Reservation Wages in Estonia

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This paper analyses the factors determining reservation wages in Estonia, and estimates the influence of the reservation wage on unemployment duration. According to estimations there is no statistically significant effect of unemployment benefit and social assistance on the reservation wage in Estonia. While evidence was found, that the higher the reservation wage, the lower the probability of finding a job, if all other things are equal. It was also found that the eligibility of unemployment benefit or social assistance increases the duration of the unemployment period, which indicates the lower offer arrival rate in the case of unemployed receiving assistance, which might be caused by a lower search intensity.

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Introduction

In 2001 about 83 thousand people in Estonia were unemployed, which is 12.7 per cent of the labour force. Of those unemployed 48 per cent had been unemployed for more than a year, which suggests that a large share of unemployment in Estonia is structural. (The issues concerning structural unemployment in Estonia have been thoroughly studied, for example, by Eamets *et al*, 2000; Venesaar *et al*, 2001). Generally, the role of labour market institutions influencing labour market outcomes in Estonia is considered rather minimal (Eamets, 2002; Freytag, 2002). Still, recent research on social benefits (Kuddo *et al*, 2002) has suggested that some people might accept the high minimum wage and social benefit as an incentive to be voluntarily unemployed. This leads to the need to study reservation wages in Estonia.

The reservation wage is the lowest wage an unemployed person would accept. The reservation wage is a factor determining the length of an unemployment period. The reservation wage depends on the possibility of receiving a wage offer (which depends on the situation in the labour market and the person's qualifications and education) and on the workers 'outside option' – their unemployment benefit and personal savings or wealth.

In the current paper the idea is to analyse the factors effecting reservation wages in Estonia, as well as estimate the influence of the reservation wage on unemployment duration. The factors analysed for their effect on the reservation wage include social assistance and unemployment benefit. The analysis should help to answer the question of whether any voluntary unemployment exists in Estonia. The main hypothesis of the paper is that high reservation wages lead to longer unemployment periods and reservation wages are increased by social benefit.

Information about reservation wages in Estonia has been obtained from the Labour Force Survey, which has already been conducted since 1995. Still, to the author's knowledge, the topic of the reservation wage has not been addressed in Estonia before. The paper uses data from individual unemployed job searchers from the period 1997–2000 to model a determination of the reservation wage and duration of unemployment.

The structure of the paper is as follows. Section 1 provides the theoretical framework used to understand the reservation wage in the context of job search decisions. Section 2 introduces the empirical model used to make the estimations in the paper. Section 3 describes the data used in the study. In section 4 the results of the estimation are presented.

1. The Theoretical Concept of Reservation Wages

The reservation wage is considered the minimum wage an unemployed person is willing to accept when looking for a job. Reservation wages can be discussed within the framework of a search model based on, for example, Layard *et al* (1991).

Unemployed person i searches for a job with a wage higher or equal to his/her reservation wage (W_i^R). There is a certain probability of the unemployed person receiving a suitable wage offer higher than his/her reservation wage $\left(p_i(W > W_i^R)\right)$, which is determined by the

base arrival rate of offers, the unemployed person's search effort and the chances of being accepted when the person applies. The base arrival rate is influenced by the general situation in the labour market (characterised, for example, by the regional unemployment rate). The unemployed person's characteristics such as skills, age and education, determine the probability of being accepted. The general situation, the job search effort as well as the probability of being accepted for a job, may vary with time. The unemployed person might decrease his/her search effort if the spell of unemployment increases (discouraged people, have lost the hope of finding a job). While he/she might increase the search effort, when his/her eligibility for unemployment benefit ends. The probability of being accepted for a job may decrease as a result of a lengthening unemployment period, as employers might take a long-term unemployment spell as a negative sign of the worker's qualification and effort.

Wage offers have a distribution specific to each individual, depending on their personal characteristics (the person's qualifications) as well as the general labour market situation. While the general labour market situation changes, the distribution may also change in time and may be effected by the length of the unemployment period. The human capital of the unemployed person may depreciate and the employer's perception of the person's qualifications may decrease as a result of a lengthening unemployment spell. Throughout the duration of the unemployment spell the unemployed person learns about the distribution of wage offers.

It is assumed that the unemployed person will maximise his/her income and use interest rate (r) to discount future income. The unemployed person can choose his/her reservation wage and search intensity depending on the alternative income and the probability of receiving a suitable wage offer. The optimum reservation wage is chosen at a level where the expected return from another period of search (unemployment) equals the expected cost of the search.

The expected cost of the search is the wage otherwise received (W_i^R) minus income while being unemployed. Unemployed persons usually have some income from unemployment benefit. In general, unemployment benefit could be considered to determine the level of the minimum reservation wage. Unemployment benefit might be a flat rate (the same for everyone) or depend upon the previous wage level, thereby directly influencing the level of the reservation wage. Unemployment benefit usually changes with the duration of the unemployment spell – when the person is not eligible anymore for the unemployment benefit it can be assumed that the reservation wage would decrease sharply. The unemployed person might also have other income sources instead of unemployment benefit. In the following all income for the unemployed person is described by (B_i).

If the job search were without cost the unemployed person would accept the first job paying more than his/her alternative income from benefit. But if he/she cannot continue the job search after having accepted an offer and the job search is costly, then the person may be willing to reject some jobs paying more than the benefit in order to find an even better job (higher wage).

The expected return from another period of search equals the probability of getting a job that pays more than the reservation wage $\left(p_i(W > W_i^R)\right)$, times the discounted value of the extra wage, which is expected over and above the reservation wage $\left(\frac{1}{r} \cdot E(W \middle| W > W_i^R)\right)$.

Equating the expected return from the search with its cost to arrive at a reservation wage gives:

$$W_i^R = B + \frac{1}{r} p_i(W > W_i^R) \cdot E(W \middle| W > W_i^R) . \quad (1.1)$$

The higher the alternative income (unemployment benefit), the higher the reservation wage. The greater the probability of receiving a suitable job offer and the higher the expected offered wage, the higher the reservation wage.

If there is the probability *s* that a job will end:

$$W_i^R = B + \frac{1}{r+s} p_i(W > W_i^R) \cdot E(W \middle| W > W_i^R) . \quad (1.2)$$

The higher the probability that a job will end soon, the lower the reservation wage. People who look for short-term/seasonal work are willing to accept lower wages. In general, the higher the discount rate *r* and the probability *s* that the job will end, the lower the reservation wage.

2. The Model

The model is intended to determine the reservation wage and the effect of the reservation wage on unemployment duration.

It can be assumed that both unemployment duration and the reservation wage are simultaneously determined, and there could be a two-way causation between the reservation wage and unemployment duration. Longer unemployment periods may lead people to decrease their reservation wage while at the same time reservation wages can also effect the duration of unemployment spells. There are several arguments why the reservation wage might be unemployment duration dependent and decline with the duration of the unemployment spell, for example:

- a declining number of job offers as the employer takes the duration of the unemployment spell as a negative sign about the human capital and qualifications of the unemployed;
- the unemployed person learns about wage offer distribution;
- the search becomes limited due to the decreasing income of the unemployed (duration of benefit).

As most of the long-term unemployment spells from our sample are excluded, it can be assumed that the reservation wage is constant during the unemployment spells under consideration. Still, to estimate the effect of the reservation wage on unemployment duration we need an instrumental variable.

As an instrumental variable, we are looking for one which directly affects the reservation wage, but which does not affect the job-offer arrival rate or the wage offer distribution. One possible instrument would be the level of unemployment benefit as it describes the cost of unemployment. This is the instrument used by Jones (1988) and Gorter and Gorter (1993). In the dataset used in this paper there is no information about the level of benefit for all of the unemployed throughout the entire unemployment spell, although there is information about the unemployed individual's eligibility for benefit. Unfortunately, eligibility for benefit as a measure is likely to affect the search intensity. The other possibility is to follow Lancaster and use the number of dependants as an instrument (Lancaster, 1985). Consequently, a third approach, and the one used in this paper, follows the study by Heath and Swann (1999). As the dataset contains information about the household income and the number of household members during the unemployment period, the household income per household member is used as a determinant of reservation wage, as it should not influence offer arrival rates and, therefore, directly influence unemployment duration.

The explanatory variables

The other explanatory variables used in the reservation wage and unemployment duration modelling are mostly dummy-variables to describe education, profession, previous work experience, the sector worked in, and the region[1]. There are personal characteristics such as age, sex and nationality, as well as whether the person receives unemployment benefit or social assistance or not. There are also dummy-variables for the years when the person found a job or the observation was censored to account for changes in the labour market. As a base group in the study, unemployed Estonian men aged 25–49 with vocational or secondary education living in southern Estonia, with work experience in the industrial sector, who do not receive unemployment benefit or social assistance were chosen.

The reservation wage equation

First, the reservation wage equation is estimated. As the data about reservation wages is mainly in a discrete form, the effect of explanatory variables on the reservation wage is estimated using the interval estimation technique developed by Tobin (1958). The following equation is estimated:

$$y^*_i = X_i'\beta + \varepsilon_i, \qquad (2.1)$$

where y^* – the unobserved reservation wage in the interval $(y_{j-1,}, y_j)$;

X–vector of explanatory variables;

β–vector of coefficients;

i,j – indicate the indices of the observation and interval;

$\varepsilon \sim N(0, \sigma^2)$.

The equation is estimated using the maximum likelihood estimation technique. The log-likelihood function maximised is in the following form:

[1] In the current study dummies are used to control for the regional differences of labour demand, instead of the regional unemployment rate. Based on the observation that during the time period labour demand was decreasing and the unemployment rate was rising in all the regions, regional dummies should be able to capture the differences in regional labour demand.

$$\log L = \sum_{i=1}^{N}\sum_{j=1}^{M} d_{ij} \log\left\{\Phi\left(\frac{y_j - X_i'\beta}{\sigma}\right) - \Phi\left(\frac{y_{j-1} - X_i'\beta}{\sigma}\right)\right\}, \qquad (2.2)$$

where Φ is the standard cumulative normal distribution function, N is the number of observations, M is the number of intervals, and $d_{ij} = 1$ if $y_{j-1} < y_i^* \leq y_j$ and $d_{ij} = 0$ otherwise.

The unemployment duration equation

To model the duration of the unemployment period the hazard model is estimated. The hazard rate describes the conditional probability of leaving the state of being unemployed within the following short time period on the condition that the individual is then still unemployed. The effect of several exogenous variables on this hazard is estimated.

In this paper the Cox proportional hazard model is used, where the hazard of leaving the state of being unemployed is described in the following form[2]:

$$h_i(t) = h_0(t) \cdot \exp(\beta' x_i) \ , \qquad (2.3)$$

where $h_0(t)$ – baseline hazard, which in the current paper remains unspecified;
β – vector of parameters;
x – vector of explanatory variables.

The hazard model is estimated using the maximum likelihood method. Both censored and uncensored observations contribute to the likelihood function being maximised. The spell is considered censored when the person leaves the labour force as well as when the person is still unemployed by the time of the interview week. The hazard function (2.3) is possible to rewrite in the following form, which enables the elimination of the baseline hazard function from the likelihood function and an estimation of the effect of explanatory variables on the hazard rate without specifying the baseline hazard function. When the observations are ordered by the duration of the spell, the probability that the individual i, with an uncensored unemployment spell, leaves the hazard group, will be the following:

$$\frac{\lambda_0(t) \cdot \exp(x_i'\beta)}{\sum_{j \in R_i} \lambda_0(t) \cdot \exp(x_j'\beta)}, \qquad (2.4)$$

where R_i – the number of observations under risk, including observations (both censored and uncensored), which lasted at least until the period t_i.

The log-likelihood function maximised is in the following form:

$$\log L = \sum_{i=1}^{K}\left[x_i'\beta - \log \sum_{j \in R_i} \exp(x_j'\beta)\right], \qquad (2.5)$$

where K – number of observations which end when leaving the state of being unemployed.

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[2] For the extensive treatment of hazard models see Lancaster (1990).

3. The Data

The data is drawn from the Estonian Labour Force Surveys of 1998, 1999 and 2000. These are retrospective labour force surveys conducted in the second quarter of each year starting from 1998 and then quarterly surveys in the third and fourth quarter of the year 2000. The surveys cover the period from 1997 to the end of 2000.

The datasets have direct information about the reservation wage of those individuals who did not have a job and were looking for one. The individuals, that reported their reservation wage, were asked the following question: 'How high would your (bruto) salary per month have to be for you to take the offered position?' The question had the following eight possible answers:

1. At least 500 EEK per month;
2. At least 1000 EEK per month;
3. At least 2000 EEK per month;
4. At least 3000 EEK per month;
5. At least 4000 EEK per month;
6. At least 5000 EEK per month;
7. At least 10000 EEK per month;
8. More than 10000 EEK per month.

In the dataset there is no information about the hourly reservation wage, so that those persons who were looking for a part-time position or started to work in a part-time position are excluded from the sample.

The reservation wage and minimum wage in Estonia

The relevance of reservation wages determining unemployment can be measured in terms of their relation to the minimum wage, which sets legally permissible minimum to the wage level. There is evidence from many countries that reservation wages are too low, compared with minimum wages, to influence unemployment. If minimum wages are high compared with reservation wages then possible changes in the reservation wage are less likely to affect unemployment. This is because due to the high minimum wage a large share of job seekers is excluded from the labour market. If reservation wages are lower than the legal minimum, unemployment could be partly reduced by decreasing the minimum wage.

In Estonia the minimum wage as a percentage of the average wage has been increasing since the second half of the 90s, which indicates the increasing importance of the minimum wage and the possible decrease in the relevance of reservation wages as a determinant of unemployment. In Table 3.1 the percentage of unemployed persons surveyed who reported their reservation wages to be lower than the official minimum is given for the years starting from 1998, when for the first time the official minimum wage was higher than 1000 EEK. Due to the structure of the question asked in the labour force survey, information about the reservation wage reported from 1997 and 1998 is not comparable in terms of its relation to the minimum wage as the minimum wage in 1997 was 845 EEK. Additionally, concerning the reservation wage we only know the share of unemployed who were willing to accept a

job with a wage of at least 500 and at least 1000 kroons, respectively. Between 1998 and 2001, the legal minimum wage has been increased from 1100 to 1600 kroons. Also, due to the nature of the data in the Labour Force Survey, it is difficult to make a conclusion about whether the importance of the minimum wage in determining unemployment and the relevance of reservation wages has been increasing or not.

Table 3.1. The minimum wage in Estonia

	1998 (II q)	1999 (II q)	2000 (I-IV q)	2001 (I-IV q)	2001 (I-IV q)
Legal minimum wage	1100	1250	1400	1600	
Minimum wage /average wage	26.7	28.3	28.5	29.0	
% of the unemployed persons surveyed with reservation wages lower than the official minimum wage	12.7	10.3	6.6	3.5	29.7*

Sources: Estonian Labour Force Surveys 1998, 1999, 2000, and 2001.
*Notes: * Percentage of people reporting their reservation wages to be equal to or less than 2000, which is lower than the legal minimum wage in the case that the minimum wage had been 41% of the average wage in 2001 (then the minimum wage would have been 2259 EEK).*

Looking at the Table it can be seen that the overall share of people, who report their reservation wage to be only 1000 EEK, is decreasing from 12.7% in 1998 to 3.5% in 2001. However, by the year 2001 the minimum wage was 1600 kroons and the survey only gives information about the share of people whose reservation wage is more than 1000 and more than 2000 kroons, respectively. To look at the relevance of reservation wages considering that the importance of minimum wages should be rising in Estonia, and if assuming that the minimum wage would be 41% of the average wage in the year 2001 (as it should be by the year 2008), or at least higher than 2000 EEK, then 29.7% of the unemployed would have reservation wages lower than the legal minimum.

Sample description

In the following modelling process the persons who became unemployed at some point during the survey observation time are included in the sample. This enables us to combine different datasets from the Estonian Labour Force surveys. Each individual enters the sample when a person becomes unemployed. There is a negative side to this sampling scheme as it leads to a situation where the current long-term unemployed are excluded from the sample.

The datasets have direct data about the reservation wage in the case of individuals who did not have a job and were looking for one during the week of the interview. If the person found a job by the interview week, information about his/her reservation wage can only be obtained by observing his/her wage level in the new job. The observations are excluded from the sample where there is no information about the individual's reservation wage (his/her reported reservation wage or the new wage), or about his/her household income.

Table 3.2. Description of the data

	Mean
Reservation wage	3589
Unemployment duration in months (spells ending with finding a job)	4.804
Reservation wage determinant	
Income per household member	1062
Search incentives	
Social assistance / unemployment benefit	0.462
Work experience	
No previous work experience	0.200
Agriculture	0.092
Services	0.360
Elementary occupations	0.146
Legislators, senior officials, professionals, technicians, associate professionals and clerks	0.166
Education	
ISCED<3	0.218
ISCED>4	0.135
Local environment	
Northern Estonia	0.223
Central Estonia	0.174
North-eastern Estonia	0.155
Western Estonia	0.130
Personal characteristics	
Non-Estonian	0.317
Age 15–24	0.172
Age 50–74	0.222
Female	0.452

Description of the data is presented in Table 3.2. There are six different categories of data, which influence the duration of the unemployment period or the reservation wage (description of the variables is presented in the Appendix):

- The determinant of the reservation wage – household's income per household member;
- Search incentives – eligibility for social assistance or unemployment benefit;
- Work experience data – the sector of the previous job (three different sectors), previous occupation (three groups of occupations);
- Education – the level of education (three different levels);
- Local environment of the labour market – the region (five regions);
- Personal characteristics – nationality, age (three age groups) and sex.

4. The Results

4.1. The Determinants of Reservation Wages

First, the estimates for the reservation wage are obtained. The main interest is to estimate whether unemployment benefit or social assistance influence the reservation wage, thereby increasing the minimum wage the person is willing to accept. Surprisingly, the benefit has no significant effect on the reservation wage. Furthermore, the reservation wage seems to be lower when a person receives some form of assistance. Eligibility for benefit should indicate a higher 'outside option' for the unemployed. But according to the estimates, when the unemployed is eligible for benefit then, probably due to unobserved factors, his/her reservation wage is not higher. It should be noted that the result is not uncommon in other similar estimations (for example, Heath and Swann for the Australian economy).

As expected, the reservation wage is affected by the factor describing the unemployed person's income. The higher the household's income per household member the higher the minimum wage a person is willing to accept.

Factors affecting the reservation wage that describe a person's qualifications are things such as the person's previous job, qualifications and level of education. Unemployed individuals whose previous job was in agriculture have lower reservation wages compared with those from industrial sector. While people whose previous work experience was in the service sector do not have significantly higher reservation wages compared with those with work experience in the industrial sector.

Those unemployed whose previous jobs involved working as legislators, senior officials, professionals, technicians, associate professionals and clerks have higher reservation wages compared with service workers, skilled agricultural and fishery workers, craft and related trade workers, plant and machine operators and assemblers (these forming the base group). While people who worked in elementary occupations have lower reservation wages compared with this base group. Educational level is also a statistically significant factor in determining the level of reservation wages. People with only a basic education (nine grades) have statistically lower reservation wages, while people with higher education have higher reservation wages.

Table 4.1. Determinants of reservation wages (dependent variable: log. reservation wages)

	mean	se
Instrument		
Log. income per household member	0.035**	0.016
Search incentives		
Social assistance/unemployment benefit	-0.018	0.023
Work experience		
No previous work experience	-0.132***	0.037
Agriculture	-0.086**	0.042
Services	-0.021	0.026
Elementary occupations	-0.109***	0.031
Legislators, senior officials, professionals, technicians, associate professionals and clerks	0.097***	0.033
Education		
ISCED<3	-0.125***	0.027
ISCED>4	0.112***	0.038
Local environment		
Northern Estonia	0.226***	0.035
Central Estonia	-0.033	0.032
North-eastern Estonia	-0.132***	0.039
Western Estonia	-0.035	0.033
Personal characteristics		
Non-Estonian	-0.062**	0.032
Age 15–24	-0.016	0.029
Age 50–74	-0.174***	0.029
Female	-0.288***	0.024
Years		
1997	-0.154***	0.049
1999	0.089***	0.026
2000	0.154***	0.029
Const	7.908	0.108
Log-likelihood	-2776.129	
No of observations	1805	

Sources: Labour Force Survey, own calculations.
*Notes Standard errors are given in the last column. * Denotes 10 per cent significance level; ** denotes 5 per cent significance level; *** denotes 1 per cent significance level.*

Individuals who live in the area around the capital, Tallinn, have higher reservation wages, while people in the north-eastern part of Estonia have statistically lower reservation wages than other areas. People living in the central and western part of Estonia do not have statistically lower reservation wages compared with southern Estonia. Looking at the general wage data from local areas, it can be seen that wages are almost 50% higher in the capital compared to other regions. While the wage level in north-eastern Estonia is not much lower compared with other counties. The reason for the significantly lower reservation wages in north-eastern Estonia could be the extremely low labour demand in the region. The labour

market in the north-eastern part of Estonia can be described as being dominated by a few large enterprises and decreasing sectors of the economy. Considering the low geographical labour mobility and industry specific skills of the individuals, this leads to bad labour market conditions which lower the wage demanded by unemployed.

Personal characteristics, like age and especially sex, are important determinants of reservation wages. It is interesting to note that older people from the age group starting from 50 years and older have significantly lower reservation wages compared with the 25–49 age group. It could be that if a person becomes unemployed at 50 then he or she may be willing to start to work for a lower wage compared to the younger workers from fear of the effect of the bad signal an unemployment period at this age might give to the employer.

One of the most important determinants of reservation wages is sex. Female unemployed have much lower reservation wages compared to male. The result is not surprising when looking at the wage data in Estonia, according to which the average wage of a male worker in the period 1997–2000 was 30 to 40 per cent higher than for female workers. By and large, the wage area has not changed much in the second half of the nineties while the wage area has been increasing in some professions, such as clerks, and decreasing in others, such as some skilled work groups.

Non-Estonians have lower reservation wages compared to Estonians according to the estimations. This result may reflect the effect of language barriers. While it could also be explained if one looks at the qualifications held by non-Estonian unemployed which tend to be exclusively from decreasing sectors of the economy.

4.2. The Influence of the Reservation Wage on Unemployment Duration

The hazard of leaving unemployment is modelled using predicted reservation wages as well as personal and labour market characteristics, which determine the offer arrival rate. Offer arrival rate is determined by search intensity as well as the general situation in the labour market and the person's qualifications.

The results from the estimation show that the predicted reservation wage influences unemployment duration. The estimated coefficient of the predicted reservation wage in the regression is negative as expected. The result supports our hypothesis from the beginning of the paper that higher reservation wages in Estonia lead to longer unemployment periods. Still there was no evidence that unemployment benefit and social assistance increase reservation wages.

While unemployment benefit and social assistance were not statistically significant factors determining the level of reservation wages, they have statistically significant influence on the hazard of leaving unemployment. Which leads to the conclusion that unemployment benefit and social assistance reduce the arrival rate of job offers. This has two possible explanations. First, people who receive social assistance/unemployment benefit might be less attractive for employers due to unobserved factors, so that eligibility for benefit is actually a proxy-variable for the lower qualifications. The second explanation is that the unemployed

receiving social assistance search for job offers less actively. The second explanation indicates that social assistance/unemployment benefit give the unemployed some incentive to become/stay unemployed. The result has been shown before by Kuddo *et al* (2002). It is interesting to note that according to the current analysis, social assistance/unemployment benefit do not influence the level of reservation wage but rather have effect on the job offer arrival rate and presumably on the job search intensity. Based on theoretical research on the effects of social benefit (see, for example, Nickell and Layard, 1999) it should be concluded that there is a need for active labour market measures in the Estonian labour market as well as stricter eligibility requirements for unemployment benefit.

Table 4.2. Determinants of unemployment duration (dependent variable: hazard of finding a job)

	Mean	se
Log reservation wage (predicted value)	-3.047*	1.718
Search incentives		
Social assistance/unemployment benefit	-0.807***	0.103
Work experience		
No previous work experience	-0.107	0.256
Agriculture	-0.380	0.236
Services	0.073	0.123
Elementary occupations	-0.442*	0.232
Legislators, senior officials, professionals, technicians, associate professionals and, clerks	0.248	0.219
Education		
ISCED<3	-0.715***	0.252
ISCED>4	0.576***	0.228
Local environment		
Northern Estonia	1.071***	0.417
Central Estonia	0.135	0.126
North-eastern Estonia	-0.409	0.259
Western Estonia	0.062	0.143
Personal characteristics		
Non-Estonian	-0.482***	0.153
Age 15–24	-0.187*	0.113
Age 50–74	-0.374	0.300
Female	-0.855*	0.494
Years		
1997	0.748***	0.262
1999	-0.026	0.186
2000	-0.803***	0.327
Log-likelihood	-3500.186	
No of observations	1805	

Sources: Labour Force Survey, own calculations.
*Notes: Standard errors are given in the last column. * Denotes 10 per cent significance level; ** denotes 5 per cent significance level; *** denotes 1 per cent significance level.*

Among the factors describing a person's previous work experience, the sector is not a statistically significant determinant of the duration of unemployment. While it can be said that individuals who have been occupied at elementary occupations have longer unemployment periods. Education is also an important factor in determining the length of the unemployment period. Unemployed with a basic education have significantly lower probability of finding a job compared to the base group and people with higher education have a much higher probability of finding a job.

Regional labour market characteristics influence the hazard of leaving unemployment. In the northern part of Estonia people are faced with a higher hazard of leaving unemployment. Other regions are not statistically different. It is interesting to note that people in the north-eastern part of Estonia do not have a statistically lower probability of finding a job. This can partly be explained by the significant negative effect of non-Estonian nationality. Non-Estonians have lower probability in finding a job. It is interesting to note that they also have lower reservation wages.

Younger people, according to the estimations, have a lower probability of finding a job. The result is surprising, although unemployment among younger people is higher. Still, younger people are usually observed to have shorter unemployment periods. The unusual phenomena in Estonia might be explained by the economic downturn in Estonia, which made it more difficult for young people to enter the labour market. Age has no statistically significant effect on the probability of finding a job in the case of the older age group (50–74), which is probably due to the movement to inactivity in the case of this group of people.

According to the estimations, women have a lower probability of finding a job. This result is the usual observation in other countries, while the general labour market trends in Estonia have shown a higher share of long-term unemployment among male workers, which has been reasoned by looking at the observation that women tend to move into inactivity when losing a job. So the estimated lower probability might be partly due to a decrease in these movements into inactive status in the case of female workers. The result might also be explained by sector-specific factors, the fact that economic downturn cyclically decreased a number of jobs in sectors where the share of male workers is higher (for example, building and some sectors of manufacturing), while the decrease in female employment was more persistent.

As the coefficients of the yearly dummies indicate, the probability of finding a job decreased throughout the period. In the year 1997 the probability of leaving unemployment was significantly higher compared with 1998 and in the year 2000 it was significantly lower compared with 1998.

Conclusions

The paper investigated the effect of reservation wages on unemployment duration and the determinants of reservation wages, as well as estimated the influence of unemployment benefit and social assistance on the reservation wage. No statistically significant effect of unemployment benefit and social assistance on the reservation wage was found in Estonia. The evidence was found that the higher the reservation wage, the lower the probability of finding a job, if other things are equal. It was also found that eligibility for unemployment benefit/social assistance increases the duration of the unemployment period. This indicates a lower offer arrival rate in the case of unemployed receiving assistance, which might be caused by lower search intensity.

It can be concluded that unemployment benefit/social assistance gives people in Estonia some incentive to become/stay unemployed. It does indicate the need for the stricter eligibility requirements for benefit and social assistance.

According to the estimations, the higher the unemployed individual's income per household member, the higher the reservation wage. Factors that indicate the qualifications of the worker, such as previous work experience and education are important determinants of the reservation wage. Individuals with no previous work experience have a lower reservation wage. Unemployed individuals who have previous work experience in agriculture or elementary occupations also have lower reservation wages. Unemployed individuals have higher reservation wages in Northern Estonia – in the capital, Tallinn – while the unemployed from Ida-Viru County have lower reservation wages compared with other regions. The personal characteristics of the unemployed are also important determinants of their reservation wage. Women have much lower reservation wages compared to men. Also non-Estonians have lower reservation wages compared to Estonians and older people from the age group over 50 have lower reservation wages compared to the age –group of 25–49.

According to the estimations, besides the reservation wage and factors determining search incentives, the other determinants of unemployment duration are again education and work experience. The higher the educational level of an unemployed person, the higher the probability of them finding a job. The sector in which a person's previous job was held is not a significant determinant of unemployment duration, but if a person worked in an elementary occupation he or she would have a lower probability of finding a job. People living in Northern Estonia have a higher probability of finding a job compared to the unemployed from other regions. Personal characteristics such as nationality, age and sex are important determinants of unemployment duration: non-Estonians, younger individuals and female unemployed have a lower probability of finding a job.

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Appendix. Description of the variables

Duration of unemployment	–	Measured as the number of months in unemployment up to finding a job or to the interview month.
Log. reservation wage	–	A logarithm of the person's reservation wage. In the case of censored observations, when a person is still unemployed during the time of the interview the dataset includes information about his/her reported reservation wage. In case a person has found a job by the time of the interview the new wage is used to describe his reservation wage. Data about reservation wages is in the interval form. The intervals are given in the second section of the paper.
Log. income	–	A logarithm of the income per household member. The income of the household is divided by the number of household members.
The following variables take the value 1 when the characteristic is present, and 0 otherwise:		
Social assistance/benefit	–	The eligibility for social assistance or unemployment benefit.
No previous work experience		
Agriculture	–	Previous work experience in agriculture, hunting and forestry, fishing.
Service	–	Previous work experience in wholesale and retail trade, hotels and restaurants, transport, financial intermediation, real estate, public administration, social security, education, health and social work, other service activities.
Elementary occupations	–	Previous work experience in elementary occupations.
Legislators, senior officials, professionals, technicians, associate professionals and clerks	–	Previous work experience as legislators, senior officials, professionals, technicians, associate professionals and clerks.
<3		Educational level equal to basic education or less.
>4		Educational level equal to higher education.
Northern Estonia	–	Living in Harju County.
Central Estonia	–	Living in Järva, Lääne-Viru or Rapla County.
North-eastern Estonia	–	Living in Ida-Viru County.
Western Estonia	–	Living in Hiiu, Lääne, Pärnu or Saare County.
Non-Estonian	–	Non-Estonian according to the survey.
Age 15–24	–	In the age group 1524.
Age 5074	–	In the age group 50–74.
Female		
1997	–	The unemployed found a job or the unemployment spell was censored in the sample in 1997.
1999	–	The unemployed found a job or the unemployment spell was censored in the sample in 1999.
2000	–	The unemployed found a job or the unemployment spell was censored in the sample in 2000.