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Determinants of Reservation Wages: Empirical Evidence for Estonia

Liina Malk*

Abstract

This paper provides an empirical analysis of the individual and macroeconomic determinants of reservation wages with a particular focus on the influence of unemployment duration. Data from the Estonian Labour Force Survey 2011–2013 and instrumental variable regression analysis are used for estimating the determinants of reservation wages. The findings indicate that personal characteristics, the household's income level and the regional unemployment rate are important factors that affect reservation wage setting. In addition, it appears that unemployment duration has a significant negative influence on the reservation wage, which is mainly driven by men and older individuals.

JEL Codes: J31, J64

Keywords: unemployment, reservation wage, unemployment duration, instrumental variable regression

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The views expressed are those of the author and do not necessarily represent the official views of Eesti Pank.

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Non-technical summary

The probability of a job-seeker finding a job and thus the duration of unemployment are determined by how probable it is that a job offer will be received and whether the job-seeker will accept the offer. Whether the offer will be accepted depends on the reservation wage, which is the lowest wage for which the unemployed person would be willing to go to work: they will accept the job offer if the wage offered is at least as high as the reservation wage.

The size of the reservation wage depends on other sources of income, the probability of a job offer being received, and the expected wage offer. The higher the alternative income is, for example from unemployment benefits or other household members, the higher the reservation wage is. The probability of a job offer being received depends on the general state of the labour market; the individual characteristics like age, education and qualifications of the unemployed person; and how intensive the search for a job is. The higher the probability that a job will be found and the higher the expected wage offer, the higher the reservation wage of the unemployed person. A higher reservation wage when all else is equal means that finding a job may be harder and the duration of unemployment may be longer.

The reservation wage may change during a period of unemployment, for various reasons. Firstly, the probability of a job offer being received and the expected wage being offered both depend on the general state of the labour market, and so changes in the labour market may have an effect on the wage expectations of the unemployed. Secondly, knowledge and skills may deteriorate the longer unemployment lasts, and employers may doubt the qualifications of the unemployed, and so the reservation wage can be expected to fall as the duration of unemployment lengthens. A longer duration of unemployment may, however, mean that the unemployed person gets to know the state of the labour market and wages better, and so can adjust their salary expectations accordingly. Thirdly, the reservation wage is affected by changes in alternative income, for example the expiration of unemployment benefits is expected to lower the reservation wage.

From this, a two-way relationship may be seen between the reservation wage of the unemployed and the duration of unemployment. Although a higher reservation wage will lengthen the search for a job, it may also be assumed that the lengthening of the job search will lead the unemployed to adjust their wage expectations. The aim of this paper is to assess whether this relation holds for the unemployed in Estonia and what other factors affect their wage expectations. The study is conducted using data from the Estonian Labour Force Survey 2011–2013.

The analysis shows that the reservation wage of the unemployed in Estonia decreases with age. It also reveals that the reservation wage of women is on average 24% lower than that of men. The reservation wage of men may be higher because men generally earn more, and so their wage expectations are also higher.

As expected, there is a positive relationship between education and the reservation wage, so that the higher the level of education, the higher the expected wage. The analysis indicates however that there is no statistically significant difference between the wage expectations of those with primary education and those of people with secondary education. It also becomes apparent that the effect of the level of education on the reservation wage is not significant for men or for unemployed people aged over 25.

From the analysis it appears that unemployed people who did not leave their previous job voluntarily, because they were fired or made redundant, have a much lower reservation wage. This is also to be expected, as those who have decided of their own free will to leave their job can probably permit themselves a period of unemployment, and their job search costs are smaller, meaning their wage expectations are higher. As lower job search costs may result from the household being economically better off, the positive relationship between household income and the reservation wage is also to be expected.

A negative relationship appears between the reservation wage and the regional unemployment rate, which indicates that the wage expectations of the unemployed looking for work in regions with higher unemployment are lower. The average wage in the region does not, however, have a significant effect on the reservation wage.

The effect of the duration of unemployment on the reservation wage appears to be negative. This means that longer unemployment spells lead to lower reservation wages. The results indicate that one extra month of unemployment leads to a fall of 0.5% in wage expectations. However, if the equation for the reservation wage is estimated separately by gender and by age group, it appears that this fall is mainly driven by men and older unemployed people.

Contents

1. Introduction

The reservation wage, as the lowest wage at which a worker is willing to accept a job offer, is an important determinant of the probability of that worker finding a suitable job and becoming employed, and also of the actual wage received (see e.g. Lancaster and Chesher (1983), Jones (1989), Blackaby et al. (2007)). Since unemployment has often been seen as a consequence of high reservation wages (Brown and Taylor (2013)), then the persistency of unemployment could be associated with downward inflexible reservation wages preventing matches between workers and employers. This means that inflexible reservation wages could be considered as one source of rigidities and lengthy adjustments in the labour market. This makes it necessary to analyse the expectations of the unemployed and the determinants of their reservation wages in order to understand the adjustment processes so that labour market policy can be designed in a way that will improve the matching between workers and employers.

The main objective of this paper is to analyse empirically the determinants of reservation wages using the job-search theory with a particular interest in the influence of the duration of the unemployment spell. The data for this study are drawn from the Labour Force Survey (LFS) of Estonia. The analysis covers the years 2011 to 2013, with a total of 2943 observations covering 2288 individuals. The methodologies used in this paper are ordinary least squares and instrumental variable regression.

In Estonia, the reservation wages in the job search model framework has been analysed by Hinnosaar (2003), whose focus was on the determinants of reservation wages and their effects on unemployment duration. However, to the author's knowledge the reverse relationship, the effect of unemployment duration on the reservation wage, has not been analysed in Estonia. Therefore this study may help to give a better understanding of how the reservation wages of the Estonian unemployed are determined and how they alter during the spell of unemployment.

The remaining part of the paper is organised as follows. Section 2 describes the Estonian labour market to give some background. Section 3 describes the underlying theoretical job-search model for explaining reservation wages. Section 4 surveys previous empirical studies on reservation wages. Section 5 describes the data and the estimation strategy. Section 6 presents the estimation results for the whole sample and for different sub-samples. Finally, section 7 summarises briefly the main findings of the study.

2. Background of the study: the Estonian labour market

In 2013 about 59,000 people in Estonia were unemployed, which is 8.6% of the labour force (see Figure 1). Of those unemployed, 44% had been unemployed for more than a year and 26% for more than two years, which suggests that a large share of unemployment in Estonia is structural. There could be many possible sources of mismatch, such as geography and skills, but structural unemployment could also emerge from wage bargaining if the job seekers' wage expectations exceed the employers' wage offers. In the following, the dynamics of both average wage and reservation wage are described and some possible underlying institutional factors are discussed.

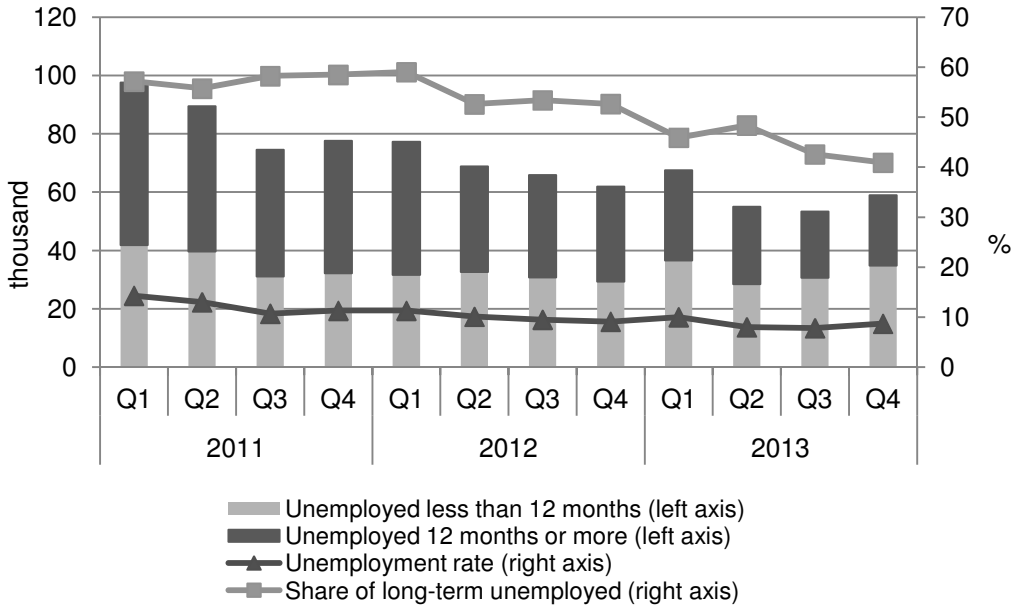

Figure 1: Unemployment in Estonia, 2011–2013

Source: Statistics Estonia.

Having fallen by 5% in 2009, average monthly gross wage started to grow again in mid-2010 and has been moving upwards since then. As employment recovered rapidly in 2011–2012, annual growth in average wage reached almost 6% (see Figure 2). The growth rate was even more rapid in 2013, when the average monthly gross wage increased by 7% from 2012, reaching 986 euros by the end of 2013.

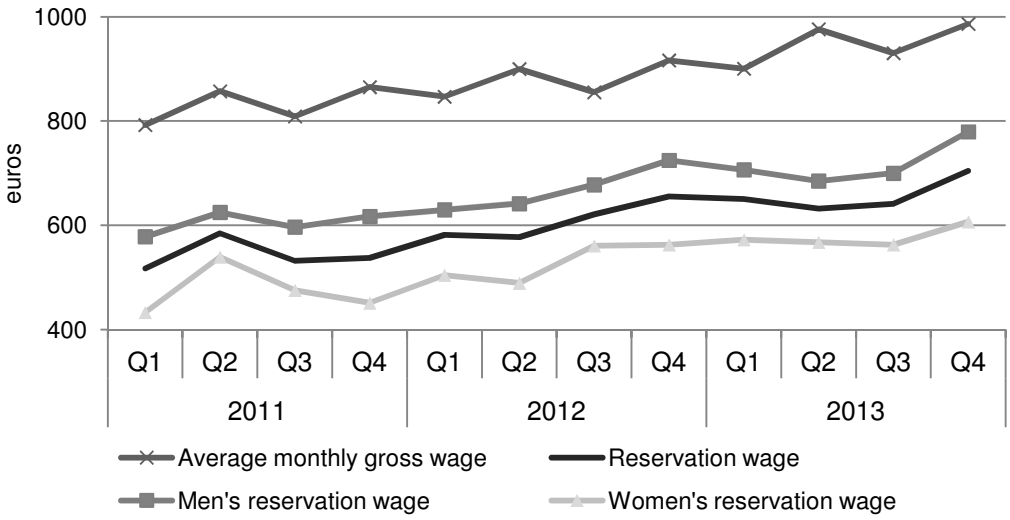

Figure 2: Average wage and reservation wage in Estonia, 2011–2013

Source: Statistics Estonia; author's calculations.

With increasing salaries and job opportunities, the wage expectations of the unemployed also grew significantly in 2011 and 2012, and they continued to increase rapidly in 2013, reaching 705 euros by the end of 2013 (see Figure 2). The ratio of the reservation wage to the average wage has increased during the last three years, from 0.65 in 2011 up to 0.69 in 2013. Thus the wage expectations of the unemployed have increased faster than the average wage. The data on reservation wages also show significant differences in the wage expectations of men and women.

Wage structure and developments could be influenced by labour market institutions like labour unions, minimum wages and unemployment benefits. The role of labour unions in Estonia can be considered weak, as the trade union density is below 10% and the collective bargaining coverage is relatively low at around 19% (OECD (2012)). This means that wages are relatively flexible in Estonia. Furthermore, flexible remuneration methods like hourly and piece-rate compensation schemes are more common in Estonia than in other EU member states (Dabušinskas and Rõõm (2011)).

The national minimum wage in Estonia is settled in annual bipartite meetings between the Estonian Trade Union Confederation and the Estonian Employers' Confederation and is given legal force by the government. In 2012, minimum wages increased by 4%, from 278 euros, where they had been since 2008, to 290 euros, and in 2013 they rose again by 9% from 290 euros to 320 euros. As a result, the ratio of minimum wages to average wages increased

from 0.33 in 2012 to 0.34 in 2013. An increase in the ratio of minimum wages to average wages generally indicates a higher degree of wage rigidity. However, since the reservation wages of the unemployed are much higher than the minimum wage then the impact of changes in the minimum wage is probably not very significant in Estonia.

In terms of institutional developments, it is important how minimum wages relate to unemployment benefits. If starting work entails additional costs, minimum wages that slightly exceed the benefits might not provide sufficient motivation for a person to accept a job offer. In Estonia, the unemployed may have the right to receive an unemployment allowance or unemployment insurance benefit. The unemployed are entitled to an unemployment allowance if they have registered as unemployed with the Estonian Unemployment Insurance Fund and have the required unemployment insurance history. An additional condition for receiving the unemployment insurance benefit is that the unemployment must be involuntary, meaning that those who left their most recent work by agreement between the parties, due to a breach of contract, or at their own initiative are not entitled to receive unemployment insurance benefit.

In 2011–2012, the unemployment allowance was 65 euros and it increased to 101 euros in 2013. The average unemployment insurance benefit paid increased from 257 euros in 2011 to 313 euros in 2013, so it is only just below the minimum wage, suggesting that the minimum wage might not provide sufficient motivation for those receiving the unemployment insurance benefit to return to employment. However, this could hold only for low-paid workers. Besides, since the share of the unemployed receiving unemployment insurance benefit has been around 40%, then the motivation for most unemployed people to accept a job offer should not be affected by unemployment insurance benefits.

3. Reservation wages in the job search theory

In order to analyse the determinants of reservation wages in detail, a model of job-search theory is needed (see e.g. Lancaster and Chesher (1983), Jones (1989), Bloemen and Stancanelli (2001), Christensen (2001), Christensen (2002), Prasad (2003), Hinnosaar (2003), Blackaby et al. (2007)). In the job-search model, it is assumed that an unemployed person in the searching process will maximise their income by choosing a reservation wage and a search intensity. These options depend on the alternative income, the probability of a job offer being received, and the perceived distribution of wage offers.

The higher the alternative income is, the higher the reservation wage. The probability of a wage offer being received is determined by the general state of the labour market, by the personal characteristics such as the gender, skills and age of the unemployed person, and by the unemployed person's search effort. The larger the probability of a suitable job offer being received is and the higher the expected wage offer, the higher the reservation wage becomes.

In the optimum, the reservation wage and search intensity are chosen at a level where the expected return from another period of search equals the expected cost. The duration of unemployment or the probability of a move into employment is determined by the probability of a job offer being received and the probability of it being accepted.

The probability of a person accepting a job depends on their reservation wage. An unemployed person will accept a job offer if the wage offered is higher than or equal to the reservation wage. Optimal search theory predicts a positive correlation between unemployment duration and reservation wages, so that workers with higher reservation wages tend to have longer spells of unemployment.

The preceding discussion assumed that reservation wages remain constant over the unemployment spell, but the reservation wage might change with the duration of unemployment for many reasons. Firstly, as the probability of a job offer being received and the distribution of wage offers depend on the state of the labour market, the reservation wages can be affected by the dynamics of the labour market. Secondly, the probability of an offer being received might also decrease the longer the spell of unemployment lasts, because the human capital of the unemployed may depreciate and employers might take a long spell of unemployment as a negative signal about the qualifications and effort of the worker.

The reservation wage may also change with the changes in alternative incomes. Unemployment benefits usually decrease the longer unemployment lasts, and eventually they completely disappear. This means that the opportunity costs of staying unemployed increase over time and the reservation wage can be expected to fall. At the same time, the ending of eligibility for unemployment benefits may increase the job finding probability by increasing the search effort of the unemployed. However, the search effort may also decrease as the spell of unemployment increases and the hope of finding a job fades.

Finally, at the beginning of the unemployment spell, the unemployed do not know precisely about the distribution of market wages. As unemployment continues for longer they might learn more about the true wage distribution and adapt their reservation wages.

So given these possible dynamic effects, the theory suggests that the duration of unemployment could be considered as another determinant of the reservation wage. This means that the reservation wage and the duration of unemployment may be determined simultaneously, which makes it difficult to test empirically whether the reservation wage is constant or changes through the unemployment spell. However, some econometric strategies have been proposed and employed in the literature for dealing with this endogeneity problem and the following analysis will employ the instrumental variables estimation approach suggested by Jones (1988) to obviate this problem of endogeneity.

4. Review of the empirical studies

An extensive empirical literature exists (see e.g. Franz (1980), Jones (1989), Christensen (2001), Prasad (2003), Brown and Taylor (2011), Brown et al. (2011), Blien et al. (2012)) which has explored the determinants and implications of reservation wage setting at the individual level. In general, the studies can be divided into two categories. One group consists of studies examining the effect of reservation wages on unemployment duration and the other group consists of studies analysing determinants of reservation wages. Most of the empirical literature from the first group gives evidence of a positive relationship between reservation wages and the duration of unemployment, meaning high reservation wages are associated with longer spells of unemployment. However, the results of the studies from the second group concerning the effects of the duration of unemployment on the reservation wage are ambiguous. Only a few of them have found decreasing reservation wages resulting from the increasing duration of unemployment.

The role of reservation wages in determining the duration of the unemployment spell has been investigated by Lancaster and Chesher (1983) and Jones (1988 and 1989) among others. The results of those studies indicate a positive relationship between reservation wages and unemployment spells. This means that the reservation wage plays a significant role in determining the duration of the unemployment spell.

All the studies examining the determinants of the reservation wage have shown that the reservation wage is affected by individual characteristics (e.g. Franz (1980), Jones (1989), Prasad (2003), Brown et al. (2011), Blien et al. (2012)). For example, Prasad (2003) showed that reservation wage levels are positively correlated with observed attributes of general human capital like the level of education and are generally higher for men. The existence of a gender reservation wage gap in favour of male workers has also been found by Brown et al. (2011) and Blien et al. (2012).

Jones (1989) has found that in addition to personal characteristics, the wage in a previous job has an important influence on reservation wages, and the same result has been identified by Hogan (1999). Furthermore, he has found that the expected future wage is also an important determinant of the reservation wage. The potential divergence between the reservation wages of the unemployed and their expected future wages has also been studied by Brown and Taylor (2011), who analysed the factors that influence this divergence. They showed that the intensity of the job search plays a significant role.

The results for the influence of unemployment and other social benefits are ambiguous. The results of studies by Franz (1980), Jones (1989), Christensen (2001) and Hogan (2004) show that neither the unemployment benefits nor the social insurance have any influence on reservation wages, though Hogan (1999) has identified unemployment benefits as having a small effect on reservation wages in one of his previous studies. In direct contrast, Kiefer and Neuman (1979) and Prasad (2003) have shown that reservation wages appear to be significantly influenced by the availability of unemployment compensation, while Fishe (1982) has found a significant drop in reservation wages when unemployment benefits are exhausted.

The role of macroeconomic determinants in determining reservation wages has also been examined in many studies, but the results are again ambiguous. Franz (1980) has found that labour demand side variables are less important and Jones (1989) has found that the effect of the local unemployment rate on reservation wages is unclear. Hogan (1999) has shown that unemployment rates have only a small effect on reservation wages, though he has found that reservation wages are lower in regions with higher unemployment but the effect of regional unemployment rates on the reservation wage is small and in some regressions statistically insignificant (Hogan (2004)). Moreover, he has found that market wages appear to have more influence than unemployment rates on reservation wages (Hogan (2004)). In contrast to this, Blien et al. (2012) have shown that the reaction of reservation wages to regional unemployment is larger than that of market wages. Brown and Taylor (2013) have further found that a higher regional unemployment rate is associated with lower reservation wages. The study of Christensen (2001) showed that among the explanatory variables relating to labour market conditions, only the skill-specific unemployment rate has a significant influence on the reservation wage.

The only analysis of the determinants of reservation wages in the context of Estonia is by Hinnosaar (2003). Like others, she showed that personal characteristics like age, gender and education are important determinants of reservation wages. By her estimations, older people from the age group 50 and older have lower reservation wages than the 25–49 age group, and un-

employed women have much lower reservation wages than men. Her analysis gives evidence for the positive effect of the level of education on the reservation wage, and she also found that the higher the household's income per household member, the higher the reservation wage. However, no significant effect from the unemployment benefit on the reservation wage could be found in her estimations. In her findings, non-Estonians have lower reservation wages than Estonians.

Among the studies examining the persistence of reservation wages, Kiefer and Neuman (1979) and Fishe (1982) have used a job-search model with non-static reservation wages to test the hypothesis of static reservation wages. They have found that reservation wages decline significantly with the duration of unemployment. The same result has been found by Addison et al. (2010), who have shown that reservation wages decline over the course of the unemployment or jobless spell.

Krueger and Mueller (2014) have provided evidence of decreasing reservation wages over the spell of unemployment as well. Using longitudinal data from a survey of unemployed workers in New Jersey, they found that reservation wages decline at a modest rate over the spell of unemployment, with point estimates ranging from 0.05 to 0.14 percent per week of unemployment. Their results indicate that this decline in reservation wages is driven primarily by individuals aged 51 and older.

The opposite result has been found by Franz (1980), Prasad (2001) and Christensen (2001) and Christensen (2002). In their studies no significant negative influence from the duration of unemployment on reservation wages can be found. However, Prasad (2001) and Christensen (2001) have provided evidence for declining wage offers. In addition, Christensen (2002) has argued that with unemployment duration the ratio of reservation wages to offered wages increases as reservation wages remain steady while potential offered wages decline. He concludes that unemployment duration is the main determinant of the reservation wage/offered wage ratio and those who have been unemployed for longer overestimate their chances on the labour market.

Brown and Taylor (2013) have modelled unemployment duration and reservation wages simultaneously. They found that the elasticity of unemployment duration with respect to reservation wages is positively and statistically significantly elastic. At the same time the elasticity of reservation wages with respect to unemployment duration has been found to be inelastic and negative.

5. Data and methodology

5.1. Data sources and data description

The empirical analysis of this study uses the individual-level data of the Estonian Labour Force Survey (LFS). The LFS is a sample survey conducted by Statistics Estonia using the methodology of the International Labour Office (ILO) to give a picture of employment, unemployment and the working conditions of the population (Statistics Estonia (2012)). The LFS covers the permanently residing population aged 15–74. In every quarter each adult member from a nationally representative sample of around 2800–3000 private households is surveyed, yielding around 4000–5000 individual interviews.

It has been argued that using cross-sectional data to estimate the changes in reservation wages over the unemployment spell may lead to bias because the sample of unemployed workers evolves over time, and that using repeated information on reservation wages from panel data would help to avoid this gap (see e.g. Krueger and Mueller (2014)). As the LFS has a rotating panel structure, then it should also be possible to use the panel dimension for observing the changes in the reservation wages of the same unemployed individuals. However, this could lead to another shortcoming, as the rotation scheme of the LFS[1] means that the analysis based on panel data would be biased towards the long-term unemployed. Therefore, the panel dimension of the data has not been exploited in this study.

In the following modelling process, unemployed people who reported their reservation wage are included in the sample. The values of reservation wages are based on subjective information given in response to the question: "How high should the gross salary be for you to accept a job?"[2] Given the data availability, the study focuses on the years 2011–2013[3]. People looking for a part-time position are excluded from the sample, because no information exists about the exact number of hours an unemployed person would like to work, so there is no information about the hourly reservation wage. The val-

[1] An individual enters the sample for two consecutive quarters, stays out of the sample for the following two quarters and enters the sample again for two consecutive quarters.

[2] One limitation sometimes mentioned when working with requested reservation wage data is how valid the reservation wage information is. This is because some respondents may fail to understand the question on reservation wages or may not bother to give precise answers (Lancaster and Chesher (1983)). However, since the concept of the reservation wage is subjective by definition, then the only way to analyse it is to use the information on reservation wages obtained from self-reported surveys.

[3] Before that there is no information about the household's income level.

ues for reservation wages are deflated by the national consumer price index[4]. Figure 3 plots the distribution of the reservation wages for the observed sample.

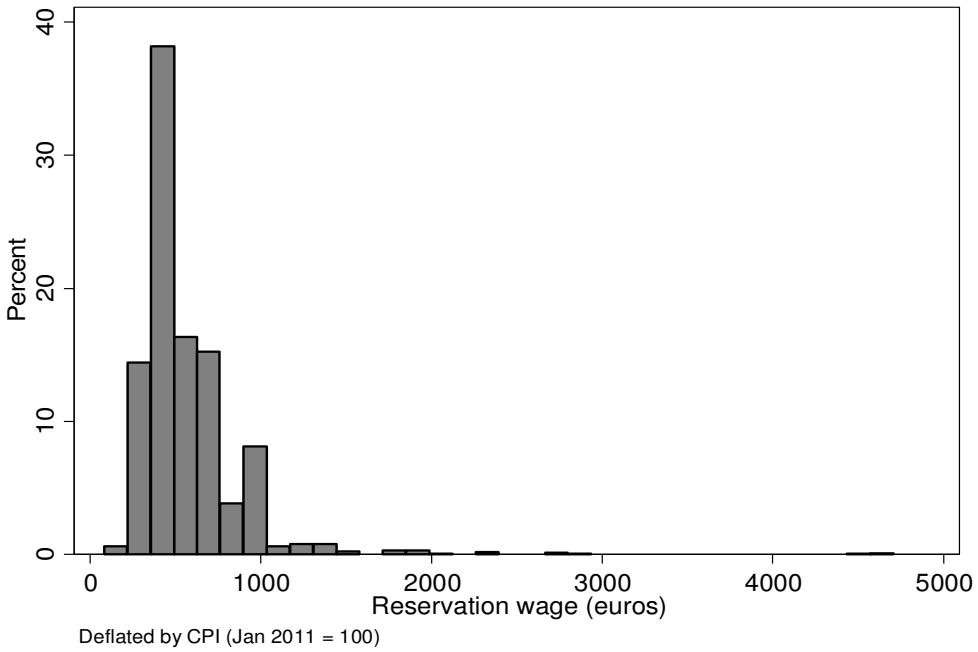

Figure 3: Distribution of the reservation wages of the unemployed

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

Unemployment spell duration is measured at the interview date and there are no exits into employment in the period when the reservation wage is observed. This means that the unemployment spells included in the sample are continuing because otherwise the respondents would not have to indicate their reservation wage. This is also reasonable given that the aim of this study is to examine the determinants of reservation wage setting. At the time of reporting the reservation wage respondents only know for how long they have been unemployed but not what the duration of the completed spell will be. Therefore the decision will be made based on the unemployment duration up to the interview date. People reporting unemployment lasting longer than ten years were excluded from the sample. Figure 4 plots the distribution of the unemployment durations for the sample.

[4] Calculated by Statistics Estonia (January 2011=100).

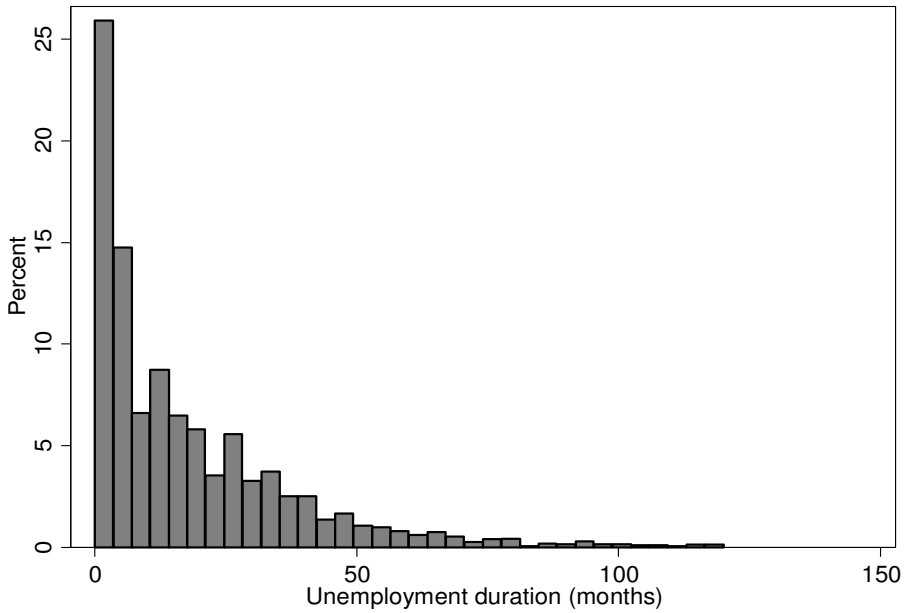

Figure 4: Distribution of the unemployment duration (in months)

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

The relationship between unemployment duration and reservation wage is presented in Figure 5. From this graph no significant relation can be seen. However, a somewhat wider distribution of the reservation wages for shorter unemployment spells suggests a negative relationship between them, meaning that higher wage expectations could be seen for those who have been unemployed for a shorter time.

The socio-demographic explanatory variables used in the modelling are age, number of children and dummy-variables for describing gender, education, marital status, ethnicity, region and previous work experience (sector and occupation of previous employment compared to no work experience and whether the worker had to move out from employment involuntarily). For the economic background the household's net income per member (quartile), the number of different sources for subsistence and dummies for describing receipt of unemployment benefits[5] or financial support from a spouse or other family members are included.

[5] Because of data shortages, the size of unemployment benefits cannot be included.

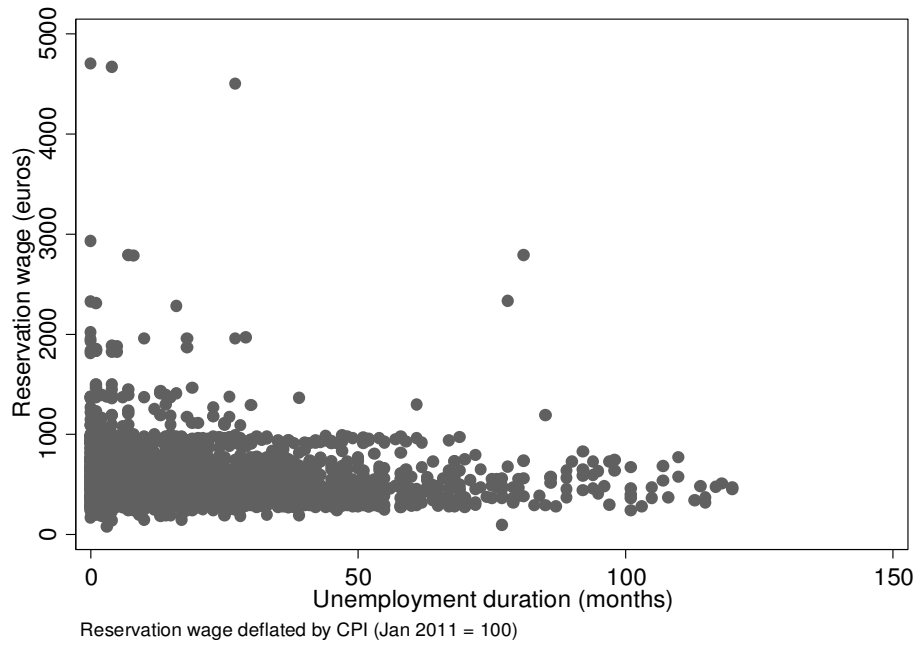

Figure 5: Unemployment duration and reservation wage

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

Since macroeconomic determinants are also likely to play a role in determining reservation wages, then the quarterly regional unemployment and the quarterly regional average wage are used too as variables indicating the labour market conditions. All monetary values are deflated by the national consumer price index[6]. The description of the variables included, together with descriptive statistics, is presented in Appendix 1.

5.2. The estimation approach

In order to analyse the determinants of reservation wage setting, the following reservation wage equation, where the dependent variable is the natural logarithm of the reported reservation wage, is estimated:

$$\ln W_{\text{int}}^{R} = \beta_0 + \beta_1 \ln \overline{W}_{nt} + \beta_3 u_{nt} + \beta_4 d_{\text{int}} + \beta_5 X_{\text{int}} + \varepsilon_{\text{int}} ,$$

[6] Calculated by Statistics Estonia (January 2011=100).

where

$\ln W_{\text{int}}^{R}$ is the natural logarithm of the reservation wage for person *i* in region *n* at time *t*;

$\ln \overline{W}_{nt}$ is the natural logarithm of average wage in region *n* at time *t*;

u_{nt} is the unemployment rate in region *n* at time *t*;

d_{int} is the duration of unemployment for person *i* in region *n* at time *t*;

X_{int} is the vector of socio-demographic variables;

$\beta' s$ are the parameters to be estimated;

$\varepsilon_{\text{int}}' s$ are random error terms.

According to the theoretical framework discussed in section 2 it could be assumed that increases in overall wage levels could lead to an increase in reservation wages and that higher unemployment rates could drive down reservation wages as the probability of a job offer being received becomes smaller. Finally, longer unemployment duration could lead to a reduction in reservation wages.

Since unemployment duration is used as one exogenous variable to determine the reservation wage, an endogeneity problem may occur. This is because the reservation wage and the duration of unemployment are determined simultaneously and so there could be a two-way causation between them. Longer unemployment periods may lead people to decrease their reservation wage, while at the same time the reservation wage influences the duration of unemployment. Furthermore, the unemployment duration is also determined by other exogenous variables like age and education.

To deal with this problem, an instrument variable (IV) approach is used in addition to ordinary least squares (OLS). The idea of IV is firstly to regress the potentially endogenous explanatory variable on the other exogenous variables plus instruments. Then the predicted values of the first stage are used instead of the potentially endogenous explanatory variable. In this way, the instruments are unlikely to have further effects on the endogenous variable, except via their effects on the potential endogenous explanatory variable.

This means, that the choice of instruments must be restricted to variables which directly affect the duration of unemployment but are unlikely to have additional effects on reservation wages. Following the previous literature and some preliminary analysis for instrument relevance, three instruments are selected: the number of different sources for subsistence, a dummy indicating

receipt of unemployment benefits[7] and a dummy for financial support from a spouse or other family members. The intuition behind this choice is that individuals with alternative sources of income would tend to have lower search costs and so they are more likely to be able to afford to search for longer for a suitable job. And so the presence of these alternative sources of income could be expected to affect reservation wages through their effect on the duration of unemployment.

6. Estimation results

In this section, the results of various regression analyses of the determinants of reservation wages are presented[8]. The OLS and the IV estimates are reported in Table 1 (see Appendix 2 for the complete list of estimates together with IV first stage estimates). To decide whether the OLS or the IV estimation is the best estimation strategy, the Hausman-Wu specification test is used for examining the endogeneity issue. It appears that the null hypothesis (the IV and OLS estimates both being consistent) is rejected (test value is 7.0492)[9]. Hence the IV appears to be the more appropriate estimation strategy.

Although the Hausman-Wu test provides evidence for the IV regression being better than OLS, the validity of the instruments also needs to be tested. Testing the possible weakness of the instruments shows that since the F-statistics value is greater than 10 (124.83) there seems not to be any weakness problems with these instruments. The test of overidentifying restrictions[10] also gives evidence for the validity of the instruments used.

From the IV estimates reported in Table 1, it can be seen that the reservation wages are significantly affected by age and gender. It appears that the reservation wage declines with age and that the gender reservation gap is 24% in favour of men. The education variables have the expected positive signs, but only the estimate for the highest level of education is significant, meaning that having tertiary education raises the reservation wage by 7.2% in comparison to primary education.

[7] Though a person can only receive unemployment benefits as long as they are not unemployed for too long. Since ongoing unemployment spells are used in this paper, then people who are receiving unemployment benefits cannot have had long unemployment spells because those benefits are only paid for up to one year.

[8] All estimations were calculated in Stata.

[9] The critical value from the F distribution is $F(1; 2251)_{0.01} = 6.6461$.

[10] Hansen J statistic is 5.5579 ($p = 0.0621$).

Table 1: Determinants of the reservation wage: OLS and IV estimations

	OLS	**IV**
Dependent variable	Ln reservation wage	
	0.028***	0.035***
Age	(0.004)	(0.005)
	–0.038***	–0.045***
$Age^2/100$	(0.005)	(0.006)
	–0.237***	–0.240***
Female	(0.017)	(0.017)
	0.025	0.008
ISCED 2	(0.018)	(0.019)
	0.100***	0.072***
ISCED 3	(0.026)	(0.028)
	–0.015	–0.001
Non-Estonian	(0.019)	(0.020)
	0.011	–0.002
Married, cohabiting	(0.018)	(0.019)
	0.014	0.010
Children	(0.009)	(0.010)
	–0.053***	–0.059***
Involuntary unemployment	(0.017)	(0.017)
	0.040***	0.039***
Household's income level	(0.008)	(0.008)
	–0.002***	–0.005***
Unemployment duration	(0.000)	(0.001)
	0.156	0.119
Ln regional average wage	(0.109)	(0.110)
	–0.012***	–0.013***
Regional unemployment rate	(0.004)	(0.004)
	4.881***	5.101***
Constant	(0.755)	(0.758)
R2 adj	0.3039	0.2774
Observations	2895	2895

Notes: Models also include occupational, industrial, regional and annual dummies (see Appendix 2 for the complete list of estimates). Clustered standard errors (by individual) in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Unemployment duration is instrumented by the number of different sources for subsistence and dummies indicating receipt of unemployment benefits and financial support from a spouse or other family members.

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

Another factor that seems to affect the reservation wage significantly is the reason for becoming unemployed. It appears that the job losers who moved involuntarily into unemployment have a reservation wage almost 6% lower than those who left their jobs voluntarily. This result is not surprising since those who decide to leave employment voluntarily to search for a new job could be expected to have lower search costs, which in turn implies higher reservation wages. Since lower search costs are also associated with higher household income, then the finding of a positive effect from the household income level on the reservation wage is logical and in accordance with theoretical predictions and previous empirical findings as well.

The regional unemployment rate appears to have a significant negative association with the reservation wage, suggesting that workers who are searching for jobs in more distressed areas in terms of unemployment take account of local labour market conditions in setting their reservation wage. However, the level of the regional average wage seems not to be taken into account in decisions about the reservation wage.

Finally, the regression results show that the duration of unemployment has a statistically significant negative influence on reservation wages. It appears that one extra month of unemployment leads to a reduction of 0.5% in reservation wages. This result is in accordance with the theoretical predictions discussed in Section 3 and also with the estimates from Krueger and Mueller (2014).

Appendix 3 shows the results broken down by gender. There are some notable differences between male and female unemployed individuals in the determinants of the reservation wages. The negative effect of being involuntarily unemployed is larger for men, but the positive effects of higher education and the household income level are larger for women. In fact, for men the influence of education in determining reservation wages seems to be insignificant.

The regional unemployment rate seems to have a more substantial influence on men's reservation wage setting, suggesting that men's decisions are more influenced by the local labour market conditions. The same applies to the duration of unemployment, where the negative effect is larger for men and has a lower significance for women. This indicates that the downward adjustment of reservation wages in response to the duration of the unemployment spell is larger for men. However, this might also be because men tend to overestimate their chances of re-employment in the beginning of the unemployment spell and set their reservation too high and therefore over the duration of unemployment they need to lower it to a larger degree.

There are also some differences between unemployed individuals of different ages in terms of the determinants of the reservation wages (see Appendix 4). It appears that the gender reservation gap is the largest among the 25–49 age group, which could be because women are of childbearing age. The effect of education on reservation wage determination only seems to be significant among the youngest age group. In contrast it appears that the household's income level has significant effects only among older age groups, and it is largest for the 25–49 age group. In accordance with the findings of Krueger and Mueller (2014), the results indicate that the decline in reservation wages connected with the duration of unemployment is driven primarily by the individuals of the oldest age group.

Some evidence could also be found for the differences between unemployed individuals with different levels of education in the determinants of the reservation wages (see Appendix 5). It appears that the gender reservation gap is smallest among individuals with an average level of education (ISCED 2). The positive effect of the household's income level seems to increase with education, which is not surprising, since it could be assumed that a higher level of education is associated with a higher level of household income, which in turn implies lower search costs and higher reservation wages. The negative effect of unemployment duration also seems to be somewhat larger for higher educational levels, which may be because more highly educated people suffer larger losses in human capital when unemployment lasts longer, which in turn suppresses the level of reservation wages to a greater extent.

7. Conclusion

This study examined the determinants of reservation wages of the unemployed with a particular focus on analysing the effects of unemployment duration. Data from the Estonian Labour Force Survey 2011–2013 were used for estimating the reservation wage equation.

The results show that personal characteristics are important determinants of the reservation wages of the unemployed. It appears that the reservation wage decreases with age. In accordance with many other empirical studies this analysis also gives evidence for the reservation wage gender gap, which is largest among the 25–49 age group. It is not surprising that the higher the educational level, the higher the reservation wage, but the findings of this study only show these positive educational effects for women and for younger individuals.

According to the job search theory, the household's income level is also expected to influence the reservation wage setting and evidence for this is also found in this study. The findings indicate that the higher the household's

income level, the higher the reservation wage, though this effect is larger for women and increases with age and educational level.

In accordance with many other studies this analysis also shows that labour market conditions play a role in explaining the setting of reservation wages. It appears that a higher regional unemployment rate is associated with a lower reservation wage, though this finding is driven primarily by men and individuals with a lower educational level.

Turning to the influence of unemployment duration, this study gives evidence for the negative effect of unemployment duration on the level of the reservation wage. It appears that one extra month of unemployment is associated with a reduction of 0.5% in the reservation wage. However, this negative effect seems to be driven mainly by men and older individuals.

In summary, the findings presented in this study show that the reservation wages of the Estonian unemployed are negatively affected by the duration of unemployment, suggesting that the Estonian unemployed do adjust their wage expectations in the course of their unemployment spell. Since reservation wages determine the speed of reintegration into the labour market, this adjustment could be considered positive for their chances of returning to work. If unemployed people set their reservation wages too high and do not lower their reservation wages over the duration of unemployment, employment becomes less probable, mainly because human capital decreases with the duration of unemployment.

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Appendix 1: Description of the data

Variable name	Type	Description	No of obs	Mean	Min	Max
Ln reservation wage	[cont.]	Natural logarithm of minimum monthly cross income to take an offered position reported by unemployed persons (in January 2011 prices)	2943	6.246	4.409	8.457
Age	[cont.]	Age of the respondent, in years	2943	38.018	15	74
Age2/100	[cont.]	Age squared dividend by 100	2943	1615.752	225	5476
Female	[0; 1]	Dummy for being female	2943	0.445	0	1
ISCED 1	[0; 1]	Dummy for having pre-primary, primary or lower secondary level education[11]	2943	0.216	0	1
ISCED 2	[0; 1]	Dummy for having upper secondary or post-secondary non-tertiary level education	2943	0.574	0	1
ISCED 3	[0; 1]	Dummy for having tertiary level education	2943	0.210	0	1
Non-Estonian	[0; 1]	Dummy for being Non-Estonian	2943	0.410	0	1
Married, cohabiting	[0; 1]	Dummy for being married or cohabiting	2943	0.548	0	1
Children	[cont.]	Number of children (under the age of 19 years)	2943	0.495	0	7
Tallinn	[0; 1]	Dummy for living in Tallinn	2943	0.260	0	1
North	[0; 1]	Dummy for living in North-Estonia	2943	0.075	0	1
Central	[0; 1]	Dummy for living in Central-Estonia	2943	0.139	0	1
Northeast	[0; 1]	Dummy for living in Northeast-Estonia	2943	0.167	0	1
West	[0; 1]	Dummy for living in West-Estonia	2943	0.133	0	1
South	[0; 1]	Dummy for living in South-Estonia	2943	0.226	0	1
Managers	[0; 1]	Dummy for having worked as a manager	2941	0.030	0	1
Professionals	[0; 1]	Dummy for having worked as a professional	2941	0.058	0	1
Technicians and associate professionals	[0; 1]	Dummy for having worked as a technician or associate professional	2941	0.063	0	1
Clerical support workers	[0; 1]	Dummy for having worked as a clerical support worker	2941	0.050	0	1
Service and sales workers	[0; 1]	Dummy for having worked as a service and sales worker	2941	0.123	0	1
Skilled agricultural, forestry and fishery workers	[0; 1]	Dummy for having worked as a skilled agricultural, forestry or fishery worker	2941	0.016	0	1
Craft and related trades workers	[0; 1]	Dummy for having worked as a craft and related trades worker	2941	0.228	0	1

[11] For more detailed description of the coding see http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:International_standard_classification_of_education_(ISCED)

Variable name	Type	Description	No of obs	Mean	Min	Max
Plant and machine operators, and assemblers	[0; 1]	Dummy for having worked as a plant and machine operator, or assembler	2941	0.150	0	1
Elementary occupations	[0; 1]	Dummy for having worked in an elementary occupation	2941	0.149	0	1
Agriculture, forestry and fishing	[0; 1]	Dummy for having previous working experience in agriculture, forestry and fishing	2897	0.049	0	1
Mining and quarrying	[0; 1]	Dummy for having previous working experience in mining and quarrying	2897	0.011	0	1
Manufacturing	[0; 1]	Dummy for having previous working experience in manufacturing	2897	0.223	0	1
Electricity, gas, steam and air conditioning supply	[0; 1]	Dummy for having previous working experience in electricity, gas, steam and air conditioning supply	2897	0.009	0	1
Water supply; sewerage; waste management and remediation activities	[0; 1]	Dummy for having previous working experience in water supply; sewerage; waste management and remediation activities	2897	0.002	0	1
Construction	[0; 1]	Dummy for having previous working experience in construction	2897	0.161	0	1
Wholesale and retail trade; repair of motor vehicles and motorcycles	[0; 1]	Dummy for having previous working experience in wholesale and retail trade; repair of motor vehicles and motorcycles	2897	0.109	0	1
Transportation and storage	[0; 1]	Dummy for having previous working experience in transportation and storage	2897	0.058	0	1
Accommodation and food service activities	[0; 1]	Dummy for having previous working experience in accommodation and food service activities	2897	0.042	0	1
Information and communication	[0; 1]	Dummy for having previous working experience in information and communication	2897	0.013	0	1
Financial and insurance activities	[0; 1]	Dummy for having previous working experience in financial and insurance activities	2897	0.009	0	1
Real estate activities	[0; 1]	Dummy for having previous working experience in real estate activities	2897	0.013	0	1
Professional, scientific and technical activities	[0; 1]	Dummy for having previous working experience in professional, scientific and technical activities	2897	0.021	0	1
Administrative and support service activities	[0; 1]	Dummy for having previous working experience in administrative and support service activities	2897	0.046	0	1
Public administration and defence; compulsory social security	[0; 1]	Dummy for having previous working experience in public administration and defence; compulsory social security	2897	0.026	0	1
Education	[0; 1]	Dummy for having previous working experience in education	2897	0.033	0	1
Human health and social work activities	[0; 1]	Dummy for having previous working experience in human health and social work activities	2897	0.017	0	1

Variable name	Type	Description	No of obs	Mean	Min	Max
Arts, entertainment and recreation	[0; 1]	Dummy for having previous working experience in arts, entertainment and recreation	2897	0.013	0	1
Other services activities	[0; 1]	Dummy for having previous working experience in other services activities	2897	0.010	0	1
Ln regional average wage	[cont.]	Natural logarithm of average monthly regional cross income (in January 2011 prices)	2943	6.630	6.346	6.944
Regional unemployment rate	[cont.]	Quarterly unemployment rate differentiated by region (North, Central, Northeast, West, South)	2943	11.297	5.8	22.4
Involuntary unemployment	[0; 1]	Dummy for indicating job losers (those who moved to unemployment involuntarily)	2943	0.594	0	1
Unemployment duration	[cont.]	Number of months person have been unemployed as of the day of interview	2943	18.086	0	120
Household's income level	[cont.]	Household's net income level per household member, quartiles	2943	1.741	1	4
Sources for subsistence	[cont.]	Number of different sources of subsistence	2943	1.395	1	4
Unemployment benefits as source of subsistence	[0; 1]	Dummy for receiving unemployment benefits	2943	0.148	0	1
Spouse or other family members as source of subsistence	[0; 1]	Dummy for having spouse or other family members as a source of subsistence	2943	0.753	0	1

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

Appendix 2: Determinants of reservation wage: OLS and IV estimations

	OLS	1. stage IV	2. stage IV
Dependent variable	Ln reservation wage	Unemployment duration	Ln reservation wage
Unemployment duration	−0.002***		−0.005***
	(0.000)		(0.001)
Age	0.028***	2.073***	0.035***
	(0.004)	(0.249)	(0.005)
Age2/100	−0.038***	−2.128***	−0.045***
	(0.005)	(0.311)	(0.006)
Female	−0.237***	0.062	−0.240***
	(0.017)	(0.877)	(0.017)
ISCED 2	0.025	−4.135***	0.008
	(0.018)	(1.057)	(0.019)
ISCED 3	0.100***	−7.14***	0.072***
	(0.026)	(1.353)	(0.028)
Non-Estonian	−0.015	3.435***	−0.001
	(0.019)	(1.001)	(0.020)
Married, cohabiting	0.011	−2.692**	−0.002
	(0.018)	(1.082)	(0.019)
Children	0.014	−1.172**	0.010
	(0.009)	(0.534)	(0.010)
Involuntary unemployment	−0.053***	−0.666	−0.059***
	(0.017)	(0.952)	(0.017)
Household's income level	0.040***	−0.241	0.039***
	(0.008)	(0.389)	(0.008)
Ln regional average wage	0.156	−12.006**	0.119
	(0.109)	(5.915)	(0.110)
Regional unemployment rate	−0.012***	−0.505**	−0.013***
	(0.004)	(0.235)	(0.004)
North	0.020	−0.785	0.016
	(0.030)	(1.409)	(0.030)
Central	−0.080*	−4.038	−0.093**
	(0.047)	(2.551)	(0.047)
Northeast	−0.037	4.370	−0.021
	(0.050)	(2.851)	(0.052)
West	−0.077*	−4.587*	−0.093**
	(0.045)	(2.487)	(0.046)
South	−0.076*	−3.407	−0.088*
	(0.045)	(2.417)	(0.045)
Agriculture, forestry and fishing	−0.177	3.566	0.070
	(0.150)	(4.695)	(0.147)

	OLS	1. stage IV	2. stage IV
Mining and quarrying	−0.181	−1.983	0.042
	(0.160)	(4.943)	(0.154)
Manufacturing	−0.215	1.974	0.027
	(0.146)	(4.096)	(0.142)
Electricity, gas, steam and air conditioning supply	−0.238	6.122	0.021
	(0.165)	(6.161)	(0.162)
Water supply; sewerage; waste management and remediation activities		14.315**	0.282
		(6.801)	(0.215)
Construction	−0.112	1.914	0.134
	(0.147)	(4.204)	(0.144)
Wholesale and retail trade; repair of motor vehicles and motorcycles	−0.178	3.006	0.069
	(0.147)	(4.197)	(0.141)
Transportation and storage	−0.140	2.140	0.106
	(0.148)	(4.486)	(0.145)
Accommodation and food service activities	−0.210	1.646	0.030
	(0.148)	(4.391)	(0.141)
Information and communication	−0.200	−2.995	0.019
	(0.158)	(4.322)	(0.163)
Financial and insurance activities	−0.167	4.771	0.079
	(0.161)	(4.724)	(0.163)
Real estate activities	−0.250	−3.084	−0.023
	(0.159)	(5.255)	(0.157)
Professional, scientific and technical activities	−0.228	−2.451	−0.005
	(0.159)	(4.452)	(0.160)
Administrative and support service activities	−0.193	−1.130	0.037
	(0.150)	(4.242)	(0.145)
Public administration and defence; compulsory social security	−0.143	−0.130	0.088
	(0.151)	(4.547)	(0.149)
Education	−0.373**	−1.346	−0.149
	(0.147)	(4.322)	(0.148)
Human health and social work activities	−0.135	3.204	0.106
	(0.163)	(4.559)	(0.157)
Arts, entertainment and recreation	−0.298*	1.858	−0.050
	(0.154)	(4.765)	(0.152)
Other services activities	−0.235		
	(0.206)		
Managers	0.360**	−5.269	0.103
	(0.155)	(4.342)	(0.146)
Professionals	0.501***	−2.215	0.257
	(0.148)	(4.227)	(0.162)
Technicians and associate professionals	0.460***	−4.620	0.206
	(0.150)	(4.500)	(0.149)

	OLS	1. stage IV	2. stage IV
Clerical support workers	0.278*	−4.232	0.023
	(0.150)	(4.317)	(0.146)
Service and sales workers	0.241	−5.310	−0.016
	(0.149)	(4.331)	(0.142)
Skilled agricultural, forestry and fishery workers	0.145	0.727	−0.083
	(0.160)	(6.371)	(0.158)
Craft and related trades workers	0.313**	−5.081	0.058
	(0.150)	(4.176)	(0.146)
Plant and machine operators, and assemblers	0.230	−2.448	−0.015
	(0.148)	(4.274)	(0.145)
Elementary occupations	0.151	−4.874	−0.101
	(0.148)	(4.243)	(0.146)
Number of different sources for subsistence		−0.005	
		(0.665)	
Receiving financial support from spouse or other family members		−2.373**	
		(1.100)	
Receiving unemployment benefits		−13.940***	
		(0.887)	
Year 2012	0.051***	−1.197	0.045**
	(0.019)	(1.034)	(0.019)
Year 2013	0.059**	−1.753	0.049**
	(0.023)	(1.334)	(0.024)
Constant	4.881***	72.408*	5.101***
	(0.755)	(41.099)	(0.758)
R2 adj	0.3039	0.1643	0.2774
Observations	2895	2895	2895

Notes: Clustered standard errors (by individual) in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Unemployment duration is instrumented by the number of different sources for subsistence and dummies indicating receipt of unemployment benefits and financial support from a spouse or other family members.

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

Appendix 3: Determinants of reservation wage, by gender: IV estimations

	Male	Female
Dependent variable	Ln reservation wage	
Age	0.049***	0.029***
	(0.009)	(0.007)
Age2/100	−0.061***	−0.039***
	(0.010)	(0.009)
ISCED 2	−0.028	0.066**
	(0.027)	(0.026)
ISCED 3	0.044	0.120***
	(0.044)	(0.035)
Non-Estonian	0.026	−0.036
	(0.028)	(0.028)
Married, cohabiting	0.018	−0.033
	(0.032)	(0.023)
Children	0.019	−0.006
	(0.016)	(0.011)
Involuntary unemployment	−0.064***	−0.045*
	(0.025)	(0.024)
Household's income level	0.035***	0.044***
	(0.012)	(0.010)
Unemployment duration	−0.008***	−0.003*
	(0.002)	(0.002)
Ln regional average wage	0.146	0.049
	(0.157)	(0.151)
Regional unemployment rate	−0.020***	−0.009
	(0.006)	(0.005)
Constant	4.782***	5.393***
	(1.071)	(1.047)
R2 adj	0.1439	0.3159
Observations	1606	1289

Notes: Models also include occupational, industrial, regional and annual dummies. Clustered standard errors (by individual) in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Unemployment duration is instrumented by the number of different sources for subsistence and dummies indicating receiving unemployment benefits and financial support from a spouse or other family members.

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

Appendix 4: Determinants of reservation wage, by age groups: IV estimations

	15–24	25–49	50–74
Dependent variable	Ln reservation wage		
Female	–0.179***	–0.279***	–0.179***
	(0.034)	(0.024)	(0.038)
ISCED 2	0.118**	0.001	–0.021
	(0.046)	(0.025)	(0.052)
ISCED 3	0.298***	0.060	0.007
	(0.074)	(0.037)	(0.063)
Non-Estonian	–0.026	0.004	–0.018
	(0.041)	(0.026)	(0.046)
Married, cohabiting	–0.006	0.005	–0.006
	(0.039)	(0.024)	(0.039)
Children	–0.034	0.018	0.061***
	(0.037)	(0.011)	(0.019)
Involuntary unemployment	–0.049	–0.069***	–0.012
	(0.036)	(0.022)	(0.037)
Household's income level	0.019	0.048***	0.034*
	(0.015)	(0.011)	(0.017)
Unemployment duration	0.007	–0.004***	–0.008***
	(0.006)	(0.002)	(0.002)
Ln regional average wage	0.233	0.241*	–0.207
	(0.231)	(0.144)	(0.246)
Regional unemployment rate	–0.015*	–0.013**	–0.015*
	(0.008)	(0.006)	(0.009)
Constant	4.613***	4.915***	7.718***
	(1.607)	(1.006)	(1.712)
R2 adj	646	1570	679
Observations	0.1972	0.3227	0.2450

Notes: Models also include occupational, industrial, regional and annual dummies. Clustered standard errors (by individual) in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Unemployment duration is instrumented by the number of different sources for subsistence and dummies indicating receiving unemployment benefits and financial support from a spouse or other family members.

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

Appendix 5: Determinants of reservation wage, by level of education: IV estimations

	ISCED 1	ISCED 2	ISCED 3
Dependent variable		Ln reservation wage	
Age	0.032**	0.033***	0.032***
	(0.013)	(0.007)	(0.012)
Age2/100	−0.040**	−0.043***	−0.041***
	(0.016)	(0.008)	(0.014)
Female	−0.295***	−0.208***	−0.253***
	(0.036)	(0.022)	(0.043)
Non-Estonian	0.050	−0.002	−0.016
	(0.042)	(0.025)	(0.048)
Married, cohabiting	0.073**	−0.011	−0.057
	(0.037)	(0.024)	(0.045)
Children	0.003	0.012	−0.016
	(0.018)	(0.014)	(0.024)
Involuntary unemployment	−0.040	−0.051**	−0.049
	(0.033)	(0.022)	(0.040)
Household's income level	0.031*	0.040***	0.055***
	(0.018)	(0.010)	(0.016)
Unemployment duration	−0.005	−0.006***	−0.007**
	(0.003)	(0.002)	(0.003)
Ln regional average wage	0.240	0.128	0.170
	(0.224)	(0.143)	(0.242)
Regional unemployment rate	−0.018**	−0.013**	−0.007
	(0.008)	(0.005)	(0.010)
Constant	4.324***	5.030***	4.897***
	(1.522)	(0.988)	(1.661)
R2 adj	0.3050	0.2697	0.3471
Observations	623	1667	605

Notes: Models also include occupational, industrial, regional and annual dummies. Clustered standard errors (by individual) in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Unemployment duration is instrumented by the number of different sources for subsistence and dummies indicating receiving unemployment benefits and financial support from a spouse or other family members.

Source: Statistics Estonia. Labour Force Survey, individual-level databases 2011–2013; author's calculations.

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