Interplay between reservation wage and unemployment duration: Evidence from Macedonia

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Abbreviations

1. 2SLS – Two stage least square
2. AW – Average wage
3. ILO – International Labour Organization
4. IV – Instrumental Variable
5. LFS – Labour Force Survey
6. NEET – Not in employment, education and training
7. OLS – ordinary least square
8. P.p – percentage point
9. PhD - Doctor of Philosophy
10. RUR – Regional unemployment rate
11. RW – Reservation wage
12. SSO – State Statistical Office
13. SWTS – School to Work Transition Survey
14. UB – Unemployment benefits
15. UD – Unemployment duration

Abstract

This study investigates the reservation wage along with the unemployment duration of the youth in Macedonia of a pooled sample of 2012 and 2014. The study assesses the determinants of the reservation wage and in particular how it is related with unemployment duration. The data comes from the School to Work Transition Survey which is a survey that is labor market designed and includes labor market information on young people aged 15 to 29 years. The Two Stage Least Square (2SLS) model is employed by using instrumental variables. This technique is used when the dependent variable's error terms are correlated with the independent variables. In our case, the issue of suspected ednogeneity between the reservation wage and the unemployment duration is treated with the 2SLS technique. The results suggest that an increase of unemployment duration decreases the reservation wage. The remittance receivers have lower unemployment duration and lower reservation wage than the non-receivers. The good financial situation increases the unemployment duration. Graduate persons surveyed have lower unemployment duration. An increase in age increases the unemployment duration and the reservation wage.

1. Introduction

Being a country with relatively high unemployment rate of 23.7% (SSO, 2016) and especially high youth unemployment rate of 49.5% (SSO, 2016) peaks the necessity of a research of the causes of these states on the labor market in Macedonia. The reservation wage is an issue that is very closely related to the unemployment rate, unemployment duration and placement of workers in the labor market. The reservation wage is the lowest wage that a worker is prepared to accept. The theoretical background of this research is based on the job search theory of analyzing the frictional unemployment resulting from job hunting by workers (Haurin and Sridhar, 2003). As Mohanty (2005) states the reservation wage is the most important determinant of the labor supply in modern labor economics. The reservation wages along with the job search are important in shaping the labor market transitions between different statuses, transfer from passive workers to active job searchers, to employed persons, but however they are rarely directly observed. The determination of the reservation wage is important to examine the changes in the labor market. This concept is important for analyzing key aspects of labor market dynamics. More specifically, the reservation wage is a concept that has a relevance for modeling labor supply decisions, through its influence on transitions from non-employment to employment. Moreover, the reservation wage sets the grounds of the job search theory where a person stops its search for a job under conditions of uncertainty and imperfect information. When analyzing and understanding in both fields macroeconomics (participation of workers on the labor market) and microeconomics (personal decisions of workers when to stop the job search) - the influence of the reservation wage is of considerable importance from both analytical and policy perspectives. The literature classifies the determinants of the reservation wage into two categories; the socio demographic characteristics and the other sources of income.

This review will assess the determinants of the reservation wage, how the factors influence the fluctuations of the reservation wage, as well as the effects and the relationship among them. The literature review will be developed in three sections, starting with the basic

determinants of the reservation wage classified as socio-demographic factors, including age, gender, education, qualifications and experience. Second section will cover the other sources of income within the households including the wealth, the income of a spouse or other member of the family and the unemployment benefits. Finally, the relationship between the unemployment duration and reservation wage is elaborated, stating the pros and cons of each phenomenon. Does the reservation wage causes the unemployment duration or is it vice versa and what is the influence on each other.

2. Socio-demographic factors

This section explores the most important socio-demographic factors of reservation wage. Malk (2014) and Hofler and Murphy (1994) elaborate the reservation wage fluctuations taking into account the individual characteristics such as age, gender, education, qualifications and experience. The conclusion is that the more competitive the worker, the higher the probability a job offer to be received, the higher the reservation wage. They state that the relationship between the age and the reservation wage is opposite. Similarly, Brunel (2014) adds that the older the people get, they exhaust their sources of income, which pushes down the reservation wage. However, as Coen (2000) tend to widen the analysis showing evidence of positive relationship of education and reservation wage, adding that education may account for the effect of age on the reservation wage making the age variable negligible. In this context, Coen (2012) investigates the effect of the age on the reservation wage independently and reveals a reverse U-shaped relationship between age and the reservation wage via employment efficacy and a U-shaped relationship via work intention. What this means is that employment efficacy initially increases with age as individuals accumulate experience but then stagnates or decreases because of experience concentration, on one hand, and on the other hand, since people become more likely to avoid situations harming their self-concept as they age, their work intention may decrease (Kanfer & Ackerman, 2004). Other studies however, found a reverse U-shaped relationship where the reservation wage increases until individuals are in

their 30s and then declines with age (Bloemen and Stancanelli, 2001; Prasad, 2003). However, another study of Prasad (2000) revealed a U-shaped relationship where the reservation wage declined until the age of 53 and then increased with age.

What is paradoxical between the analysis of Sant (1977) and Malk (2014) is the concept of learning and education. Sant (1977) concludes that the longer the unemployment duration the lower the reservation wage, but he doesn't take into consideration the concept of education at all. When Malk (2014) considers the education concept, concludes the as the time passes of a person in the education system (prolonging unemployment), the higher the level of learning and education, the higher the reservation wage. Even though both concepts have arguments behind, this may be arguable if further developed. Malk (2014) further disseminates the concept into two way relationship. The higher reservation wage may lengthen the job search, but lengthening of this search may lead the unemployed workers to adjust their wage expectations. Sants (1977) complements to the concept of the two way relationship by stating: "The higher the reservation wage, ceteris paribus the lower the probability of finding an acceptable wage offer, and the longer would be the expected duration of unemployment." (p.49).

In accordance with Coen (2012), higher education, specifically having a degree (undergraduate or post-graduate), is associated with a lower duration of unemployment and lower unemployment duration is associated with higher reservation wage (Addison et al., 2012). More educated, though, seem not to be more averse towards skill depreciation than low educated. The estimated model of Kanfer and Ackerman (2004) confirms that education has an important role for the prospects of finding a job. Also, Gorter and Gorter (1993) state that the reservation wage tends to increase with the level of education.

Coen (2000) also concludes that women have lower reservation wages than man. Rubery and Grimshaw (2009) explain the two main elements to the argument that women may have lower reservation wages than man. Firstly, they are less likely to receive support from the state in the form of unemployment benefits, and secondly, they are expected over their life course to be partially dependent on the other sources of income, mainly the income of the

spouse. Opposite to this, Queralt (2006) concluded that when reservation wages are the same for both men and women, highly educated women are able to receive job offers at the same frequency as highly educated men, which equalizes the reservation wages of men and women at the level of high education. Similarly, Caliendo et al. (2014) suggest that the gender wage gap disappears once the reservation wages are controlled. Also, they conclude that the potential workers with low labor market experience show no gender gap in reservation wages.

The relationship between the other sources of income and the reservation wage is positive. The higher the income the higher the reservation wage. Lamers (2014) main empirical results on the relationship of wealth and reservation wage, but also the job search, conclude that wealth has a significantly positive effect on reservation wages of both household heads and spouses, and a significantly negative effect on the search effort of household heads. He also states that, for heads of the household, a higher non-wage income and a higher income of the spouse influence reservation wages positively.

An increase in a person's experience is expected to increase his wage expectations, and this is in line with previous studies since experienced people rationally assume their productivity will be higher than that of inexperienced people. In addition, previous job experience enhances a person's perception about his productivity and raises his wage expectation (Şentürk, 2015). Other characteristic besides the previously mentioned is previous work experience, which have impact on the wage level and therefore also on the reservation wage level (Hinnosaar, 2004). The analysis of Hinnosaar, (2004) who besides the experience included the variable of region and sector in his analysis, concluded that between 1997 and 2000 the unemployed in North East Estonia had significantly lower, and the unemployed in North Estonia significantly higher reservation wages, and contrary to the previously stated positive relationship of the experience and reservation wage, he concluded that the unemployed with previous work experience in agricultural sector or work experience in elementary occupations had significantly lower reservation wages .

"Work today would increase experience in the future, that increased experience would increase future wage offers, and that higher wages would reduce future welfare dependency"

(Grogger, 2009, p.490). This statement implies that experience would increase expected wages, but his analysis estimated a small effect of experience on reservation wages. Nevertheless, even the effect is small, it is statistically significant. He added that experience increases reservation wages, but it increases wages by a greater amount.

Burger et al. (2017) relying on sample of young respondents found that the reservation wages declines until the age of 30 being influenced by market experiences that is in this case inexperienced workers. They also find that the reservation wages are relatively high and suggest a number of potential factors that could explain high youth reservation wages such as transportation costs, social grants, and the hope of finding high-paying jobs in large rather than small firms.

The reservation wage is dependent on individual characteristics of a person which intends to be placed on the labor market, or as explained above the socio-demographic determinants. The more competent a worker is the higher the reservation wage is. Each determinant age, education, qualifications and experience, except for gender have positive relationship with the reservation wage when measured individually, ceteris paribus. But if some of these socio-demographic factors are combined with each other, or are combined with different factors that also influence the reservation wage, than the interpretation may differ from the one where the socio-demographic factors are measured independently. The dynamics and the selection of variables should be taken with caution when interpreting the movements of the reservation wage if several determinants are taken into account at the same time.

3. Other sources of income

Other factors that the literature treats when considers the determination of the reservation wage are the other sources of income that come within the household of the persons who reported the reservation wage. The main other sources of income according to Malk (2014) are wealth, income of spouse and other family members and unemployment

benefits. The relationship between the other sources of income and the reservation wage is positive. The higher the income in the household the higher the reservation wage. Prasad (2003) also agrees that the variables that proxy for alternative sources of income, including total net household income and a dummy for receipt of unemployment compensation, are positively correlated with reservation wages.

Lamers (2014) also investigates the relationship of wealth and reservation wage, but also the job search, and his results suggest that wealth has a significantly positive effect on reservation wages of both household heads and spouses, and a significantly negative effect on the search effort of household heads. The study of Lentz and Tranaes (2001) suggests that wealth and other income sources may affect search intensity. Individuals may search harder if they have less wealth, or may increase their search intensity as they spend down their assets (Alexopoulos, 2006). The intuition behind the concept of other sources of income 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 (Malk, 2014). Furthermore, Prasad (2003) and Maani and Studenmund (1986) analyze the factors that may influence the search period. They conclude that in the first place are the economic resources. The main example is the last monthly wage income or other sources of income. An unemployed worker who has some other source of income and wealth, total net household income and wealth from home ownership would lower job search costs, which leads to longer periods of search, raising the reservation wage of the job seeker. Their analysis goes deeper in the concept of how the last monthly wage influences the reservation wage. A 1% increase in the last wage affects the reservation wage by approximately 0.3%. Other economic resources variables in their model are considered as dummies for the highest source of income of the job seekers in the first half of 2007 (the year of analysis). The source could be a household member who receives income, a private pension, or a student loan. Those variables are not significant. The variable “total weekly household net income” is also not significant. One explanation of the insignificance as

they note, would be that the total weekly household net income disclosed was too low because the respondents may not have had the complete income information for the entire household.

The same reasoning is behind the unemployment benefits. As unemployment benefits increase the reservation wage increases as well (Beladi and Kar, 2013). If the reservation wage measures the well-being of unemployed workers then higher unemployment benefits reduce the cost of remaining unemployed and therefore raise the reservation wage (Akin and Platt, 2012). Theoretically this leads to a point at which sufficiently high unemployment benefits would eventually eliminate all economic activity (Beladi and Kar, 2013). Addison et al. (2008) made two analyses regarding the unemployment benefits and the reservation wage. The results complement the findings of a positive relationship between the reservation wage and the unemployment benefits based on the data of the European Community Household Panel, although some of the point estimates were not statistically significant based on their chosen methodology. Later, Addison et al. (2010) made analysis for the UK, where again the positive relationship was proven. What the increase of benefits in practice does, are stimulation of workers to stay at home and not place themselves on the labor market. This view is called on-the-job-search predictions in the paper of Akin and Platt (2012), but what they conclude in their paper is the totally opposite from this on-the-job-search prediction. They examine the relationship of the reservation wage and unemployment benefits, but only for workers who receive benefits for finite length of time. In this case, surprisingly, an increase in benefits can actually cause wages to fall. Gorter and Gorter (1993) widen the aspect of unemployment benefits analysis and refer to the effects on the whole economy stating that the benefit level does not influence search duration. In the long run lower benefits and minimum wages lead to structural changes in the production process (substitution of labor for capital), and lower level of unemployment. But, lowering benefits would be harmful to the present unemployed. Unemployment benefits make job search relatively cheaper for the unemployed and thereby stretch unemployment spells, but hopefully lead to a better job and worker match. The negative side is that with a prolonged unemployment spell the qualification of a person might decrease, and finally it might be more difficult to find a new job. Hinnosaar (2004) sees the unemployment benefits as a benchmark to determine the minimum level of the reservation

wage. Unemployment benefits can be the same for everyone or depend on the previous wage level, which directly influences the level of the reservation wage. Unemployment benefits usually change with the duration of the unemployment spell, and when the person is no longer eligible for the unemployment benefit it can be assumed that the reservation wage decreases sharply. Furthermore, Hinnosaar (2004) treats the unemployment benefits from fiscal policy perspective. He states that minimum wage cannot be raised without changing any other labor policy instrument because the constraints on entering the employment lead to unemployment increase. Increasing unemployment benefits should be accompanied by increasing the restrictions on the eligibility of the benefits, so that unemployment benefits would not lead to less intensive job search, as previously mentioned in the concept of on-the-job predictions. In the case of labor policy methods, which lead to lower probability of finding a job and longer unemployment periods, the indirect impact should be taken into account, including decrease in human capital, increasing need for training and larger transfers from the budget. Shimer and Werning (2006) analyzed the length of the unemployment benefits. They state that usually the assumption is that benefits last forever. But in reality as previously stated in the study of Akin and Platt (2012), most unemployment benefit systems pay only for a specified amount of time. For example, in the United States, this is typically 6 months. After this, a worker must be employed for some months before is eligible to collect benefits again. Having this in mind, the authors conclude that when benefits fall with the duration of unemployment, there are two reasons why a worker is willing to take a job. First is earning a wage and resetting the eligibility for benefits, and second is taking a job that will last. An unemployed worker may be willing to take a bad job just long enough to reset the benefit eligibility but unwilling to keep the job forever. In this case two different reservation wages are presented, a low one for a job that one can quit when resets the unemployment benefits eligibility and high one for a job that one is willing to keep if that point is passed. The higher reservation wage is the real one. With no direct evidence on how the reservation wages respond to benefits changes within the unemployment duration, the authors indicate on the search theory suggesting that when benefit duration is finite, newly unemployed workers should be more responsive to a change in benefits than workers who have used up part or all of their eligibility (Berg, 1990). For example,

consider a worker who has been unemployed for a long time and is no longer eligible for benefits. Raising benefits will actually lower such a worker's reservation wage since it encourages one to accept a mediocre job in order to renew eligibility (Carolina and Pau, 2008). Now, when the length of unemployment is considered, Janlet (2014) concludes from his analysis that cumulative length of unemployment is correlated with deteriorated health and health behavior. Brown et al. (2010) states that health does not have any influence on the reservation wage, but has influence on the point whether a worker will be active or passive job searcher.

Fishe (2001) introduces the concept of unemployment insurance rather than unemployment benefits and support the hypothesis that the unemployment insurance has direct effects on reservation wage which lower the costs of non-working activities and thereby increase reservation wages. This, however, tends to be offset by the finite length. These results are consistent with the models of the unemployment insurance system proposed by Mortensen (1977) and Burdett (1979). Higher levels of income from unemployment insurance or other sources significantly increases the reservation wage. This is consistent with other studies such as Lancaster and Chester (1983) and Feldstein (2005) and Poterba (1984).

The analysis of Caliendo (2007) elaborates the issue of other sources of income, but with accent on the spouse in the households analyzed. In his analyses there is assumption that spouses condition their reservation wage on the behavior of their partner and especially their labor market income. That is, the revealed reservation wage of a secondary earner is on top of the first earner's income in a couple household where one of the spouses is working. Additionally, Perez and Rendon (2007) also analyze the same issue and state that once the partner separates from his or her job, the spouses' reservation wage declines, thereby speeding up the partners' transition from unemployment to employment. A consequence of this asymmetry is that the gender wage gap for these married couples is larger when the spouse is unemployed than when he or she is employed.

In conclusion, the other sources of income increase the reservation wages. Wealth and the income of a spouse or other family member increase the reservation wages. The higher

amount of unemployment benefits pushes the reservation wage to go higher, but, what matters is the duration of the unemployment benefits that is if they are for finite length of time, than the effect is opposite.

4. Unemployment duration and the reservation wage

What the literature does not weight on either side is the relationship of the reservation wage and the unemployment duration. Addison et al. (2008) stated that there is a positive influence of the unemployment duration on the reservation wage, while they already know the positive influence of the reservation wage on the duration with certainty. Jones (1988) adds to this statement concluding that there is influence of the reservation wage on the unemployment duration, substantial with the literature from earlier periods (e.g. Lancaster, 1985; Nickell, 1979; Narendranathan and Nickell, 1985). Sants (1977) complements to the concept of this relationship by stating: "The higher the reservation wage, ceteris paribus the lower the probability of finding an acceptable wage offer, and the longer would be the expected duration of unemployment." (p.49). Mohanty (2005) and Kiefer and Neumann (1979) do not agree on this, stating that the influence comes from the other side, unemployment duration lowers the reservation wages. Murphy (1994) agrees that an increase of the reservation wage reflects higher costs from an extended search and resulting from a longer duration of unemployment. The third view in the literature explains that reservation wages and unemployment duration are simultaneously determined (Addison et al. 2012; Lancaster and Chesher, 1984). The elasticity of unemployment duration is decomposed into two components: one due to the elasticity of the reservation wage (scaled by the slope of the wage offer distribution taken at the level of the reservation wage) and the other one due to the elasticity of the job offer arrival rate (or search effort).

Belzil (1992) in his analysis also show that higher reservation wages predict longer unemployment duration. He introduces the concept of observable and unobservable variables that influence the reservation wage. A concern that he considers in his study is that the

empirical relationship between the reservation wage and unemployment duration, controlling for observables, is likely to reflect both the causal effect of the reservation wage on unemployment duration and the influence on the reservation wages of unobservable that are also correlated with unemployment duration. The workers who are more productive are likely to have better prospects and thus higher reservation wages. They are also more likely to stay unemployed for shorter periods. The unobserved heterogeneity in productivity is likely to create a negative relationship between reservation wage and unemployment duration, holding observables constant. Several empirical studies have examined the question of constant reservation wages. One of those studies is of Prasad (2003) using Dutch data, who found no relationship with a simple ordinary least square (OLS) regression, but a positive relationship with instrumental variables (IV) regression, which could be interpreted as support for the constant reservation wage hypothesis. Addison and Pedro (2004) investigate the relationship between post-unemployment wages and unemployment duration. They use this strategy as an indirect test of the declining reservation wage hypothesis. The impact of unemployment duration on wages can also be interpreted as an indicator of poor productivity, or as a measure of the depreciation of human capital during joblessness. There is no impact of reservation wages on the probability of finding a suitable job. The results contain a clear suggestion that the relationship between accepted wages and duration of unemployment shadows the relationship between reservation wages and unemployment duration, as would be expected from job search theory according to the authors. However, a problem that the literature treats regarding the relationship of the reservation wage and the unemployment duration is the problem of endogeneity. The problem is that the reservation wage and the duration of unemployment could be endogenously determined. Furthermore, optimal search theory (Lammers, 2014), under the assumption of a stationary reservation wage, predicts a positive correlation between these variables. That is, workers with higher reservation wages tend to have longer unemployment spells (Prasad, 2003). Additionally, in the model of Prasad (2003) the conditional correlation between the reservation wage and unemployment duration appears to be essentially zero. In fact, although not statistically significant, the parameter estimates are slightly negative. At an intuitive level, this might seem reasonable since, one might expect the

reservation wage to decline as the non-employment spell duration lengthens. Hence, the interpretation of the positive correlation between reservation wages and unemployment duration as being consistent with optimal search theory requires caution in interpretation and further elaboration.

Contrary to the statements of positive relationship of the reservation wage and the unemployment duration, a recent study of Krueger and Mueller (2014), find that reservation wages appear to influence employment decisions among unemployment insurance recipients in New Jersey, but reservation wages are unaffected by unemployment duration and unemployment insurance exhaustion. In the study of Christiansen (2001), no evidence of an influence of unemployment duration and different kinds of unemployment benefits on reservation wages was found for Germany. Again, this finding is in contrast to theoretical models predicting declining reservation wages with increasing unemployment duration. Only in countries with rapidly declining and exhausting unemployment benefits an obvious decline of reservation wages with duration of unemployment is expected (Dolton and O'Neill, 1995). Therefore, the presented results for Germany, which show no declining reservation wages, may simply indicate a low financial pressure to unemployed persons.

The unemployment duration is closely related to the unemployment rate in one country. The policy implications and recommendations of the issues of unemployment duration and reservation wage will eventually implicate in the rate of unemployment, especially the long term unemployment. Falk et al. (2006) conclude that an introduction of minimum wage would increase the reservation wages suggesting that this economic policy may affect people's behavior by shaping the perception of what is a fair wage. And after the removal of the minimum wage the reservation wages remain high. The policy of minimum wage has been a hot topic in Macedonia the recent months, which makes it a good objective for research.

The factual situation throughout the years has been that the relationship between the unemployment duration and the reservation wage is negative. The longer a worker is unemployed, he/she lowers the reservation wage as the time passes. On the other side, the higher a worker keeps his/hers reservation wage, he/she prolongs the unemployed period. But

the relationship that comes from both sides, make questionable the issue of correlation and endogeneity of these two phenomenons. Main recommendations of the studies that elaborate the issue of the relationship of these two phenomenon state that the interpretations have to be taken with caution. What can prevent from increases in the unemployment duration are the policies that a country has implemented for the labor market and the measures for employed and unemployed persons on the labor market.

To sum up, the reservation wage is crucial for the labor market determination and placement of workers on the labor market. Age, education, experience and gender are the most important determinants from the human characteristics of estimating the reservation wage caries. Furthermore, other sources of income also determine the reservation wages. Here are included the wealth, income of spouses and unemployment benefits. Unemployment benefits are the most important source of other income when determining the reservation wage and its fluctuations. If the unemployment benefits are not finite, then the reservation wage increases, but if a person is receiving these benefits for a finite time, than the effect is opposite. The income of the spouse opens the question of the gender pay gap, and increases reservation wages as the income of the spouse or other family member increases.

Moreover, the unemployment duration and the reservation wage have opposite relationship. The longer a worker is not employed the lower the reservation wage. This research will investigate the factors influencing the fluctuations of the reservation wage and unemployment duration, as well as the relationship between them. Various factors, including the most frequent sources of income that may influence reservation wage will be analyzed. Remittances and pensions were selected as the most frequent sources of income in a Macedonian household (Petreski, 2016). Even though, most of the literature puts an accent on the unemployment benefits, Macedonia has a very small number of recorded receivers of unemployment benefits, and the amount of unemployment benefits is almost negligible. Besides these sources of income all the previously elaborated personal characteristics in the literature review will be investigated.

5. Model

The literature when considering the methodology and modeling of the estimation of the reservation wage agrees that a parametric Two-Stage Least Squares (2SLS) approach is suitable for estimation of the reservation wage, by simultaneously resolving the issue of endogeneity of two crucial variables in the model, unemployment duration and reservation wage (Malk, 2014; Brown and Taylor, 2009).

$$\ln RW_i = B_o + B_1 Ri + B_2 RUR_n + B_3 \ln AW_n + B_4 N_i + B_5 OS_i + B_6 A_i + B_7 UB_i + B_8 UD_i + Ei$$

$\ln RW_i$ - natural logarithm of the reservation wage of the individual

R_i – dummy if the individuals' household receives remittances

RUR_n – regional unemployment rate

$\ln AW_n$ – natural logarithm of the regional average wage

N_i – dummy of the individual falls under the category of NEETS

OS_i – dummy if the individual uses other sources of income

A_i – age of the individual

UB_i – dummy if the individual uses government unemployment help

UD_i – instrumented unemployment duration of the individual

E_i - error terms.

i- refers to each individual surveyed

n – regional data

In our model, the reservation wage is regressed will all the exogenous variables and the instrumented endogenous variable – unemployment duration. The predicted values from this regression replace the original values of the endogenous variable unemployment duration in the second stage regression model. The variables that determine the reservation wage are the regional unemployment rate and the regional average wage. NEETS are a special category that is treated in this model and it determines the reservation wage with a dummy explaining if the young person falls under this category or not. A specific variable that influences the reservation wage are the remittances. The other sources of income also determine the reservation wage,

including sources as financial institution and family and friends. In Macedonia there are different kinds of financial help from the government for unemployed youth and this is an important factor for the reservation wage. Last but not least is the age of the youth that have significance over the determination of the reservation wage.

To overcome possible endogeneity problem, in this research we estimate a model using a parametric 2SLS approach. This approach can be used to estimate the structural parameters of the model (Lancaster and Chesher, 1984; Jones, 1988). When Haurin and Sridhar (2003) used the 2SLS model according to the research of Lancaster and Chesher (1984) and Jones (1988) stated that the appropriate technique for estimating a two-equation structural model of the determinants of reservation wages and unemployment duration is the 2SLS model, and that the issue of identification must be addressed with care. In spite of the recognition of simultaneity, many models have been estimated using OLS, possibly leading to simultaneous equations bias of the estimated coefficients. 2SLS regression analysis is a statistical technique that is used in the analysis of structural equations. This technique is the extension of the OLS method. It is used when the dependent variable's error terms are correlated with the independent variables. Additionally, it is useful when there are feedback loops in the model.

The unemployment duration is one of the endogenous variables that will be regressed by the instrument variables. Hereby, is introduced a linear regression that will explain the unemployment duration. The explanatory variables of the first stage regression must not be correlated with the error term of the regression of the reservation wage – the other endogenous variable. In our data there might be some limitations of the responses on the survey. Complementary to this, Dolton and O'Neill (1995) show that by using log-linear approximations to key functional relations in the job search model one can write the model as a system of ordinary log-linear simultaneous equations, which can be estimated using 2SLS on elapsed durations. The model will allow to test a key prediction of the search model, namely because reservation wages are positively correlated with unemployment duration. By simultaneously modeling the reservation wage and unemployment duration this approach overcomes the potential problem of endogeneity.

The literature investigating instrumental variables reveals several variables that the unemployment duration can be explained with and which are not correlated with the error term of the reservation wage regression. Malk (2014) connects the unemployment duration directly with unemployment benefits and dummies of financial support of spouse (whether he receives salary). In the case of our research an important point is that the analysis is done on youth population, implying that they are not as eligible to receive unemployment benefits due to the limited experience on the labor market. Furthermore, these social transfer in Macedonia are a negligible portion from the total social transfers, resulting in not being a valid instrument for the hereinafter analysis. The financial support of spouse can be closely related to two instruments that are used in this analysis from the available data, and those are marital status and dummy of financial situation in the household, collecting information by answering whether it is good or bad. Prasad (2000) uses the marital status as an instrument for the unemployment duration as well. Wealth in the household is an instrument that is used by Bloemen and Stancanelli (2001) to determine the unemployment duration. Wealth can be identified with the financial situation in the household in the case of this analysis. Heath and Swann (1999) use instrumental variables such as family income and family size. Brown and Taylor (2009) use the benefit income as instrumental variable and later on in another paper in 2013 use the previous wage of the respondent as instrument. In this analysis there were not enough information regarding the previous reported wage, so this instrument cannot be used.

The model of this analysis uses the following instruments to determine the unemployment duration: dummy of the financial situation within the household, dummy of whether the individual has graduate degree, dummy of whether the individual has postgraduate degree, experience of the individual expressed in months, gender of the individual and marital status, or more precise whether he/she lives with a partner. We expect that the education has a greater effect on the length of unemployment than on the reservation wage in conditions of relatively high unemployment, in sense that highly educated can accept any kind of job offer compared to less educate. The last variable is the year of the analysis. As mentioned before the data in this research is a pool of 2012 and 2014 SWTS, so the year might influence directly the unemployment duration.

Thus, we define the following equation to estimate the instrumented variable i.e. the unemployment duration:

$$UD_i = B_o + B_1 FSi + B_2 GR_i + B_3 PG_i + B_4 EX_i + B_5 MS_i + B_6 G_i + B_7 Y_i + Ei$$

UD*i* – unemployment duration of the individual *i* expressed in months.

FS*i* – dummy of the financial situation of the individuals' household

GR*i* – dummy if the individual has graduate degree

PG*i* – dummy if the individual has postgraduate degree

EX*i* – months of experience of the individual

MS*i* – dummy of the marital status of the individual

G*i* – dummy of gender of the sample

Y*i* – year of the sample of the individual

E*i* – error term

i - refers to each individual surveyed

6. Data

6.1 School to Work Transition Survey

The International Labor Organization (ILO) and the State Statistical Office in Macedonia implemented a project called Work4Youth, which included conducting the School to work transition survey (hereinafter: SWTS). This survey was conducted twice in Macedonia, once in 2012 and the second time in 2014 on a random sample. This study uses the SWTS from the two years to examine the relationship between the reservation wage and the unemployment duration. The study pooled the data from the two years, so there are 5018 observations of the sample examined, 2474 observations from 2014 and 2544 observations from 2012.

The SWTS is a survey that is labor market designed. It includes labor market information on young people aged 15 to 29 years. This survey has crucial information because the structure

of the survey is focused on the transition from school to work, which is of matter of this research. According to ILO's information for implementation of this survey, they state that the SWTS was designed in a way that applies a stricter definition of "stable employment" than is typically used in the genre. The SWTS offers important additional information over traditional labor force surveys. An important aspect of the survey is that SWTS detects the individual characteristics of young people that determine labor market disadvantage. Also, it identifies the features of youth labor demand. This demand compared to the supply on the labor market introduces the mismatch that is happening on the labor market. Furthermore, it collects information for the labor market for the least developed countries, which do not have databases of such. This survey is implemented by the State Statistical Office along with the Labor Force Survey (hereinafter: LFS), but is not implemented in a timeline, rather as an ad hoc wave module of the survey.

In Macedonia, the SWTS was conducted by the State Statistical Office as an additional module to the LFS in the third quarters of 2012 and 2014, drawing on random samples. As general conclusion from both reports of 2012 and 2014, in 2014 the number of young people has declined by 1.7 per cent compared to 2012, which is a logical consequence of the time passed. In 2014 the total number of youth, defined as the population aged 15 to 29, is 455,869 persons.

6.2 Questionnaire and variables

The structure of the SWTS is divided into 7 sections, according to the characteristics and nature of the questions : section A- Reference details, section B - Personal, family and household information, section C - Education, activity history and aspirations, section D - Youth in education, section E - Unemployed youth, section F - Young employees and section G - Youth not in the labour force.

The selection of the sample of analysis treats only unemployed workers. The variables that will be used in the research are primarily the socio-demographic variables. As previously

explained in the literature review this research will identify relationship between these variables and the reservation wage i.e. how they influence the reservation wage individually and whether they influence the reservation wage at all if combined with the other variables. Furthermore, information of the sources of income of the respondent is collected. A focus is put on the variable remittances, analyzing if the reservation wage of the youth is influenced if the household receives remittances from abroad. Moreover, in the determinants of the other sources of income benefits or financial help from the government for being unemployed are treated.

Two macroeconomic factors are taken into account due to the fact that the analysis is done on regional level, and those are the average wage in the region and the unemployment rate also in the region.

Regarding the questionnaire, the following questions are used to generate the variables for the model. In the first section of the questionnaire are the basic socio-demographic variables such as region (p1 qA2), age (p2 qB2), gender (p2, qB4), level of education (p5 qC4), marital status (p2 qB9) of the respondent in the moment of responding the survey and the financial situation within the household (p2 qB12).

In the questionnaire there is no specific question that answers the magnitude of experience the respondent has. That is why this variable will be generated out of several questions from the questionnaire. The experience will be generated out of the questions where first are shown list of activities, out of which one is the first experience. The activities that ILO treats as work/job related are: Work for wage/salary with an employer (full- or part-time), self-employed, work as unpaid family member (work for family gain) and engaged in an apprenticeship/internship. The variable for experience is generated in the following way: If the respondent has the first, second, third or fourth answer on the question of what activity is doing at the moment or has been doing, than he/she is implying to the definition of work/job of ILO (p9 qD4), then the question (p9 qD3) sets the start date of the work experience and the end date is set by question (p9 qD6) or if is ongoing (p9 qD5).

Furthermore, the questionnaire covers the topic of qualifications, where a dummy is used to interpret whether the qualifications suit the job (p15 qE27 a1) or not (p15 qE27 a2, 3, 4).

Additionally, we introduced variables if the unemployed person is an active job seeker or not, and how long she/he has been actively looking for a job (p19 qF8). The same question collects the data for the unemployment duration. These two variables take the unemployment duration and the activity rate up until the moment of the survey due to the uncertainty of the respondent of how long this spell will take. This variable is transformed from ranked variable to continuous one, in order to overcome linearity issues in the model. While, the reservation wage will be answered from the question: what is the minimal monthly income that you would accept to start to work (p.17 qE46) and (p21 qF19)?

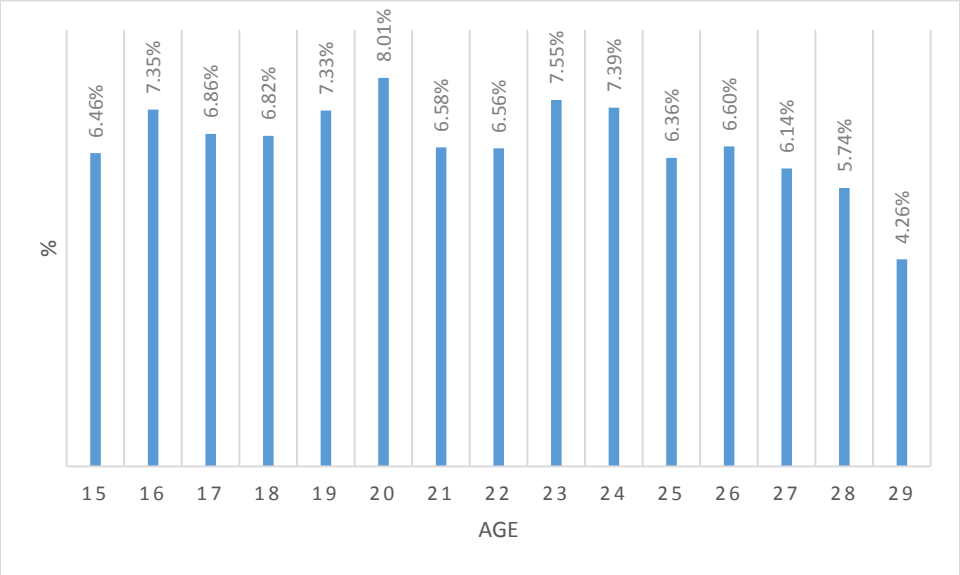
The model wants to analyze the influence of a specific variable on the reservation wage. That is the variable of remittances receipt in the household, as previously explained in the literature review. The data collected for the remittances comes from the question: what financial services the respondent uses, where one of the answers is the remittances (p3 qB13 a7).

Furthermore, the model treats a specific category of youth and that is the “not in employment, education or training category” – (NEETS hereinafter) this category is specific and differs from the rest of the youth due to the non-competitiveness on the labor market on one hand and the scars of the reservation wages and future wages on the other hand. The non-competitiveness of this group lead to a state where the reservation wage of this category differs from the others, but as longer they are unemployed their future wage gets more and more scared.

6.3 Descriptive statistics

The sample includes respondents from 15-29 years. Graph 1 shows the distribution of the age of the respondents in the sample.The respondents having age of 20 have the highest share in the sample (8.0%) and the least of the respondents are the age of 29 (4.3%).

Graph 1. Age of the sample



Source: ILO, calculation of the author

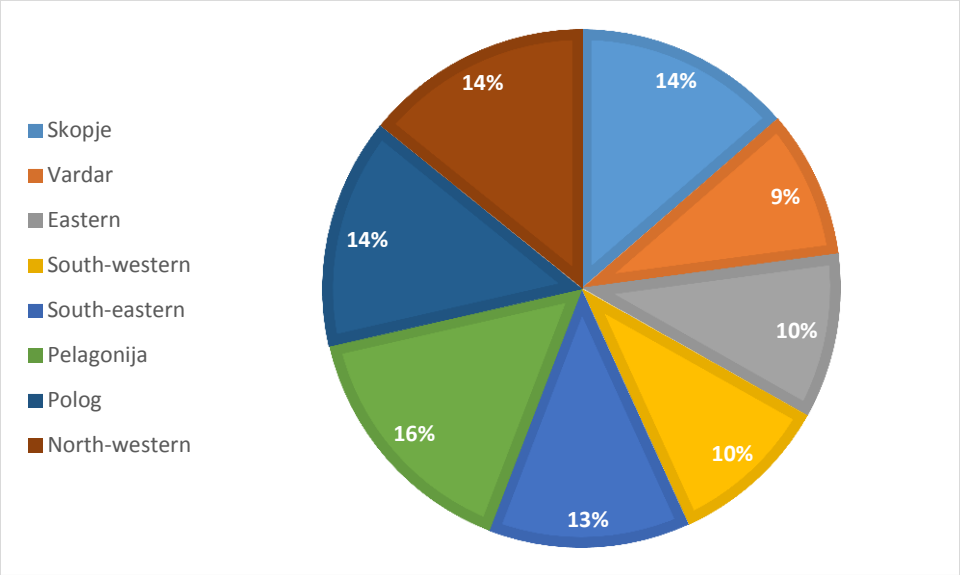
Regarding the regional distribution, the highest numbers of the respondents are from the Pelagonija region (16%), and the least are from the Vardar region (9%) according to Graph 2. The highest average reservation wage is noted in the Northwestern region and it is 14.084 denars and the lowest is noted in the Polog region of 10.323 denars. The shortest unemployment duration is noted in the Vardar region of 29 months, and the longest in the Northwestern region of 39 months Table 1. Reservation wage and unemployment duration

Table 1. Reservation wage and unemployment duration of the sample

	Macedonia	Vardar	Eastern	South western	South eastern	Pelagonija	Polog	North eastern	Skopje
RW (denars)	12.286	12.500	11.248	10.847	13.476	12.168	10.323	14.084	12.191
UD (months)	35	29	37	38	32	36	36	39	30

Source: ILO, calculation of the author

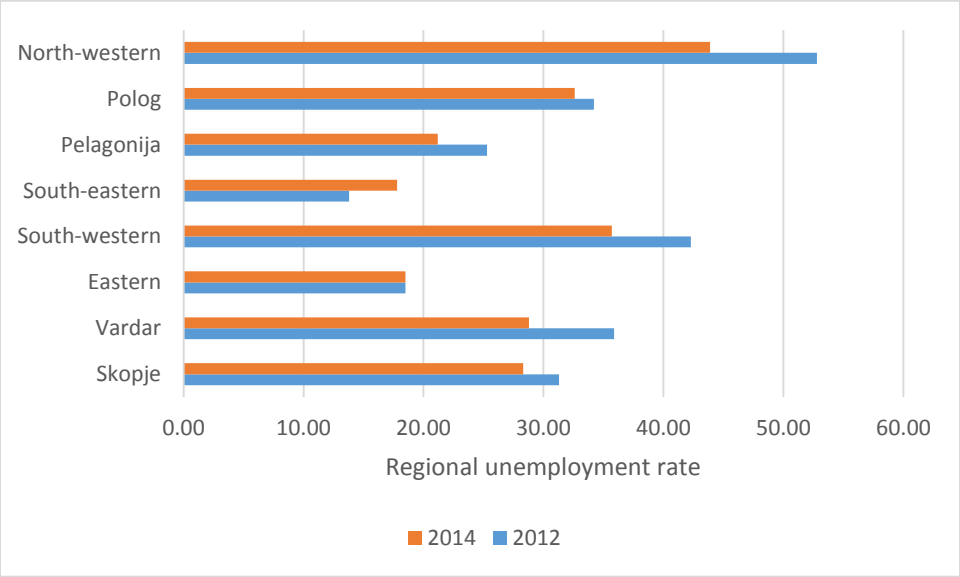
Graph 2. Region of the sample



Source: ILO, calculation of the author

The Northwestern region keeps the first place of highest regional unemployment rate (RUR) noted in both years of analysis (Graph 3). The Southeastern region notes the lowest regional unemployment rate in Macedonia for 2012 and 2014.

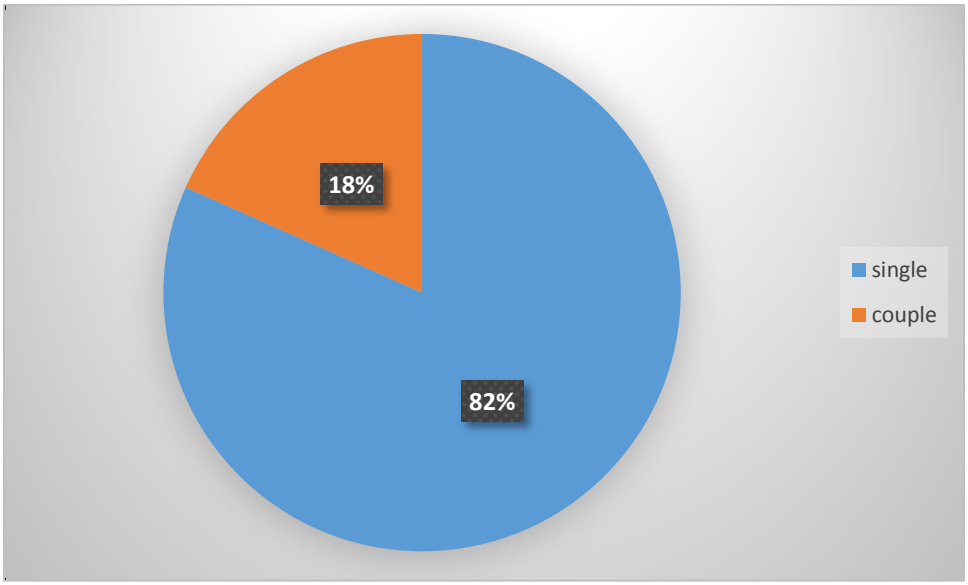
Graph 3. Regional unemployment rate by region in 2012 and 2014



Source: State Statistical Office of Macedonia

82% of the respondents of the sample are single, including divorced and widowed and 18% are either married or engaged (Graph 4). What is really specific about the case of the marital status of the sample is that the average reservation wage for both, single and couple respondents is around 12.280 denars.

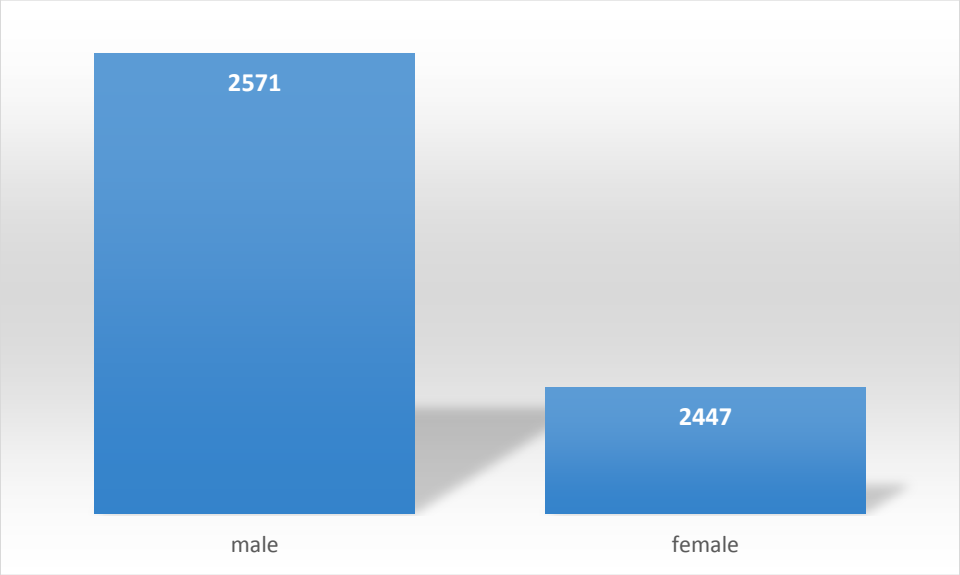
Graph 4. Marital status of the sample



Source: ILO, calculation of the author.

2571 of the respondents of the sample were male and 2447 were female. Women reported 576 denars lower average reservation wage than man. This result goes in line with the 12% unadjusted gender pay gap calculated in Macedonia for 2014[1]. Men have shorter average unemployment duration than women of one month. When considering motherhood, the reservation wage of mother with one or more than one child is 12.073 denars while that of the women without children is 11.970 denars.

Graph 5. Gender of the sample



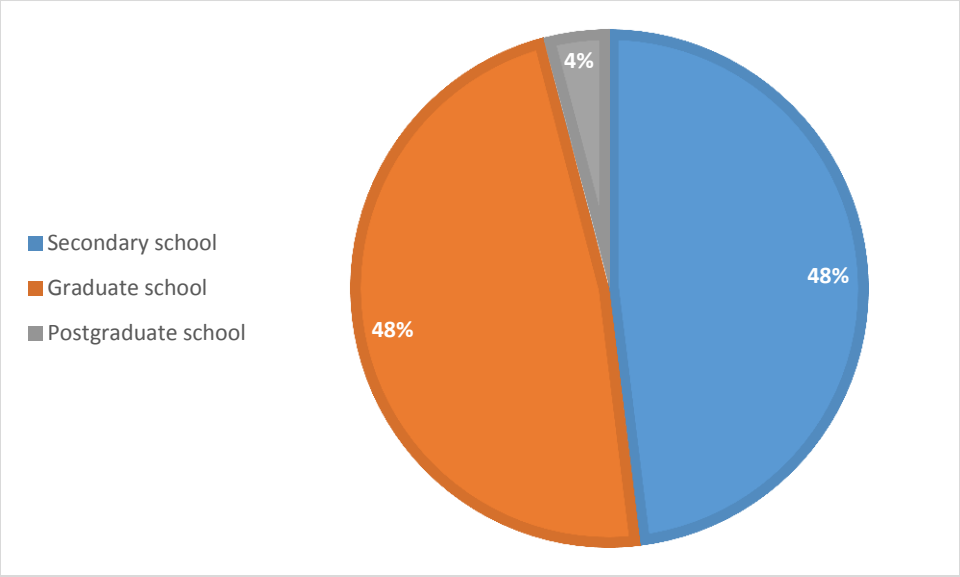
Source: ILO, calculation of the author

As for the education, 48% of the respondents had finished elementary and secondary school. Another 48% had graduated and the last 4 % had finished postgraduate and doctoral degree (Graph 6). Having in mind that the sample is up until 29 years the 4 % postgraduates and PhDs is not as discouraging as the fact that almost half of the sample is with elementary and secondary finished school. The average reported reservation wage of the graduates is 13.260 denars, but again the median wage is 12.000. The postgraduates and the PhDs had 3.000 higher median reservation wage and an average reservation wage of 15.781 denars. The graduates have one month shorter average unemployment duration than the postgraduate and PhDs. The respondents with elementary and secondary education have average reservation wage of

[1] Authors calculation

12.207 denars and average unemployment duration of 14 months which is almost half the average unemployment duration of the graduate and postgraduate of 25 and 26 months, respectively. The unemployment rate of youth with only primary education was nearly double that of youth with university education in 2014 at 58.9 and 33.1 per cent, respectively (Eurostat).

Graph 6. Education of the sample



Source: ILO, calculation of the author

358 out of the 5018 respondents reported that they are overqualified for the job and the reported average reservation wage is 12.448 denars, and the maximum reported wage was 80.000 denars. 46 respondents declared themselves as underqualified and reported an average reservation wage of 11.687 denars.

80% of the respondent had no experience, 1% had experience of 2 months and 0.08% had experience of 34 months, which were the highest number of months of experience reported. The experience includes internship as well.

While the practices of the traditional labor market capture the employed or unemployed on the labor market, there is a gap that it fails to capture, which includes the school-to-work transitions and the young people who are outside the labor market. This

category are the -not in employment, education and training youth (NEETS). This category enables policymakers to better address the disjunctions between young people and the labor market. According to the findings of the survey (Table 2) the overall NEETS increased by 1.9 p.p from 2012 to 2014 (30% and 31.9% of the total population fall under the category of NEETS of youth in 2012 and 2014, respectively). The share of female NEETS is higher than of male NEETS.

Table 2. NEETS by gender

NEET rate	2012	2014
Male	28%	29.40%
Female	32.20%	34.40%
Total	30%	31.90%

Source: ILO, calculation of the author

The sample statistics shows that the average reservation wage in Macedonia is 12.286. The average reservation wage is 34% and 28% higher than the minimum wage in Macedonia for 2012 and 2014, respectively. According to the Law of minimum wage which was adopted in 2012 in Macedonia, the minimum wage was set at 8.050 denars[2] and 8.800[3] denars for 2012 and 2014, respectively. The same sample had reservation wage that is 27% lower than the average wage in 2012 and 42% lower than the average wage in 2014. The median reservation wage of the sample is 12.000 denars. The lowest reported wage was 3.000 denars in Polog region and the highest reported wage was 88.000 denars in Skopje region. Particularly, in 2014 the average reservation wage is 13.561 denars, which is 37% lower than the average net wage reported by the State Statistical Office for 2014. For 2012 the reservation wage recorded is 10.980 denars and the net average wage is 20.903 denars. Table 4 presents the net average wages by regions in Macedonia for 2014. It can be noted that the Eastern region has the lowest recorded net average wage and Skopje region has the highest.

[2] Official Gazette of RM 11/12
[3] Official Gazette of RM 30/14

Table 3. Average net wage by regions in Macedonia

2014, in denars	Macedonia	Vardar	Eastern	South western	South eastern	Pelagonija	Polog	North eastern	Skopje
Net-wage	21.394	16.936	15.785	19.460	16.729	19.591	20.425	16.524	25.260
Reservation wage	13.562	13.597	12.210	12.519	13.564	13.630	12.733	14.724	13.708

Source: SWTS, calculation of the author

The average unemployment duration of the sample is 35 months, but specific information regarding the duration and how long the respondents have actively looked for a job is that the median unemployment duration and the maximum unemployment duration is the same and it is 4 years. The unemployment duration is one of the crucial variables treated by this study (Table 4). It is directly connected with the unemployment rate, and the youth unemployment rate. The findings of the comparison of the two surveys from both years show that over 70% of the population has an unemployment duration more than one year and almost none has a direct transfer from school to work. Year 2012 show lower rates of unemployment duration than 2014. In 2012, 81.4% of the men waited for more than a year to get employed, while the rate for women is 70.2%. The case for 2014 is the opposite, showing that 80.6% of women waited more than one year to get a job, while the rate for men is 76%.

Table 4. Unemployment duration by gender in Macedonia

	Total		Male		Female	
Unemployment duration	2012	2014	2012	2014	2012	2014
Less than a week	0.4%	0.1%	0.3%	0%	0.6%	0.4%
1 week to less than 1 month	2.4%	2.4%	1.2%	2.9%	4.1%	1.6%
1 month to less than 3 months	8.2%	7.7%	7.5%	6.2%	9.2%	10%
3 months to less than 6 months	4.5%	4.6%	3.1%	5.2%	6.5%	3.8%
6 months to less than 1 year	7.6%	7.4%	6.4%	9.8%	9.3%	3.6%

Unemployment duration	Total		Male		Female	
	2012	2014	2012	2014	2012	2014
More than a year	76.9%	77.8%	81.4%	76%	70.2%	80.6%
Total	100%	100%	100%	100%	100%	100%

Source: SWTS country brief, ILO

Considering the statistics from Eurostat for both years (Table 5), the youth unemployment rate of the population of age 25-29 decreased between 2012 and 2014 from 43.3 to 39.3 %, but remained at more than double the EU-28 average of 17.7 % in the same year (Eurostat, youth aged 15-29). Women have slightly lower unemployment rate than that of young men (36.5% compared to 41.2% for males in 2014).

Table 5. Youth unemployment rate in Macedonia

	2012			2014		
YUR	Total	Male	Female	Total	Male	Female
15-19	58.7	61.9	51.8	63.5	65.6	59.9
20-24	53	53.8	51.8	51	49.2	54
25-29	41.5	42	40.9	39.3	36.5	43.2
15-29	51.07	52.57	48.17	51.27	50.43	52.37

Source: State Statistical Office of Macedonia

The main difference between the survey in 2012 and 2014 is that the share of “older” young people has increased by 1.7% which is due to the aging of the overall population. What this means, according to the findings of the survey is that the age group 25-29 years old in 2012 are 33% of the population, and later in 2014 this share jumps up to 48.9%. The increase of the share of “older” youth goes in line with the increased number of married youth, specifically more women than men, 29% of the women in 2014 are married. This finding increases the concern of the importance of the demographic changes when interpreting the results of the two waves of the survey (Mojsoska Blazevski, 2016).

A specific variable of matter is the household income level and the financial situation of the household and their impact on the unemployment and job search. Young people in relatively higher income households are less likely to be unemployed. For example in 2014, 9.4% of youth that live in wealthy households are unemployed compared to 32.8% of youth who live in poor households. This trend has more impact on women than on men (SWTS brief, 2016).

Another important variable that the study investigates is the sources of income that the respondent uses other than salary. The study divides the sources of income into two main categories – financial institutions and 3F's (friends, family and fools). The category of financial institutions includes: bank, insurance and microfinance institutions, while the 3F's include: money transfers, non-formal financial operators, friends and family and other. The statistics show that 2.148 of the respondents use the 3F's source of income, while 1.011 use the financial institutions. The respondents that use the 3F's as source of income have reservation wage of 11.277 denars and unemployment duration of 36 months, while the ones that use the financial institutions have reservation wage of 11.702 denars and reservation wage of 33 months.

A specific accent is put on the remittance receivers. The statistics show that the 1.041 remittance receivers of the sample have higher average reservation wage of 13.025 denars than the average reservation wage of the whole sample, but shorter unemployment duration of 28 months than the average of the whole sample.

Table 6 summarizes the descriptive statistics of all the continuous variables elaborated in this study.

Table 6. Statistics of the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	5018	21.60	4.15	15	29
Number of children	5018	0.20	0.60	0	6
Experience (months)	5018	7.50	22.20	0	204
UD (months)	1040	35.00	17.08	0	48
RW	1536	12286.00	5737.48	3000	88000
RUR	5018	29.97	10.26	13.8	52.8
AW	5018	18817.00	2851.49	14957	25260

Source: SWTS, calculation of the author

7. Results

Before we turn to the results, the validity of instruments is briefly discussed. Regarding the validity of the variables as instruments: the null hypothesis of the Sargan test for validity of the instruments is not rejected at any reasonable level, which indicates that the instruments and the IV regression, are valid. (Appendix 1). The Sargan test in our model is 4.343 implied an overidentified model. A model to be overidentified means that there are more instruments than endogenous regressors. Underidentification test (LM statistic) rejects the null hypothesis stating that the model is underidentified, and by rejecting the null hypothesis we confirm the model is identified. The LM statistic in the model is 36.644 with a p-value of 0.000, driving the conclusion of rejection of the null hypothesis and concluding that the model is identified. The third test for weak identification shows that the identification of instruments are strong as the CraggDonald F stat in our case 7.641 is above the critical values from IV bias and the hypothesis of weak instruments actually is rejected at 20%.

Table 7. First stage - 2SLS model

First stage	
Unemployment duration - dependent variable	
Financial situation	3.873**
	(1.345)
Graduated	-10.34***
	(2.667)
Postgraduate	-10.42**
	(4.28)
Marital status	2.621
	(1.584)
Year of sample	3.18
	(3.668)
Remittances	-13.321***

First stage	
Unemployment duration - dependent variable	
	(1.521)
RUR	0.08
	(0.069)
lnAW	-9.57*
	(4.465)
NEETS	-0.891
	(1.955)
Other sources	1.596
	(3.334)
Age	1.698***
	(0.217)
Unemployment government help	-4.076
	(4.11)
constant	84.829
	(44.873)
observations	592
Sanderson-Windmeijer F-test	7.64***

Source: Authors' calculations *, **, *** denote statistical significance at the 10, 5, and 1% level, respectively. The number in the brackets represents the standard error of the representative coefficient.

In the first stage of the 2SLS model where we regress the unemployment duration aiming to tackle the endogeneity with the reservation wage, in Table 7 are presented the variables with statistical significance that influence the unemployment duration. Firstly, the good financial situation in the household from where the person surveyed is coming increases the unemployment duration of 3.9 months. Secondly, graduate persons surveyed have 10.3 months lower unemployment duration than the ones without a graduate degree. Thirdly, the impact of the remittances is estimated with negative sign .What this means is that the persons surveyed that receive remittances from abroad have lower unemployment duration of 13

months, which is a significant number of months looking at the distribution of the total unemployment duration. The explanation for this phenomena indirectly comes from the fact that the households receivers of remittances mainly fall into the category of socially endangered low income households, implying that the persons interviewed are eager to be placed on the labor market, become active searchers for jobs or employed persons and earn their own income. The last statistically significant variable is the age. Along with the previously elaborated literature an increase in age of one year increases the unemployment duration of 1.7 months. Furthermore in the elaboration of the first stage results are discussed the signs of the other variables, even though statistically insignificant. The postgraduate variable same as the graduate have negative sign indicating that postgraduate persons surveyed have lower unemployment duration than the ones without a postgraduate degree. The coefficient of the marital status indicates that women have longer unemployment duration than man, which is along with the literature. Unexpected is the sign of the variable NEETs indicating that the NEET category of persons have lower unemployment duration than others. Persons that use other sources of income tend to have longer unemployment duration than other, but the ones that use government help tend to have shorter unemployment duration.

The results from the second stage which are of primary interest for us, show that the model has treated 592 observations (Table 8). The p-value of the F-statistic is 0.000 which also proves the validity of the explanatory variables. Regarding the instrumented unemployment duration in the first stage, a one month increase of the unemployment duration decreases the reservation wage by 1.4% implying a countercyclical relationship between these two variables at a confidence level of 99%, along with the most of the theoretical background and conclusion of most of the authors in the literature review. The receiving of remittances and the natural logarithm of the average wage are statistically significant at 95% confidence interval. The results suggest that the receivers of remittances have 12.6% lower reservation wages than the non-receivers. Even though the remittances fall under the category of other sources of income, this case is the opposite of the theory of what most authors argue, that the receiving of other sources of income increases ones' reservation wage. Several aspects can influence these results, first and foremost is that the sample is youth of the age 15-29 years. Most authors come to their conclusion taking into consideration the whole population. Contrary to that, this

youth are not direct receivers of the remittances. Usually the receivers of the remittances are the heads of the households, so this income does not make the young person the direct user and spender of it. Petreski et al. (2017) concludes that most of the remittances are used for construction and renovation of real estate in the household implying that they have no impact on the youth and their determination of reservation wage. Second reason is that the youth population is eager to be placed on the labor market and is carrier pursuant regardless the receipt of remittances. The same applies for the coefficient for other sources of income. The results show that by increasing the sources of income in the household the young person decreases his/hers reservation wage by 16%. This is contrary to the previous findings Malk (2014) where he confirms a positive relationship between the other sources of income and the reservation wage and Prasad (2003) also agrees that the variables that proxy for alternative sources of income, including total net household income and a dummy for receipt of unemployment compensation, are positively correlated with reservation wages. The variable age of the sample is statistically significant in the second stage of the model indicating that the positive sign of the coefficient states that each additional year of age of the surveyed persons increases their reservation wage for 4%. This result is contrary to the conclusions of Malk (2014) and Hofler and Murphy (1994) where they conclude the opposite relationship of the age and the reservation wage, but it is not full contrary to the elaboration of the relationship of age and reservation wage in the literature. Bloemen and Stancanelli (2001) and Prasad (2003) found a reverse U-shaped relationship where the reservation wage increases until individuals are in their 30s and then declines with age. This is along with our conclusions of the result of the variable of age, taking into consideration the fact that our sample is up to 29 years all persons. The coefficient of the regional wage has also a negative sign indicting that the higher the regional average wage the lower the reservation wage. The perception is that young people get motivated of the increase of the regional average wage, so they get eager to be placed on the labor market, resulting in a decrease of their reservation wage. NEETS have 9% higher reservation wage than the youth that does not fall under this category. This might be a result of the non-presence of the NEETS on the labor market, education or training and their knowledge and perception of the market wages. The two variables that are not statistically significant in this model are the unemployment government help and the regional unemployment rate.

Table 8. Results of 2SLS model

Reservation wage- dependent variable	
Unemployment duration	-0.014***
	(0.004)
Remittances	-0.126*
	(0.064)
RUR	0.001
	(0.002)
lnAW	-0.255*
	(0.12)
NEETS	0.099*
	(0.045)
Other sources	-0.164***
	(0.045)
Age	0.045***
	(0.009)
Unemployment government help	-0.123
	(0.102)
constant	11.246***
	(1.178)
observations	592
R^2 (uncentered)	0.9983
Second stage F-test	11.73***
LM statistic (Anderson canon.corr)	36.644***
Sargan statistic	4.343

Source: Authors' calculations *, **, *** denote statistical significance at the 10, 5, and 1% level, respectively. The number in the brackets represents the standard error of the representative coefficient.

8. Robustness check

In order to confirm the stability of the results of the model, robustness check is conducted. Two additional models are delivered and presented in Table 9 and Table 10 in the Appendix 2. In table 9 and table 10 are presented the results of the first and second stage of the 2SLS model estimated by adding gender in the second stage as additional variable that directly influences the reservation wage and not the unemployment duration. By doing so, it is estimated that this variable has no statistical significance and the results are consistent with the baseline model estimations.

In table 11 and 12 are presented the results of the robustness check of the first and second stage of the model when in the second stage the experience is included as additional variable. By doing this, in the second stage, the remittances lose their statistical significance in the model and the variable NEETS lowers the level of significance in comparison with the original model. Nevertheless, the general conclusions arising from the baseline model estimate are largely supported.

9. Conclusion

The high unemployment rate in Macedonia, especially the high youth unemployment rate raises the question of what is the required price to put this youth on the labor market, i.e. the reservation wage. This study elaborates this price and estimates its determinants.

The youth has 34% and 28% higher reservation wage than the minimum wage in Macedonia for 2012 and 2014, respectively and 27% lower reservation wage than the average wage in 2012 and 42% lower reservation wage than the average wage in 2014. The older the person the higher the reservation wage. If the young person comes from a household with good financial situation, he or she will have longer unemployment duration and longer unemployment duration of the youth in Macedonia decreases the reservation wage. On the

contrary, the higher level of education the shorter the unemployment duration. When considering the education, trainings and employment, a paradoxical finding of this study is that the NEETS have higher reservation wage than the youth that does not fall in this category. This might be a result of the non-presence of the NEETS on the labor market, education or training and their knowledge and perception of the market wages

In similar context, this study accesses the remittances and their influence over the reservation wage and unemployment duration. The remittance receivers have lower unemployment duration of 13 months, which is a significant number of months looking at the distribution of the total unemployment duration and have the same influence as the other sources of income in the household over the unemployment duration, but indicate lower reservation wage than the non-receivers. The sources of income in the household and the reservation wage also have opposite relationship. The young person decreases his/hers reservation wage by 16% if has other sources of income in the household. These indications primarily come from the fact that the sample is youth of the age 15-29 years. This youth are not direct receivers of the remittances. Usually the receivers of the remittances are the heads of the households, so this income does not make the young person the direct user and spender of it. Second reason is that the youth population is eager to be placed on the labor market and is carrier pursuant regardless the receipt of remittances.

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Appendix 1

Table 9. Robustness check - 2SLS model First Stage

(including gender in the second stage)

First stage	
Unemployment duration - dependent variable	
Financial situation	3.88**
	(1.346)
Graduated	-10.28***
	(2.670)
Postgraduate	-10.40*
	(4.283)
Marital status	2.660
	(1.587)
Gender	0.7577
	(1.325)
Year of sample	3.31
	(3.678)
Remittances	-13.275***
	(1.524)
RUR	0.081
	(0.069)
lnAW	-9.72*
	(4.476)
NEETS	-0.831
	(1.95)

First stage	
Unemployment duration - dependent variable	
Other sources	1.620
	(3.336)
Age	1.703***
	(0.217)
Unemployment government help	-4.067
	(4.114)
constant	85.67
	(44.924)
observations	592
Sanderson-Windmeijer F-test	7.64***
Source: Authors' calculations *, **, *** denote statistical significance at the 10, 5, and 1% level, respectively. The number in the brackets represents the standard error of the representative coefficient.	

Table 10. Robustness check - 2SLS model Second Stage

Second stage	
Reservation wage- dependent variable	
Unemployment duration	-0.014***
	(0.004)
Remittances	-0.126*
	(0.064)

Second stage	
Reservation wage- dependent variable	
RUR	0.001
	(0.002)
lnAW	-0.255*
	(0.12)
NEETS	0.099*
	(0.045)
Other sources	-0.164***
	(0.045)
Age	0.045***
	(0.009)
Gender	0.002
	(0.032)
Unemployment government help	-0.123
	(0.102)
constant	11.246***
	(1.178)
observations	592
R^2 (uncentered)	0.9983
Second stage F-test	10.42***
LM statistic (Anderson canon.corr)	36.695***
Sargan statistic	4.359

Source: Authors' calculations *, **, *** denote statistical significance at the 10, 5, and 1% level, respectively. The number in the brackets represents the standard error of the representative coefficient.

Appendix 2.

Table 11. Robustness check - 2SLS model First stage

(including experience in the second stage)

First stage	
Unemployment duration - dependent variable	
Financial situation	3.88**
	(1.347)
Graduated	-10.344***
	(2.669)
Postgraduate	-10.44*
	(4.286)
Marital status	2.622
	(1.586)
Experience	-0.009
	(0.048)
Year of sample	3.09
	(3.694)
Remittances	-13.081***
	(1.922)
RUR	0.080
	(0.069)
lnAW	-9.56*
	(4.469)
NEETS	-0.855
	(1.965)
Other sources	1.548
	(3.345)

First stage	
Unemployment duration - dependent variable	
Age	1.704***
	(0.219)
Unemployment government help	-4.082
	(4.115)
constant	84.65
	(44.919)
observations	592
Sanderson-Windmeijer F-test	7.64***

Source: Authors' calculations *, **, *** denote statistical significance at the 10, 5, and 1% level, respectively. The number in the brackets represents the standard error of the representative coefficient.

Table 12. Robustness check - 2SLS model Second stage

Second stage	
Reservation wage- dependent variable	
Unemployment duration	-0.014***
	(0.004)
Remittances	-0.134
	(0.070)
RUR	0.001
	(0.002)
lnAW	-0.255*
	(0.12)
NEETS	0.099*

Second stage	
Reservation wage- dependent variable	
	(0.045)
Other sources	-0.164***
	(0.045)
Age	0.045***
	(0.009)
Unemployment government help	-0.123
	(0.102)
Experience	0.0002
	(0.01)
constant	11.246
	(1.178)
observations	592
R^2 (uncentered)	0.9983
Second stage F-test	10.41***
LM statistic (Anderson canon.corr)	36.683***
Sargan statistic	4.449
Source: Authors' calculations *, **, *** denote statistical significance at the 10, 5, and 1% level, respectively. The number in the brackets represents the standard error of the representative coefficient.	