significant level $\alpha = 0.001$.

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