UNIVERSITY OF LJUBLJANA
FACULTY OF ECONOMICS

MASTER'S THESIS

THE LINK BETWEEN ETHNIC TENSIONS AND UNEMPLOYMENT IN MULTIETHNIC COUNTRIES: THE CASE OF BOSNIA AND HERZEGOVINA

Ljubljana, January 2017 EMA TALAM

AUTHORSHIP STATEMENT

The undersigned Ema Talam, a student at the University of Ljubljana, Faculty of Economics, (hereafter: FELU), author of this written final work of studies with the title The link between ethnic tensions and unemployment in multiethnic countries: The case of Bosnia and Herzegovina, prepared under supervision of prof. dr. Sašo Polanec.

DECLARE

1. this written final work of studies to be based on the results of my own research;

2. the printed form of this written final work of studies to be identical to its electronic form;

3. the text of this written final work of studies to be language-edited and technically in adherence with the FELU's Technical Guidelines for Written Works, which means that I cited and / or quoted works and opinions of other authors in this written final work of studies in accordance with the FELU's Technical Guidelines for Written Works;

4. to be aware of the fact that plagiarism (in written or graphical form) is a criminal offence and can be prosecuted in accordance with the Criminal Code of the Republic of Slovenia;

5. to be aware of the consequences a proven plagiarism charge based on the this written final work could have for my status at the FELU in accordance with the relevant FELU Rules;

6. to have obtained all the necessary permits to use the data and works of other authors which are (in written or graphical form) referred to in this written final work of studies and to have clearly marked them;

7. to have acted in accordance with ethical principles during the preparation of this written final work of studies and to have, where necessary, obtained permission of the Ethics Committee;

8. my consent to use the electronic form of this written final work of studies for the detection of content similarity with other written works, using similarity detection software that is connected with the FELU Study Information System;

9. to transfer to the University of Ljubljana free of charge, non-exclusively, geographically and time-wise unlimited the right of saving this written final work of studies in the electronic form, the right of its reproduction, as well as the right of making this written final work of studies available to the public on the World Wide Web via the Repository of the University of Ljubljana;

10. my consent to publication of my personal data that are included in this written final work of studies and in this declaration, when this written final work of studies is published.

Ljubljana, 16.01.2017. Author's signature: _____

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Bosnia and Herzegovina is a small, multiethnic country that was, shortly after proclaiming its independence, affected by a series of events that shaped its past, the present and that will certainly continue to shape its future as well. The war in Bosnia and Herzegovina, almost four-year long conflict that occurred in the period between 1992 and 1995, left indelible traces on the country, destroyed its economy completely and significantly affected the development of an independent country. It is estimated that about 2.2 million people were displaced from their homes (The United Nations Refugee Agency, 2000) many of whom permanently left the country, 97,207 (Bosnia war dead figure announced, 2007) people were killed, between 20,000 and 60,000[1] (Lent Hirsch, 2012) women were victims of sexual violence and Sarajevo was the capital city under the longest siege in the modern history (siege lasted 1,425 days and ended with large number of victims).

Table 1. Structure of population within entities by ethnic/national affiliation (in %), 1991[2] and 2013

	1991			2013		
Ethnic/ national affiliation	**Federation of Bosnia and Herzegovina**	**Republic of Srpska**	**Brčko District**	**Federation of Bosnia and Herzegovina**	**Republic of Srpska**	**Brčko District**
Bosniak[3]	50.84	30.44	44.07	70.40	13.99	42.36
Bosnian Croats	21.52	9.61	25.39	22.44	2.41	20.66
Bosnian Serbs	19.42	52.65	20.69	2.55	81.51	34.58
Not declared	0.34	0.31	0.51	0.82	0.67	0.63
Other	7.10	6.18	7.48	3.60	1.25	1.65
No answer	0.78	0.81	1.85	0.19	0.17	0.12

table continues

[1] Final number was not established as many victims out of shame or fear did not immediately report such violence.
[2] As in 1991, Bosnia and Herzegovina was not divided into entities and district, data on national affiliation of population on municipality level was used to construct the entity/district level structure for 1991. This was done as accurately as possible, considering that certain municipalities from 1991 were separated into both entities.
[3] Table 1 reports population that declared their national identity as Muslim in census from 1991 under Bosniak.

Table 1. Structure of population within entities by ethnic/national groups (in %), 1991 and 2013 (continued)

	1991			2013		
Ethnic/national groups	**Federation of Bosnia and Herzegovina**	**Republic of Srpska**	**Brčko District**	**Federation of Bosnia and Herzegovina**	**Republic of Srpska**	**Brčko District**
Total (no.)	2,739,217	1,550,189	87,627	2,219,220	1,228,423	83,516

Source: Institute for statistics of Republic of Bosnia and Herzegovina, *Ethnic affiliation of population – Results for republic and on municipality levels 1991*,1993, pp. 15-19; Agency for statistics of Bosnia and Herzegovina, *Census of population, households and dwellings in Bosnia and Herzegovina: Final results 2013*, 2016a, p.54.[4]

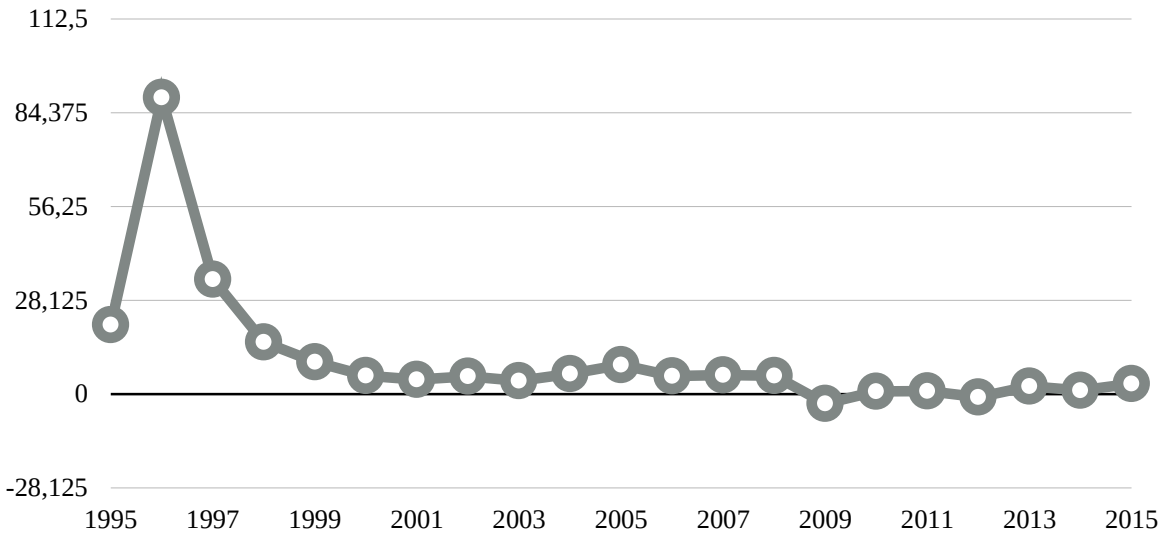
As a consequence of war, the structure of population in Bosnia and Herzegovina in the period of 1992–1995 changed dramatically and ethnic groups became largely concentrated in certain areas within the territory of Bosnia and Herzegovina, which can be seen from Table 1. Data from only census in Bosnia and Herzegovina conducted after 1991 shows that nowadays majority of Bosniaks and Bosnian Croats live on the territory of Federation of Bosnia and Herzegovina, while most of the Bosnian Serbs live on the territory of Republic of Srpska. Furthermore, there is a large concentration of ethnic groups within cantons in Federation of Bosnia and Herzegovina (i.e. Bosnian Croats are majority ethnic group in Zapadnohercegovački canton, Hercegovačko-neretvanski, Canton 10 and Posavski canton, while Bosniaks are majority ethnic group in the remaining six cantons).

Unemployment in Bosnia and Herzegovina is structural (Ministry of civil affairs of Bosnia and Herzegovina, 2010, p. 17) and the problem, although addressed in various strategic documents (which are discussed below), has never been appropriately or fully addressed. While historically, unemployment rates in Bosnia and Herzegovina were quite high, they were still lower than they are today. As a part of Yugoslavia, Bosnia and Herzegovina was one of the poorer federal republics, rich in natural resources and highly relying on low-value added industries. In the years after the war, Bosnia and Herzegovinian gross domestic product had significant growth rates[5] (Figure 1), however, growth in employment rates did not follow (presented later in the text). Some of possible explanations are (Ministry of employment and social politics of Federation of Bosnia and Herzegovina, 2008):

[4] The final results of the census from 2013, first one that has been conducted since 1991, are still disputed.
[5] Efendić (2003, p.1) assesses that "the quality of growth is not satisfactory" and points out to the large dependence of growth on the foreign aid.

1. Bosnian and Herzegovinian economy has always been dependent on large share of low-value added industries (e.g. metal industry, mining, etc.),
2. period of 1992 - 1995 led to destruction of many production facilities,
3. some of those production capacities are still not renewed or are not operating at their pre-war capacities,
4. at the end of the war, Bosnia and Herzegovina transformed to market economy and was organised as an open economy[6],
5. Bosnia and Herzegovina is rather complex environment for doing business[7], and
6. the extent of informal economic activities in Bosnia and Herzegovina is rather large (agriculture is especially identified as a sector where informal economy is widespread, while at the same time, more informal economic activities occur in rural areas).

Figure 1. Annual GDP growth rates in Bosnia and Herzegovina (in %), 1995–2015



Source: *GDP growth (Annual %)*, 2016.

Even though large unemployment rates are problematic on their own, Bosnia and Herzegovina faces other employment related challenges as well, such as: long-term unemployment among many unemployed persons, large inactivity rates (especially among youth and women), high youth unemployment rates and discriminatory practices that occur on labour market and are based on gender.

In order to understand how to effectively tackle the problem of unemployment in Bosnia and Herzegovina, it is important to understand the causes of unemployment and individual income. The aim of the thesis is to explore the effects:

[6] Privatisations are often believed to lead to job losses in the short-term, however, to increase company's productivity over the long-run.
[7] On the World Bank's Doing Business list from 2016, Bosnia and Herzegovina ranks 81 out of 190 countries according to the ease of doing business.

1. socio-demographic characteristics (age, gender, marital status, education and location of living),
2. individual characteristics and experiences (engagement into interethnic friendships, belonging to minority or majority ethnic groups, importance of ethnicity, personal experience of interethnic tensions, importance of multiculturalism, trust, war trauma, war-related displacements), and
3. environment-related characteristics (interethnic mixing in the place of living and presence of ethnic tensions in the place of living), on employment status and income.

The main focus of my analysis is the extent of influence of individual characteristics and experiences on employment status and income. At the same time, I will test whether assortative matching theory holds in Bosnian and Herzegovinian labour market. The general idea is that understanding of the influences on employment status and income in Bosnia and Herzegovina that might go beyond the influence of socio-demographic characteristics, will help to determine the adequate policies and new ideas that would help to tackle the problem of unemployment. This is of extreme importance as not recognising that such influences exist can result in a situation that policies that are being implemented do not actually address the problem adequately and do not solve the problem in the long-term. The starting hypothesis of this thesis is that individual characteristics and experiences and environment-related variables will significantly influence the probability of employment and the income of individual. Furthermore, individual characteristics and experiences and environment-related variables will significantly influence income of employed individuals.

Part 1 of the thesis analyses unemployment as an economic phenomenon. Unemployment has consequences for individuals, wider society and economy as a whole. Unemployment has serious consequences on the economy as a whole, influencing total purchasing power of population, consumption patterns of individual and public finances. Researches have shown that unemployment can influence crime rates in the society (Raphael & Winter-Ebmer, 2001), as well as rates of mortality and morbidity within the society (Case & Deaton, 2015; Pierce & Schott, 2016). Furthermore, unemployment can place large burden on individuals, by influencing one's social network structure, physical and psychological health. (Strandh, 2001)

Furthermore, section 2 of part 1 will explore and present the theory of assortative matching in labour market. Positive assortative matching on labour market results in the best firms being paired with the most talented individuals. The particular case of matching of CEOs with firms will be discussed in more details. Evidences of the empirical tests of this theory will also be presented. Discrimination in labour market is another topic that will be explored in part 1. Differences between statistical and taste discrimination will be

presented. Although discriminatory practices are often fought against and addressed in laws or international conventions, they still exist and persist. In this part, empirical evidences on labour market discrimination in Israel, Germany and United States of America will be reviewed. Finally, last section (Section 1.4) of part 1 will analyse labour market of Bosnia and Herzegovina in more details than it was done in this introductory part. Analysis will compare labour market in Bosnia and Herzegovina at the time of Yugoslavia and nowadays, pointing out to the differences and similarities between two completely different time periods and economic systems. Furthermore, current labour market will be analysed on the level of two Bosnian and Herzegovinian entities, Federation of Bosnia and Herzegovina and Republic of Srpska, as each entity and canton has certain degree of freedom in applying their own labour-market related policies. Strategies that were made and implemented in the past years will be analysed.

Part 2 of the thesis marks the beginning of empirical investigation of the link between ethnic tensions and unemployment on the labour market of Bosnia and Herzegovina. This part begins with the description of the survey questionnaire that was used for the purposes of empirical investigation. Data gathering method and representativeness of the survey questionnaire are discussed. Furthermore, rationale, in the form of previous research results and data on Bosnia and Herzegovina, was provided for each of the questions used for the purpose of empirical investigation. Section 2.2 provides summary statistics of the variables included into empirical investigation, describing their transformations in more details and giving detailed breakdown of certain variables that are particularly interesting for this particular empirical investigation.

Finally, part 3 describes the empirical evidence, starting with a description of estimation methodology. This part describes two distinct econometric models that will be used for the purposes of empirical investigation: (1) probit model, that will be used to test the link between ethnic tensions and unemployment, and (2) Heckman selection model, that will be used to test the link between income and ethnic tensions on the subset of employed individuals within the sample. Theoretical assumptions behind each of the models are explained in more details, as well as their application to this particular empirical investigation. In the following part, results obtained for both models are presented and those that appeared to be statistically significant were described in more details.

Last part of the thesis contains Conclusion, which will link the results of empirical investigation to the past policy recommendations and future policy recommendations. Future policy recommendations are going to be based on the current gaps in the performance.

1 THEORETICAL BACKGROUND AND ANALYSIS OF LABOUR MARKET IN BOSNIA AND HERZEGOVINA

One of the welfare-decreasing features of modern economies is the size and persistence of unemployment rates. There are numerous aspects from which unemployment can be tackled. In the following parts, aspects of unemployment that are relevant for econometric analysis in the parts 2 and 3 will be analysed in more details: economic and social consequences of unemployment, theory of assortative matching in the labour market, problem of labour market discrimination and finally, analysis of unemployment in Bosnia and Herzegovina.

1.1 Economic and social consequences of unemployment

Unemployment inevitably leads to large economic, psychological and social costs (welfare losses). (Samuelson, Nordhaus, & Mandel, 1995; Feldstein, 1977; Strandh, 2001) Larger unemployment, depending on the economic system of the country, requires larger outlays for unemployment benefits and usually impacts the amount and sources of tax revenue: larger unemployment will result in lower income tax revenue which, in certain cases, governments may try to compensate from other sources (e.g. taxes imposed on companies). Lower tax revenue can impact the number of social benefits that state will be able to provide in the future. Furthermore, unemployment results in foregone output that could have been produced by unemployed persons. When unemployed, individuals have less financial resources available. This results in lower purchasing power and it often leads to change in consumption patterns. Krstić and Sanfey (2006, pp. 17-18) show increase in consumption occurs when individuals engages either in formal or informal employment, compared to inactivity. Some authors suggest that unemployed people are exposed to larger risk of being poor (Krstić & Sanfey, 2006, pp. 13-14) or having financial troubles (Samuelson et al., 1995). To escape poverty, individuals often engage in informal economy (i.e. employment within informal sector). Also, unemployment can result in social exclusion. Unemployed individuals might experience changes in the structure of their social networks and may socialise less in general.

Unemployment has serious effects on individual. Samuelson et al. (1995, p. 238) argued that: “unemployment leads to deterioration of both physical and psychological health: higher levels of heart disease, alcoholism and suicide.” Furthermore, some studies have shown that there is a link between psychological distress and unemployment. Contrary to the expected, well-being of the unemployed youth in low- to upper-middle-income countries tends to be higher than that of older employed persons. However, the opposite holds true for youth in high-income countries. Furthermore, well-being tends to be even lower for unemployed youth in higher-income countries with larger educational attainment

level (Busteed & Mourshed, 2016). Impact of unemployment on well-being tends to be less pronounced (Busteed & Mourshed, 2016):

1. if individuals enjoy support from their families, or
2. when there is a larger peer group that faces similar situation/problem.

Strandh (2001, pp. 59-60) suggests three reasons why unemployment may cause poor mental well-being:

1. certain psychosocial functions are satisfied by employment (i.e. time structure, social contacts, etc.) and lack of fulfilment of these functions can result in dissatisfaction,
2. need of individuals for economic control, and
3. individuals' ability to foresee the future.

To some extent, active labour market policies and unemployment benefit system can have an impact on well-being of an unemployed individual (Strandh, 2001).

Raphael and Winter-Ebmer (2001) tested the existence of one of potential social consequence of unemployment: effect of unemployment on crime rates. They show that there is a significant and positive impact of unemployment on property crimes. Data on mortality and morbidity in the United States of America shows that mortality and morbidity increased among midlife non-Hispanic Americans in the late 1990s. Case and Deaton (2015) suggest that one of the possible causes of this increase is economic insecurity. Pierce and Schott (2016) empirically show that there exists positive link between unemployment rates and mortality rates.

1.2 Theory of assortative matching in labour market

Theory of assortative matching in labour markets influenced and shaped the formation of underlying hypothesis for the empirical analysis presented later in the text. Assortative models are suitable for understanding the functioning of the markets where difference between actors is present, persistent and significant for the market outcomes (Cahuc, Carcillo, & Zylberberg, 2014). Underlying assumptions behind the model are: prevalence of the perfect competition on the market[8] and free entry of the agents to the market which allows the transformation of the jobs to the preferences of the workers. The idea of assortative matching model is that, conditional on the assumptions explained below, most productive workers are matched with most productive firms.

Cahuc et al. (2014, pp. 180-187) present an example of matching CEOs to the firms. The equilibrium of the assortative matching model is achieved when there is no better CEO-firm combination that can be formed as compared to the current one. This also means that

[8] Numerous suppliers and demanders are present. All of them are price takers.

firm's profit is being maximised with the current CEO and that CEO is earning the highest possible wage within the firm of certain, given size. Output of the firm can be defined as:

$$Y(a,s) \geq 0 \tag{1}$$

where *a* represents the ability of the CEO that can assume values from the [0,1] interval, whereas *s* is interpreted as the size of the firm. The function is increasing with increasing *a* or *s*. Furthermore, the profit of the firm can be represented as:

$$\pi(a,s) = Y(a,s) - w(a) \tag{2}$$

where additionally, $w(a)$ is the wage of the CEO with the talent *a*. The equilibrium is achieved with the assignment function $\alpha(s)$, which relates ability of CEO and size of the firm. Cross derivative of production function determines whether positive or negative assortative matching occurs. Positive assortative matching occurs when cross derivative of production function is greater or equal to zero, meaning that function is super modular and that practically, the most talented individuals are matched with the largest firms. Positive assortative matching maximises the output in the economy. Opposite holds true when the function is submodular. In that case, there is a negative assortative matching meaning that the most talented individuals are matched with the smallest firms.

Durlauf and Seshadri (2003) theoretically showed that if coalitions[9] are of equal size, assortative matching will be predicted. When there is limited number individuals that can be assigned to certain coalitions, stratification will occur.

Abowd, Kramarz, Perez-Duarte and Schmutte (2009), using the data on manufacturing and professional, scientific and technical services sector in the United States of America, find some evidences of assortative matching in labour market. Positive assortative matching is found in professional, scientific and technical services sector. They also find that there is a misbalance between employer's requirements and employee's abilities in sectors (e.g. there is a large number of high-skilled workers available, but at the same time, large number of low productivity jobs available). This misbalance impacts distribution of earnings. Abowd, Kramarz, Perez-Duarte and Schmutte (2014), using sectoral data from the United States of America, also empirically show that positive assortative matching occurs. Using the data from Portuguese labour market, Mendes, van der Berg and Lindeboom (2007) empirically show the existence of positive assortative matching in Portuguese labour market. However, the strength of positive assortative matching varies across industries.

[9] Specification of the model suggested Durlauf and Seshadri (2003) assume organization of individual agents into groups–coalitions.

1.3 Labour market discrimination

Unfortunately, discrimination in labour market is still largely relevant problem in the world. Even though there are many attempts of international organisations and governing bodies to ensure equality in every aspect, this has not completely lived in practice. Economists distinguish between two types of discriminations in labour market: taste discrimination and statistical discrimination.

Taste discrimination occurs in the cases when employer refuses to hire a worker because of his/her affiliation to certain group. If taste discrimination is present in certain labour market, workers affiliated to discriminated group(s) have lower chances of finding employment and even if they find one, they are entitled to lower remuneration. Members of discriminated groups have also lower chances of being promoted at work. Cahuc et al. (2014, pp. 488-495) assume that pool of workers is comprised of members of two distinct groups, Group 1 and Group 2. Although labour market relevant characteristics for members of both groups are the same, group 2 is a subject of taste discrimination. Employer's gain of employing a member of group 2 can be represented as follows:

$$y - w_2 - u \tag{3}$$

where y is the total quantity of the good produced by each worker, w_2 is the wage paid to group 2 and finally, u is employer's aversion towards group 2. Simple reorganisation of the equation (3) [10] shows that remuneration for the group that is subjected to taste discrimination, in case all employers exhibit aversion towards members of group 2, is equal to:

$$w_2 = y - u \tag{4}$$

However, remuneration for non-discriminated group is:

$$w_1 = y \tag{5}$$

From this simple example, we can observe that remuneration for the group subjected to taste discrimination is lower than the remuneration for non-discriminated group. In case that the labour supply is affected by wages (i.e. that higher wages lead to larger supply of labour), members of Group 2 experience lower employment. In perfectly competitive labour market, taste discrimination cannot last. In perfectly competitive market, any employer is allowed to enter or exit the market freely and if employer who has no aversion towards one of the groups can and does enter the market, this difference in remuneration

[10] Perfectly competitive labour market is assumed.

disappears. The non-discriminating employer earns larger profit than the other, discriminating employers and as the end result, discrimination disappears. Not only employers themselves can act discriminatory towards other group(s)–employees working for certain company/organisation/institution that belong to majority group might feel aversion towards members of minority group and as a consequence, employers might not be willing to hire members of minority groups.

However, being aware that perfectly competitive labour market is often not the case (Bhaskar, Manning, & To, 2002), we know employees are often exposed to taste discrimination. Taste discrimination can persist in imperfectly competitive markets. Workers are often not able to move from one geographical location to another or from one employment[11] to another and hence, they remain subject of discriminatory practices.[12] Some theories also underlie that workers might voluntary choose lower paid job instead of higher paid one, if for getting a higher paid job, they are likely to be subjected to unfair competition of any kind.

Statistical discrimination is based on premise of productivity. Employers sometimes rely on additional information (e.g. stereotypes) to assess the productivity of a demographic group. Additional information is usually based on the perceived average performance of that certain demographic group. Statistical discrimination occurs if the employers lack certain information on individual characteristics of workers. Arrow (1971, p. 25) states that if employers has to incur large costs[13] in order to get a better glimpse of worker's productivity, it is very unlikely that employer will do so, but will rather rely on certain additional information.

Kaas and Manger (2012) conducted a field experiment on labour market discrimination based on ethnicity on German labour market for student internships in the fields of economics and management. Field experiment included sending two very similar applications[14] (including resumes, cover letters and school records), in which the only distinguishing characteristic was that the one was sent with German-sounding name and the other one with Turkish-sounding name, to 528 job advertisements. Authors have discovered that discrimination exists – call-back rate was 14 % higher for applications with German-sounding names. This rate was even 10 percentage points higher for smaller companies. Furthermore, the authors have noticed that if more information about student's personality is given, the difference in the number of call-backs between applicants with German-sounding name and Turkish-sounding names becomes smaller. Bertrand and

[11] Adjustment costs impact the nature of competition.
[12] If there are large number of individuals competing in the labour market, competitiveness can be preserved.
[13] However, employer always has to incur certain costs to determine worker's productivity.
[14] Both applications were applications of students with German citizenship, who were born and raised in Germany and who speak German as their first language.

Mullainhatan (2004) employ very similar research design as Kaas and Manger (2012) to test labour market discrimination in United States of America. In this research, racial discrimination is explored and the researchers used either white-sounding name or African-American-sounding name. Four different resumes are sent to more than 1,300 job advertisements in one of the four categories: sales, administrative support, clerical services, and customer services. Two resumes that were sent were of high-quality, while the other two were of low quality. The same experiment was conducted in Boston and Chicago and the results were fairly similar. The authors found that while white-sounding name results in 1 call per 10 resume sent, African-American-sounding name results in 1 call per 15 resumes sent. The difference in call-back rates between resumes with white-sounding names and African-American sounding names is equivalent to 8 additional years of experience. Furthermore, having a higher quality resume significantly increases the number of call-backs for applicants with white-sounding names, while the difference is less significant for African-American-sounding names. Applications are filed in with fictional addresses; however, quality of neighbourhood of those fictional addressed also affected call-back rates. Guryan and Charles (2011) used General Social Survey data to test the link prejudice and wage gaps among different races. They show that as a result of racial prejudice that exists among whites, there indeed exists a wage gap between whites and non-whites.

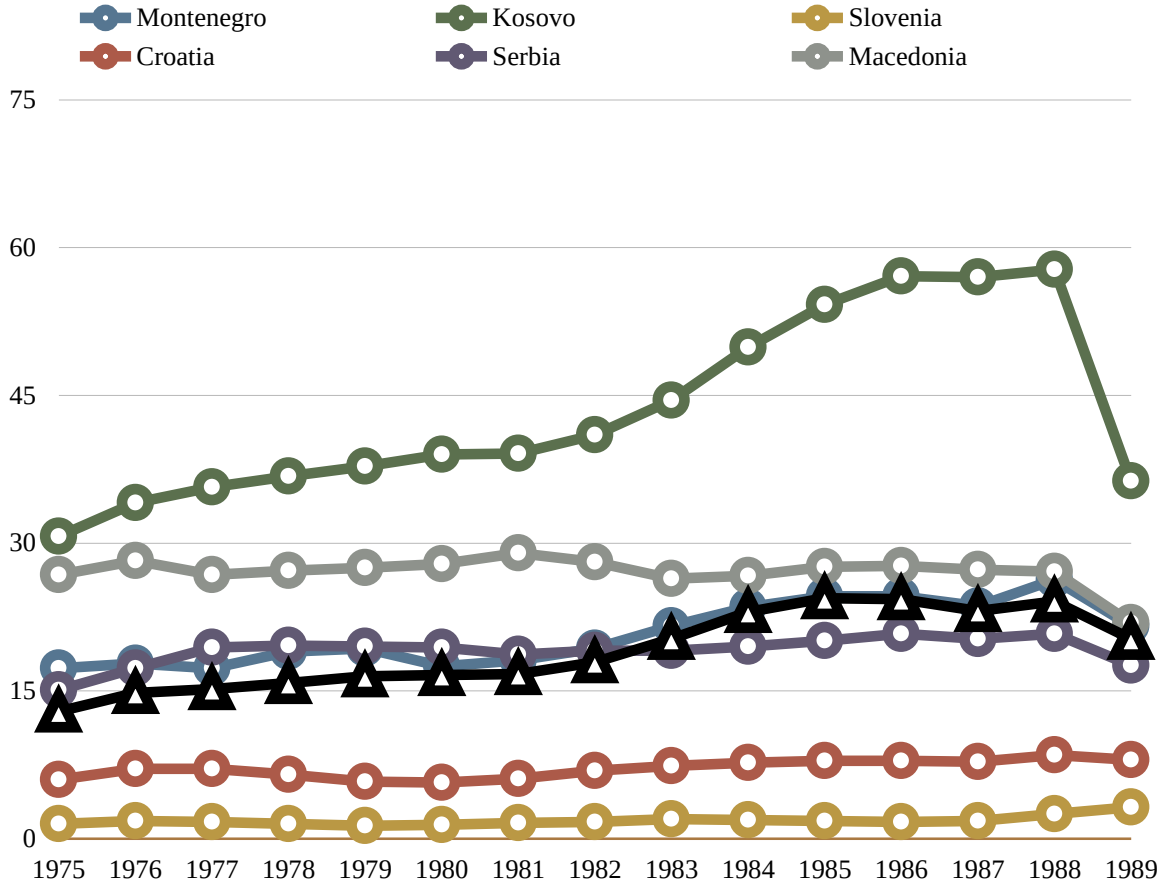
These studies on labour market discrimination point out to serious problems. What makes the problem even more complex is that there is no apparent solution to these problems. Simple policy measures and especially, certain active labour market policies such as training programmes do not appear to be suitable method of tackling the problem.

1.4 Analysis of unemployment in Bosnia and Herzegovina

Unemployment, although not a defining characteristic of all developing and transitional economies, is a considerable problem in all countries that were once part of ex-Yugoslavia. Bah and Brada (2014, p. 17), when describing labour markets of centrally planned economies before the transition, state: “Pre-transition labour markets were characterised by low worker mobility between firms and regions. It was difficult to fire workers, workers could not easily move from location to location, and they were tied to company housing and the social benefits provided by the employer. Union membership was almost universal and wages were completely centrally set.” According to Woodward (1995), Yugoslavia itself was never truly like other socialist or communist countries that followed Marxist doctrine regarding unemployment. Unemployment rates were positive and persistent in all republics and were rising in some of the republics towards the dissolution of Yugoslavia (presented in the Figure 2). The problem of unemployment was recognised at the very beginnings of Yugoslavia, already in 1950s, but was never fully addressed. Nevertheless, the socialist leaders strived to reduce unemployment using administrative measures.

Numerous work positions were created, even though the need for those work positions was questionable. Furthermore, social consequences of unemployment existed, as Woodward (1995, p. 4) states: "To be unemployed was to be excluded from full membership in society - a loss of full citizenship right, a second class status, a disenfranchisement." Woodward (2009, p. 78) argues that unemployment in Yugoslavia was largely structural and latent. She also indicates that positive discrimination was present on the labour market–presence of proportional quotas based on national identity. In as much as all socialist countries are followed by certain type of political programme, in the similar manner, unemployment in socialist Yugoslavia was a political problem. Also, large number of people was also seeking job opportunities outside Yugoslav borders.

Figure 2. Unemployment in countries that were part of ex-Yugoslavia (%), 1975–1989



Source: S. Woodward, *Socialist unemployment: The political economy of Yugoslavia*, 1995, pp. 375-393.

From the Figure 3, it can be observed that unemployment in Bosnia and Herzegovina in the period 1991 to 2020[15] is constantly at very high levels. Average unemployment rate is 26.8 %, whereas the rate of unemployment peaked at 31.2 % in 2014. Before consequences

[15] Last real value of unemployment rate was 2014, while last real value for youth unemployment rate was 2013. Years that follow represent projections of International Labour Organisation.

of the global financial crisis[16] affected Bosnia and Herzegovina, unemployment rate was at relatively low levels compared to the average, at 23.3 % and 24.1 % in 2008 and 2009, respectively. Projections of International Labour Organisation show that unemployment in Bosnia and Herzegovina will decrease in the period 2016 to 2020.

In the countries around the world, youth unemployment rates tend to be higher than unemployment rates of older cohorts.[17] Average youth unemployment rate in the period 1991–2020 is 56.9 %. In 2013, unemployment rate of persons 15–24 years old, was at high 60.2 %, whereas estimates of International Labour Organisation show that, in 2014 and 2015, this rate was even considerably higher (68.8 % and 66.9 %, respectively). Estimates show that youth unemployment rate will decrease to 61.3 % in 2020. Researches show that youth unemployment among females tends to be larger than youth unemployment among males in general (Fares & Tiongson, 2007), which is also the case in Bosnia and Herzegovina. Youth unemployment may trigger the decision of women to stay out of the labour force. Quite often, youth in Bosnia and Herzegovina is not employed within their field of expertise (i.e. doing jobs unrelated to their field of study) or are more likely to find jobs within informal sector, especially lower skilled workers. Education system of Bosnia and Herzegovina is not quite aligned with the needs of the labour market, making it more difficult for youth to make transition from school/university to work. Research done by United Nations (2012) shows that, on average, young people need more than a year to find employment. According to the same research, most of the youth is employed within sectors of: (1) tourism and hospitality, (2) education, (3) culture, (4) health and social security, and (5) crafts. More than 60 % of surveyed young people said that they are willing to leave Bosnia and Herzegovina for temporary employment, whereas over 50 % would be willing to leave Bosnia and Herzegovina permanently. This points to one of the most important problems that Bosnia and Herzegovina is currently exposed to–brain drain–younger people leaving the country in search for better employment opportunities.[18]Another problem that Bosnia and Herzegovina faces is large inactivity rate of youth, which is largely explained by the fact that young population enrols to tertiary education.

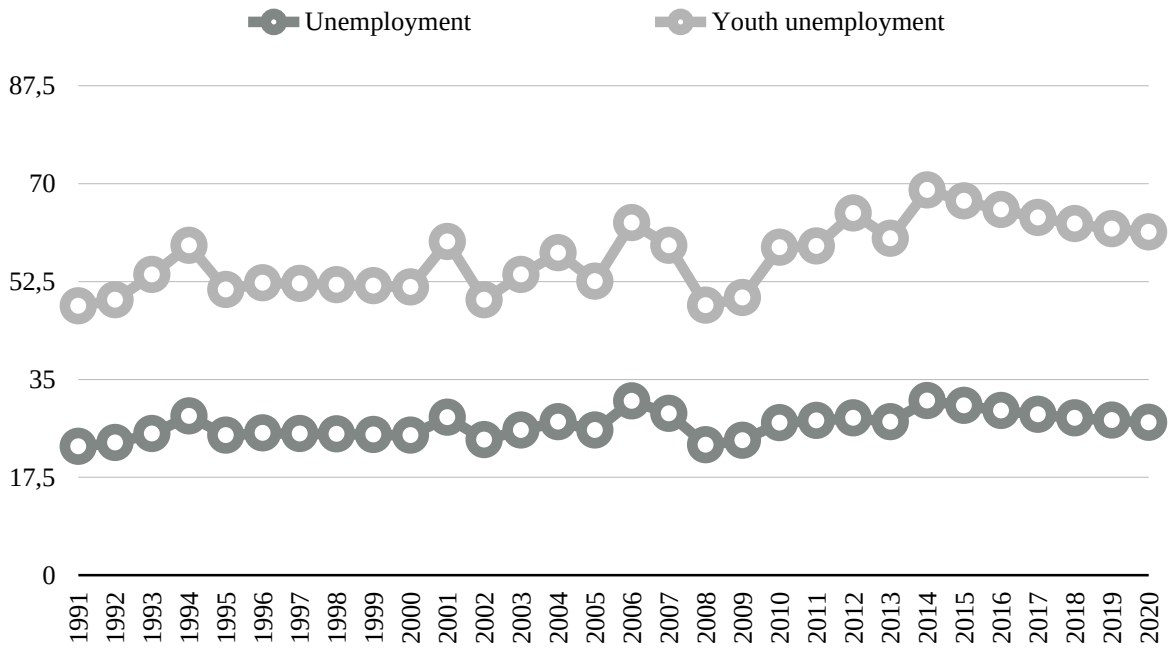
What can also be observed from Figure 3 is almost similar trend of movement in general unemployment rates and youth unemployment rates.

[16] Global financial crisis affected Bosnia and Herzegovina mainly though declining demand for exports and through financial institutions of foreign ownership. (Strategy of employment of Bosnia and Herzegovina 2010–2014, 2010, p.5)

[17] Fares and Tiongson (2007, p. 2) state that youth unemployment is approximately 2 or 3 times larger than the unemployment rates of the overall population of a country.

[18] Emigrations from Bosnia and Herzegovina are mostly of economic nature. Official data shows that in the period between 1998 and 2015, 69,289 Bosnians and Herzegovinians gave up on Bosnian and Herzegovinian citizenship. (Ministry of security of Bosnia and Herzegovina, 2016)

Figure 3. Unemployment and youth unemployment in Bosnia and Herzegovina (in %), 1991–2020



Source*: Unemployment rate by sex and age-ILO estimates and projections (%),* 2016.

Another problem that Bosnia and Herzegovina faces is long-term unemployment (Table 2). Labour force survey data from 2016 (Agency of statistics of Bosnia and Herzegovina, 2016) shows that largest percentage of respondents, 69.4 % of the total number of respondents, is unemployed for more than 24 months, whereas 21.5 % of the respondents are unemployed for more than 120 months. Percentage of women unemployed for more than 120 months is larger than the overall average (24.0 % compared to 21.5 %, respectively).

Table 2. Unemployed by duration of unemployment (in %), 2016

Unemployment duration	**Total**	**Men**	**Women**
Found job but still not working	0.6	-	-
Less than 6 months	7.0	7.1	7.0
6 - 11 months	7.3	7.4	7.3
12 - 23 months	15.6	15.0	16.5

table continues

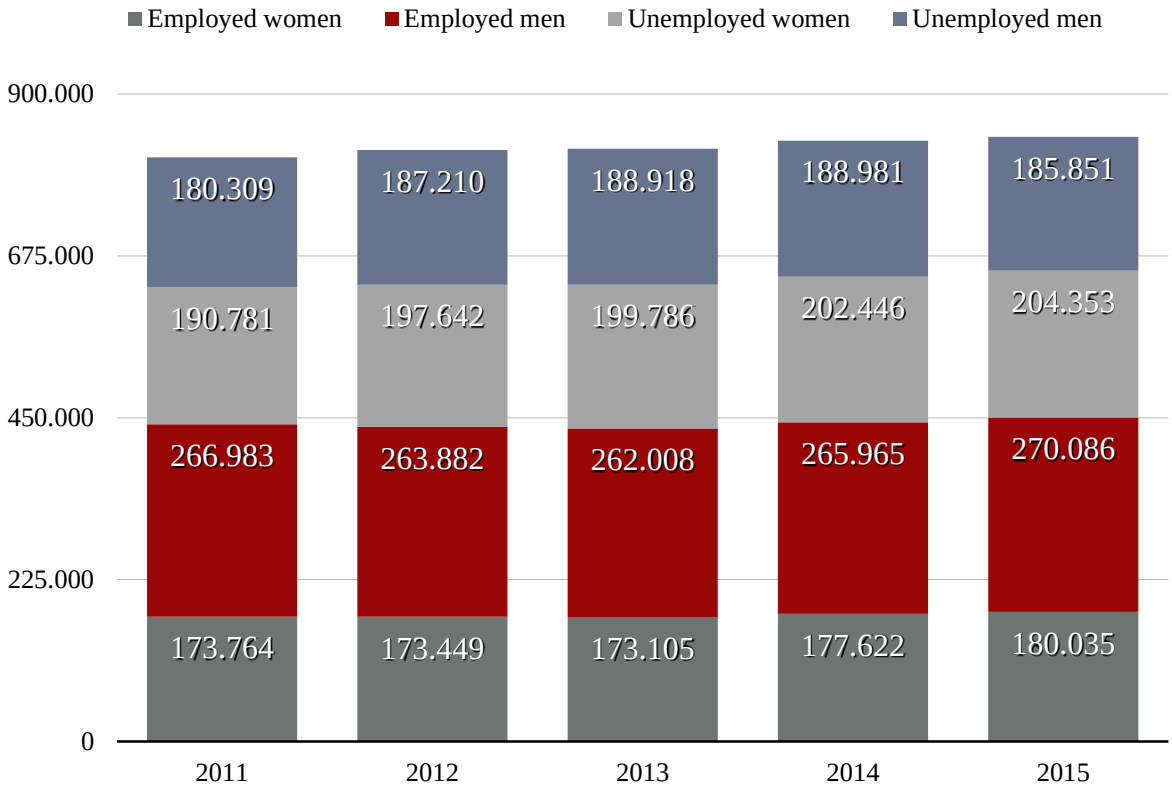
Table 2. Unemployed by duration of unemployment (in %), 2016 (continued)

Unemployment duration	Total	Men	Women
24 - 59 months	29.5	32.3	26.1
60 - 119 months	18.4	18.3	18.5
120 months and more	21.5	19.4	24.0

Source: Agency for statistics of Bosnia and Herzegovina, *Labour Force Survey*,2016b, p. 59.

In Figure 4, number of persons active on labour market (total and by gender) in Bosnian and Herzegovinian entity, Federation of Bosnia and Herzegovina, is shown. Large unemployment and youth unemployment rates, large long-term unemployment and large degree of inactivity (mainly among women and youth) are some of the characteristics of labour market on the territory of Federation of Bosnia and Herzegovina. Over the observed time period, 2011–2015, total number of persons active on labour market of Federation of Bosnia and Herzegovina increased by 3.5 %. Number of employed persons in Federation of Bosnia and Herzegovina in the same period increased for 2.1 %, while the number of unemployed persons increased for 5.2 %. According to official statistical data for Federation of Bosnia and Herzegovina for 2015, three largest groups of unemployed, according to educational attainment are: unskilled workers (28.4 %), skilled workers (33.4 %) and workers who have completed high school (30 %). In 2015, 60 % of employed persons were men. Number of employed in 2015 was the highest in the following five sectors: (1) manufacturing, (2) public administration and defence, compulsory social security, (3) education, (4) human health and social work activities, and (5) transportation and storage. (Institute for statistics of Federation of Bosnia and Herzegovina, 2016) One of the largest problems in Federation of Bosnia and Herzegovina is the extent of informal employment. Largest sectors for informal employment in Bosnia and Herzegovina are: (1) agriculture, (2) construction, (3) trade, and (4) hospitality services (tourism). (Ministry of employment and social politics of Federation of Bosnia and Herzegovina, 2008, p. 20)

Figure 4. Persons active on labour market by gender in Federation of Bosnia and Herzegovina, 2011–2015

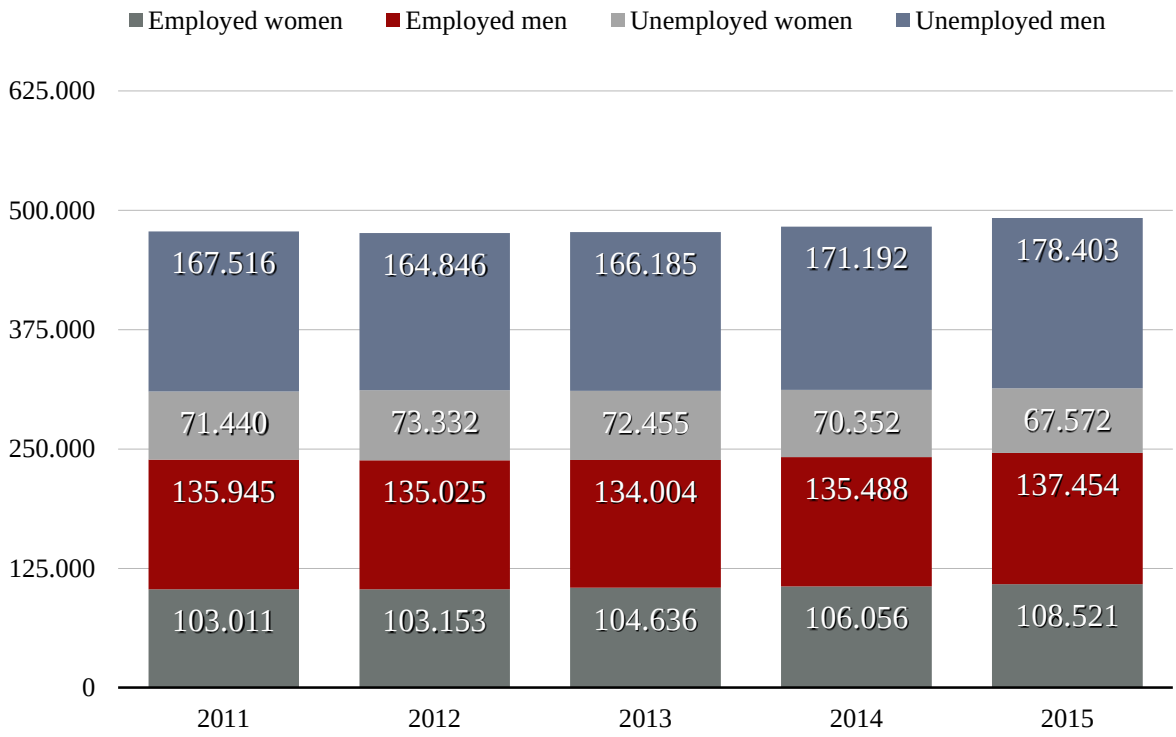


Source: Institute for Statistics of Federation of Bosnia and Herzegovina, *Employment, unemployment and wage in Federation of Bosnia and Herzegovina: Statistical bulletin 2011*,2012, p. 13; Institute for Statistics of Federation of Bosnia and Herzegovina, *Employment, unemployment and wage in Federation of Bosnia and Herzegovina: Statistical bulletin 2012*,2013, p.11; Institute for Statistics of Federation of Bosnia and Herzegovina, *Employment, unemployment and wage in Federation of Bosnia and Herzegovina: Statistical bulletin 2013*, 2014, p.11; Institute for Statistics of Federation of Bosnia and Herzegovina, *Employment, unemployment and wage in Federation of Bosnia and Herzegovina: Statistical bulletin 2014*, 2015, p.11; Institute for Statistics of Federation of Bosnia and Herzegovina *Employment, unemployment and wage in Federation of Bosnia and Herzegovina: Statistical bulletin 2015*, 2016, p.11.

In Figure 5, we can see the breakdown of persons active on labour market by gender in Bosnian and Herzegovinian entity, Republic of Srpska. In the observed period, 2011–2015, number of persons active on labour market increased for 2.9 %. Number of employed persons experienced same increase in terms of percentage points. Over the same period, number of unemployed persons decreased for approximately 7.2 %. In 2015, 55.9 % of total employed persons were males. In the same year, largest number of employed persons had completed high school education (43.6 %), followed by persons with university education (22.5 %). On the other hand, largest number of unemployed was: unskilled persons (21.2 %), highly skilled and skilled persons (36 %) and persons with high-school education (29.1 %). Private sector employs the largest number of persons in Republic of Srpska, followed public institutions. Number of employed persons is the highest in the following five sectors: (1) manufacturing, (2) public administration and defence,

compulsory social security, (3) human health and social work activities, (4) wholesale and retail trade, repair of motor vehicles and motorcycles and (5) construction. Largest number of employed is in larger urban areas. (Institute of statistics of Republic of Srpska, 2016)

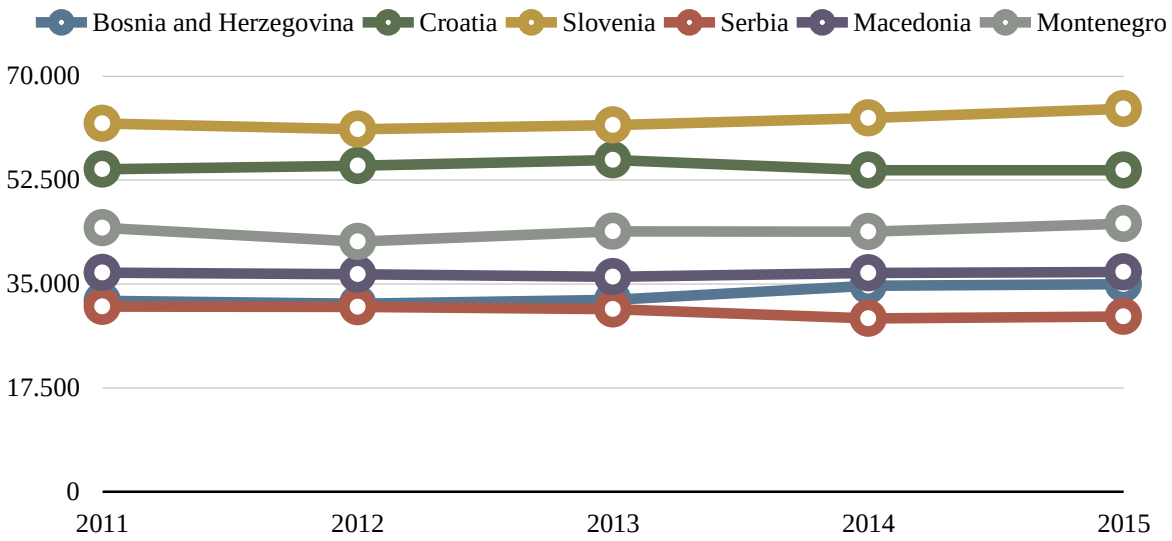
Figure 5. Persons active on labour market by gender in Republic of Srpska, 2011–2015



Source*:* Institute of statistics of Republic of Srpska, *Wages, employment and unemployment: Statistical bulletin*,2016, p.12, p.19.

Figure 6 shows output per worker in Bosnia and Herzegovina and comparable countries, countries of former Yugoslavia (Croatia, Macedonia, Montenegro, Serbia and Slovenia), as measured in terms of GDP constant 2011 international dollars in PPP for the period 2011 to 2015. Output per worker in Bosnia and Herzegovina is among the lowest compared to countries of former Yugoslavia. Only country with slightly poorer output per worker is Serbia, whereas Slovenia and Croatia are the best performers among former Yugoslav states in terms of output per worker.

Figure 6. Output per worker in Bosnia and Herzegovina and comparable countries (GDP constant 2011 international $ in PPP), 2011–2015



Source*: Output per worker (GDP constant 2011 international $ in PPP)-ILO estimates and projections*, 2016.

Numerous strategic documents in Bosnia and Herzegovina dealt with the problem of unemployment, some of them being: Reform agenda for Bosnia and Herzegovina 2015–2018, Strategy of employment in Bosnia and Herzegovina 2010–2014, Strategy of employment of Federation of Bosnia and Herzegovina 2009–2013 and Strategy of employment of Republic of Srpska 2011–2015. Some of the areas that strategic documents addressed are: the problem of unemployment, long-term unemployment, high inactivity rates, mismatch between labour supply and demand and education. Both entities have Bureaus for employment services (and in the case of Federation of Bosnia and Herzegovina, each canton has one). Bureaus serve for matching employers and employees on labour market. Besides this, in each of the entities, certain unemployment benefits are provided to the unemployed. Bureaus for employment services, for Federation and Bosnia and Herzegovina and for Republic of Srpska, had implemented some projects that tackled the problem of unemployment, such as: (1) programmes for employment of certain groups (e.g. Roma people, older persons), (2) training programmes, and (3) providing certain subsidies towards employment.

Gender inequalities exist on labour market of Bosnia and Herzegovina. Women tend to be predominantly employed within what are considered to be "traditionally female" sectors (i.e. health, social security or education). However, even in those sectors, female employees are often employed on the jobs that require lower levels of formal education. In addition to this, women often tend to be employed as a part of informal economy. Wage gaps among men and women in Bosnia and Herzegovina exist. Furthermore, although it is prohibited the law, women are often subjected to discriminatory practices when pregnant

(i.e. women might face loss of their job during pregnancy, not be hired at all, etc.). Glass ceiling in Bosnia and Herzegovina is existent and very apparent. According to the research done by Agency for gender equality of Bosnia and Herzegovina, conducted in 2014 among 100 best performing companies in Bosnia and Herzegovina, there is a large misbalance in number of men and women in their boards of director and supervisory boards. Only about 20 % of members of boards of director were women, while this percentage was even smaller in supervisory boards - 15 %. (Agency for gender equality of Bosnia and Herzegovina, 2015, pp. 9-38) Gender action plan for Bosnia and Herzegovina 2013–2017 addresses some of the mentioned issues.

Certain examples of ethnic or religious discrimination are present on the labour market of Bosnia and Herzegovina as well. Constitution of Bosnia and Herzegovina indicates that for some of the positions within government of Bosnia and Herzegovina, only members of specific ethnic groups can be nominated. For example, Constitution of Bosnia and Herzegovina states that Bosniak and Bosnian Croat member of Presidency of Bosnia and Herzegovina have to come from Bosnian and Herzegovinian entity Federation of Bosnia and Herzegovina, while Bosnian Serb member of the Presidency has to come from entity Republic of Srpska. Defined in this way, it excludes the possibility of choosing Bosniak of Bosnian Croat member from entity Republic of Srpska or Bosnian Serb member from entity Federation of Bosnia and Herzegovina. Furthermore, it completely excludes the possibility for members of minority groups to be elected to the Presidency of Bosnia and Herzegovina. In the same way, 15 representatives for House of People of Parliamentary Assembly of Bosnia and Herzegovina are chosen, again as defined by Constitution of Bosnia and Herzegovina.

2 DATA DESCRIPTION AND SUMMARY STATISTICS

In this part of the thesis, I will describe the survey that was used to create the data set and summary statistics. The first section describes survey questionnaire in more details, especially process of data gathering and representativeness of the survey. The second section describes summary statistics of the data in details.

2.1 Description of the survey questionnaire

The data used to the test the link between ethnic tensions and unemployment is obtained from the survey[19] originally conducted for the purposes of the book Ethnic tensions and

[19] The data was gathered in the period between June and October, 2012, by the professional agency by face-to-face meetings with the respondents using Computer-Assisted Personal Interviewing (CAPI) method. Pilot survey was conducted in May 2012.

economic performance: Bosnia and Herzegovina and Macedonia, co-written by Efendić, Silajdžić and Atanasovska in 2014.[20] The data are collected by professional agency, which conducted interviews by asking interviewees predetermined set of closed questions. For the purpose of conducting the interviews, area of Bosnia and Herzegovina was divided into 16 regions: 10 regions covering Federation of Bosnia and Herzegovina, 5 covering Republic of Srpska and one for Brčko District. The surveyors interviewed one of the family members, which acted as a representative of the whole household. The initial sample of 2,017 respondents is representative in terms of: entities, regions, municipalities, ethnic groups, gender and location of living (urban, rural and suburban areas) (Efendić et al., 2014, pp. 38-51).

Although the original dataset does not involve any missing variables, option "Does not know" or "Does not wish to answer" is allowed as the potential response to the questions in the survey questionnaires. In this particular empirical analysis, these answers are treated as missing variables. Observations, for which any of the explanatory variables used in this empirical research is considered as missing, were deleted. Furthermore, only respondents who were part of the labour force were included in empirical analysis, which finally resulted in 683 observations. Resemblance of full and limited sample were analysed for all the variables describing individual characteristics and experiences and environment-related variables. Distributions of variables in the full sample (with 2,017 observations) were preserved in the limited sample used here (with 683 observations). Ordered choice answers to the questions were transformed into binary variables, where it was considered appropriate.[21]

The choice of variables included in the empirical analysis was based on the previous research conducted on the territory of Bosnia and Herzegovina and other countries whose population consists of different ethnic groups, on the topics related to ethnicity, labour market outcomes or social capital. Variables that will be used in the empirical analysis can be divided into three broader categories:

1. socio-demographic variables,
2. variables describing individual characteristics (previous experiences), and
3. environmental variables.

[20] I would like to use this opportunity to express my gratitude to RRPP (Regional Research Promotion Programme in the Western Balkans) and prof. Adnan Efendić, for making the database available to me. The database was prepared within the framework of the Regional Research Promotion Programme in the Western Balkans, run by University of Fribourg upon the mandate of the Swiss Agency for Development and Cooperation, Federal Department of Foreign Affairs. The database was prepared as a part of the project "Ethnic tensions and economic performance: what are (not) casual links?" implemented by School of Economics and Business of University of Sarajevo and project coordinator: prof. dr. Adnan Efendić.
[21] Variables age, entity, education level, interethnic friendships and income were not transformed into binary.

Table 3 gives a detailed overview of the variables within these three broader groups.

Table 3. Variables used in empirical analysis

Socio-demographic characteristics	**Individual experience/characteristics**	**Environment-related variables**
Gender	Interethnic friendships	Interethnic mixing in the place of living
Age	Belonging to majority/minority ethnic groups	Presence of ethnic tensions in the place of living
Education	Importance of ethnicity	
Marital status	Personal experience - interethnic tensions	
Employment status	Importance of multiculturalism	
Location of living (urban, rural or suburban area)	Trust	
Income	War trauma	
	War-related displacements	

As defined by Constant and Zimmermann (2007, p. 2), ethnic identity is: "whatever makes individuals the same or different in comparison to other ethnic groups. But, it may also encompass a network of strong beliefs, values, and what people hold dear, it builds and shapes peoples' lives." Interesting study done by Desmet, Ortuno-Ortin and Wacziarg (2016) links culture[22], ethnicity, civil conflict and provision of public goods. Their results point to the importance of overlap of ethnicity and culture. The existence of this overlap increases the possibility of conflict occurrence and reduces the public goods. Larger cultural diversity on its own has the opposite effect on both: it increases the provision of public goods and lowers the possibility of conflict occurrence.

According to Malcolm (2011, p. 40), historically, tensions and rivalry in Bosnia and Herzegovina have existed. However, they were not solely or fully caused by different religious or ethnic affiliations of people living on the territory of Bosnia and Herzegovina. Tensions and rivalry were mainly the product of economic circumstances. Additionally, these tensions and rivalry (despite their root cause) between people in Bosnia and Herzegovina have changed throughout the history. Bosnia and Herzegovina is and always was a multiethnic country. However, Bisogno and Chong (2002, p. 67) claim that a large

[22] Desmet, Ortuno-Ortin and Wacziarg (2016, p. 1) describe culture as a set of norms, values and attitudes.

concentration of ethnic groups exists within entities (both Federation of Bosnia and Herzegovina and Republic of Srpska) and furthermore, that the large concentration of ethnic groups also exists within cantons in Federation of Bosnia and Herzegovina.

Dyrstad, Ellingsen and Rod (2015) believe that nationalism largely affects the development of multiethnic societies, especially those societies that survived the conflict. Regarding Bosnia and Herzegovina, they show that more religious individuals as well as individuals living in rural areas tend to be more ethnonationalistic[23], whereas the opposite is true for individuals whose life partner belongs to ethnic group different than their own. Moreover, their research has shown that the link between ethnonationalism and low income, low education and age exists. Along the mentioned, in Bosnia and Herzegovina, individuals belonging to the local majority ethnic group tend to be more ethnonationalistic than individuals belonging to local minority ethnic group. Nevertheless, both members of majority and minority ethnic groups tend to be more ethnonationalisic the more populous their group is. Additionally, individuals who had experienced displacements during the war in Bosnia and Herzegovina (1992–1995) and returned to their places of origin only later appear to be more ethnonationalistic.

As mentioned in the paragraphs above, ethnicity and multiculturalism present in Bosnia and Herzegovina have always been important and have a significant influence on the behaviour of individuals in Bosnia and Herzegovina. Therefore, in order to test the importance of ethnicity, ethnic tensions and multiculturalism in the labour market in Bosnia and Herzegovina, a set of variables will be included in the econometric model and those are the following: (1) belonging to majority or minority ethnic groups, in order to test whether individuals belonging to minority ethnic group have lower probability of finding employment, (2) presence and experience of ethnic tensions in individuals' places of living, in order to test whether higher level of ethnic tensions in the place of living might have an impact on individuals' probabilities of being employed, (3) importance of ethnicity, in order to test whether individuals who regard ethnicity (belonging to certain ethnic group) as less important are more likely to find the employment, and (4) importance of multiculturalism, in order to test whether individuals who value multiculturalism more are more likely to find employment.

Another set of variables that will be used in empirical analysis are variables related to the past experiences of the individual respondents. By taking into consideration that the war in Bosnia and Herzegovina has left severe consequences that are still largely dealt with, these variables are of great importance. Bisogno and Chong (2002) point that 40 % of the Bosnian and Herzegovinian labour force were former soldiers. Furthermore, war-related

[23] Dyrstad et al. (2015, p. 5) defined ethnonationalism as: "the desire to keep the (ethnic) nation homogeneous and separated from other groups".

displacements lead to significant economic vulnerability of the displaced persons[24]. Kondylis (2008) showed, in the research on the impact of conflict-induced displacements on labour market of Bosnia and Herzegovina, that displacements had negative impact on labour market outcomes for both genders. Furthermore, the research showed that selection into displacement was positive and that the magnitude of the effect was quite large: increase in probability of unemployment of roughly 15 % for both men and women. Another implication of war displacements (forced migrations) is that households' parents spend approximately 20-30 % less[25] on their children's education compared to households that did not change their location during the war. (Eder, 2014) Moreover, Ringdal and Ringdal (2010) researched the connection between religiosity and war-related distress in Bosnia and Herzegovina. Their evidences suggest that the link exists and that religious beliefs and stability act protectively against war-related distress, while the opposite is true for religious activity. Two variables are included that capture the effect of past (war-related) experiences:

1. individuals' perception of how traumatic the experience of war was for her/himself irrespective of where they were during the period of war, in order to test whether the individuals whose experience of the war was more traumatic are less likely to find employment today, and
2. war-related displacement, in order to test whether individuals who experienced war-related displacements are less likely to find work today.

These variables are also important as potential discrimination can exist against those who have left their homes during the war and later returned, and today comprise the minority groups in those areas. Bieber (2007, p. 49) states: "The authorities in the areas where there are minority returnees often show favouritism toward the majority returnees when it comes to property rights and allocating financial resources."

Interethnic friendships are used as an indicator of presence of ethnic tensions and openness towards other ethnic groups. Hence, variable on interethnic friendships is also included in empirical analysis, in order to test whether the larger openness towards other ethnic groups affects the probability of being employed. Marmaros and Sacerdote (2006) analysed different determinants of formation of friendship relationships by treating friendship relationship as a function of benefits and costs. One of the underlying assumptions is that if a person has to incur even incrementally smaller costs when interacting with person of

[24] The estimates have shown that approximately 2 million people were displaced during the period 1992-1995.
[25] There are many possible explanations of this phenomena, some of them being: differences in the amount of disposable income, durable goods, uncertainty about the future, etc.

other race[26], it represents a barrier to social interaction. Determinants of friendships are characteristics such as: geographical proximity, race, family background and the extent of shared interests. O'Loughlin (2010) researched the nature and scope of interethnic friendships in Bosnia and Herzegovina. The results of his survey indicate that about 54 % of the citizens of Bosnia and Herzegovina have all or most of their friends from the same ethnic group they belong to. The results from the survey used in his paper indicate that only 18 % of Bosnian Croats meet members of other ethnic groups on daily basis, while percentages for Bosnian Serbs and Bosniaks are higher: 29 % and 53 % respectively. The paper indicates important determinants of people being more open towards interethnic friendships: higher level of general trust, age (older people appear to be more engaged in inter-ethnic friendships), pride in the own ethnic groups, optimism about the economic prospects of the country, gender (males tend to be more open towards inter-ethnic friendships) and finally, one's primary identity (whether the person considers his/her primary identity to civic identity (Bosnian and Herzegovinian) or ethnic identity (Bosniak, Bosnian Croat or Bosnian Serb). Furthermore, O'Loughlin finds that people who were displaced as the consequence of war have fewer friends belonging to the other ethnic groups. The research conducted also shows that 47 % of the Bosnian and Herzegovinian citizens want more friends belonging to other nationalities.

Another interesting aspect of empirical analysis is the link between trust and employment. Many research papers have studied the link between ethnicity and trust. Collier (1998) shows that ethnic diversity does negatively affect trust, which leads to lower income. Most notable findings suggest that men, individuals with low levels of educational attainment, older individuals and unemployed on average display lower levels of trust. However, no pronounced negative effect between ethnicity and generalised trust appears to hold true for the sample of European countries (Hooghe, Reeskens, Stolle, & Trappers, 2009). Based on the experiment done in the Basque country and Catalonia, only limited evidence was found on the link between co-ethnicity and trust between Catalan language speakers in Catalonia, whereas no link was found between trust and co-ethnicity in Basque country (Criado, Herreros, Miller, & Ubeda, 2015). Furthermore, studies suggest that higher levels of income inequality[27] can have a negative impact on trust. Alexander and Christia (2011), based on experimental results from public goods game conducted in Mostar (Bosnia and Herzegovina) pointed out to the importance of institutional context on the link between ethnicity and cooperation between members of different ethnic groups. Namely, segregated institutions have deteriorating effect on amount of contributions to the public goods, while

[26] Although there is no racial differences present in Bosnia and Herzegovina, this can easily apply to ethnic differences as well.

[27] Bisogno and Chong (2002) showed that approximately 27.3 % of Bosnian and Herzegovinian citizens can be considered as poor, whereas approximately 11.5 % can be considered as extremely poor. Where head of the household is either unemployed or inactive, household is more likely to face poverty. Estimated Gini coefficient is 0.45. There are differences in terms of inequality between ethnic groups and entities.

this difference in the amount of contributions declines under institutions of integration. By conducting an experiment of so-called dictator game[28], Whitt and Wilson (2007) found that there is still norm of fairness present in Bosnian and Herzegovinian society. The results of their multivariate analysis suggest that participants who consider their ethnicity to be the most important for them personally are less likely to exhibit fairness towards the members of other ethnic groups.

Numerous studies show that different socio-demographic variables have a large influence on employment. Age plays an important role in the labour market. Quite frequently, older workers are exposed to discriminatory practices (Cheung, Kam, & Ngan, 2011). In this empirical analysis, following the research of Heckman, Tobias and Vytlacil (2000, p. 16), age variable is transformed to potential experience variable, where:

$$Potential\ experience = Age - Years\ of\ schooling - 6. \quad (6)$$

Previous researches have confirmed that additional time spent in school has a positive effect on earnings (Angrist & Krueger, 1991; Heckman et al., 2000). One of the well-known economic theories, theory of signalling, also points to the importance of education. It is based on the premise that education acts as a signal for the employer and directs employer towards most able persons (Cahuc et al., 2014). Schooling model (Mincer, 1974, p.47) links wage to the years of schooling suggesting that the wage increases with the years of schooling:

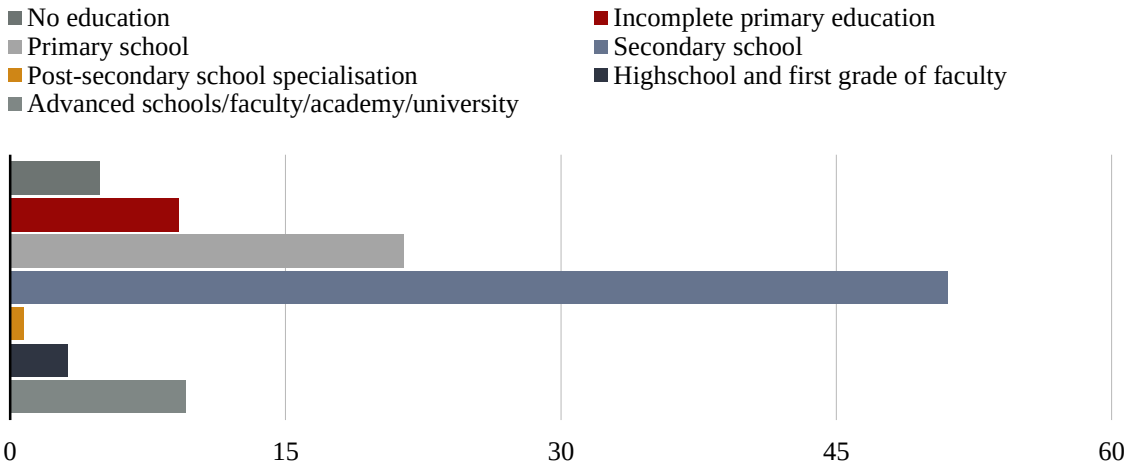
$$ln\ Y_s = ln\ Y_0 + rs \quad (7)$$

where Y_s represents the earnings of individual with certain educational attainment and *rs* represents rate of return to schooling.

Comparable to what will be observed in next section, the majority of individuals in Bosnia and Herzegovina have low educational attainment (Figure 7).

[28] In a dictator game, one of the two participating subjects (Player A) allocates certain amount of money provided in the experiment between him/herself and the other participant (Player B). In the first game, Player A and Player B came from the same ethnic group and the same entity (Federation of Bosnia and Herzegovina or Republic of Srpska), whereas in the second game, the participants came from different ethnic groups.

Figure 7. Educational attainment of individuals aged 15 or higher in Bosnia and Herzegovina



Source: Agency for statistics of Bosnia and Herzegovina, *Census of population, households and dwellings in Bosnia and Herzegovina: Final Results 2013*, 2016a, p. 152.

Efendić et al. (2014)[29] shows, for Bosnia and Herzegovina that economic performance of individuals is largely affected by: their employment status, education, age, gender, international experience and whether individuals live in urban or rural areas. Furthermore, his research shows higher ethnic tolerance among: employed individuals, older individuals, those living in urban areas, males, individuals who had certain international experience, living in more ethnically diverse area and living in the area where ethnic tensions are not present.

Moreover, there is evidence of discriminatory practices based on belonging to certain ethnic group exist in the different countries. Rubinstein and Brenner (2014) tested whether wage discrimination exists in Israeli labour market based on perception of belonging to different ethnic groups. First, they compared the wages of individuals who are born in interethnic marriages compared to individuals who are not. Both groups are similar in terms of all labour market relevant characteristics, while the only difference is the perception of their ethnicity (individual's surname is used as a signal for ethnicity). The results showed that Israeli labour market acts discriminatory towards Sephardic Jews. Second part of the research involved testing whether father-in-law's surname (as a signal of ethnicity, rather than their own father's surname) influences the wages of women in interethnic marriages. This also appeared to be the case. However, if there are other signals of ethnicity present (such as e.g. skin tone), the difference in wage cannot be explained by

[29] Just some of differences mentioned research of Efendić et al. (2014) and research in this thesis include use of different econometric model (both method and set of dependent and independent variables is different) and research of Efendić et al. uses full database (as already explained for the needs of this research, certain limitations are imposed on the database).

surnames. Inspired by the evidences mentioned in this paragraph, the link between income and all of the previously mentioned variables will also be researched in further details. Therefore, the second part of my empirical analysis will involve testing the impact of socio-demographic characteristics (besides the employment status), individuals' characteristics/experiences and environmental variables on disposable income in order to test whether discrimination based on the grounds of ethnicity exists in Bosnia and Herzegovina.

2.2 Summary statistics

Table 4 presents summary statistics for the set of variables used in empirical analysis.[30] Summary statistics overview involves: (1) number of observed variables, (2) mean values of variables, (3) their respective standard deviations, and (4) minimum and maximum values that the respective variable can take. As discussed in the previous part, numerous variables will be included in the empirical analysis which can be divided into three more general categories:

1. socio-demographic variables,
2. variables describing individual characteristics (experience), and
3. environmental variables.

Heterogeneity is also present among survey respondents as the sample involves: respondents belonging to both majority and minority ethnic groups, respondents of different age, education (ranging from elementary school to Ph.D.) levels, respondents living in urban, suburban and rural areas, different entities within Bosnia and Herzegovina, respondents who were subject to war-related displacements, etc.

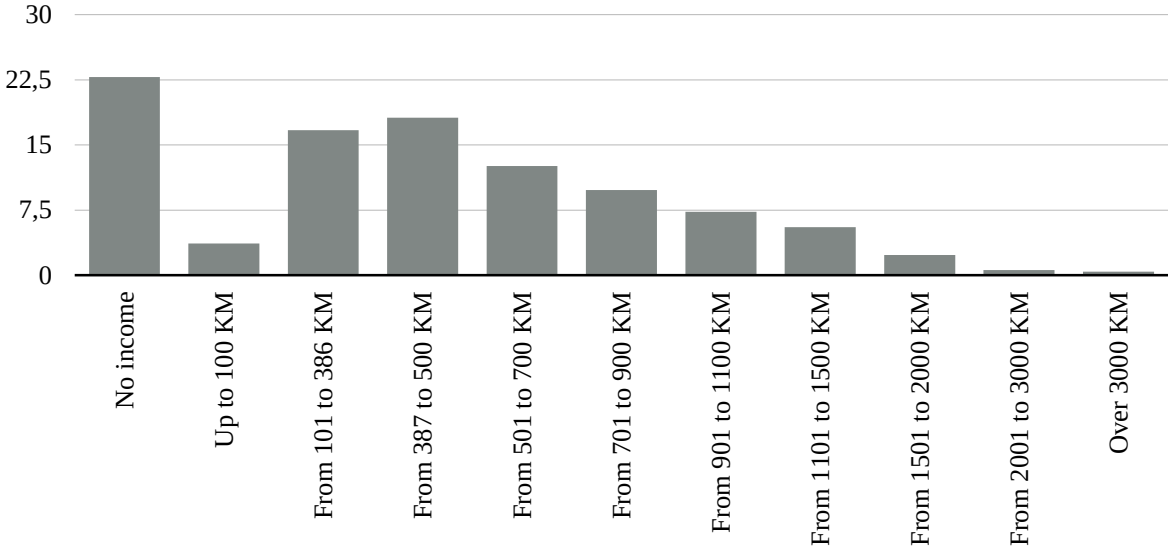
Out of 683 respondents, 50.95 % were unemployed, whereas the remaining 49.05 % of the respondents were employed. As shown in the Table 4, survey respondents were between 18 and 85 years old, with 95.75 % of the respondents being under the age of 65. Average age of survey respondents was 44 (Table 4). On average, the survey respondents had 22 years of potential experience (Table 4). Slightly larger percentage of survey respondents were men (51.98 %). Majority of the survey respondents were married (67.50 %), whereas the remaining respondents belong to one of the four groups[31]: (1) single, (2) separated, (3) widowed, or (4) living together, but not officially being married. Most of the survey respondents live on the territory of Federation of Bosnia and Herzegovina (60.47 %), followed by those living in Republic of Srpska (37.19 %) and finally, Brčko District (2.34

[30] Table 4 also includes several original variables, if their transformation for the purposes of empirical research was different than just transformation into the binary variable.
[31] As the variable is binary, 1 indicates that respondent is married, while 0 is used for the respondents who are not married and belong to one of four listed groups.

%). Larger number of survey respondents lives in rural or suburban areas, compared to urban areas (65.01 % and 34.99 %, respectively).

Reported mean income of the survey respondents is relatively low – 637.1[32] BAM, with standard deviation 450.2 (Table 4). Distribution of disposable income is left skewed (as it can be observed in Figure 8), with the largest number of respondents belonging to the lower income groups. Largest number of no income recipients has only high school education (63.46 %), followed by the respondents with only elementary education (15.38%) and respondents with university education (12.82 %). Although the largest number of lower income recipients either have no elementary or incomplete elementary education, elementary education or high school, relatively significant share (up to 10 %, depending on the income group) of the respondents with either college or university education belongs to the lower income groups. 16.03 % of the respondents with no income also belong to minority ethnic group in the place of living, whereas 83.97 % belong to majority ethnic group in the place of living.

Figure 8. Income distribution among survey respondents

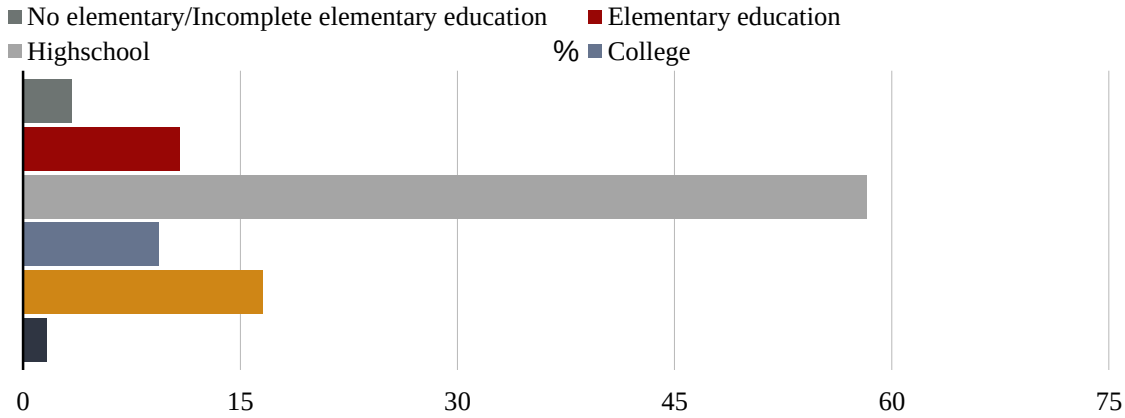


As it can be seen from Figure 9, heterogeneity in terms of obtained education was present among survey respondents. Approximately 3.37 % of survey respondents had either no elementary or incomplete elementary education. Further analysis of the data reveals that over 80 % of the respondents with no elementary or incomplete elementary education were over the age of 50. Majority of survey respondents completed only high school education - almost 60 % of total number of respondents. Over 15 % of survey respondents completed

[32] The average salary in Bosnia and Herzegovina was 831 BAM in December 2012, as reported by Bosnian and Herzegovinian Agency for Statistics.

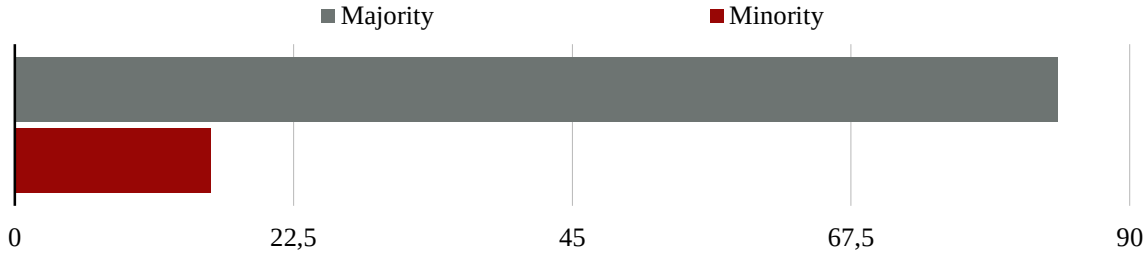
university education and slightly more than 1.5 % holds either Master's degree or Ph.D. Roughly 73 % of Master's degree or Ph.D. holders are younger than 50 years.

Figure 9. Education of survey respondents[33]



Next, we consider characteristics that survey respondents exhibited regarding trust, interethnic friendships and interethnic mixing in the place of living. Survey respondents exhibited low levels of trust towards others, with mean value of 0.33 (Table 4). Women appeared to be slightly more trustful than men. As an extension to trust variable, survey respondents also exhibited very low level of interethnic friendships–average number of friends belonging to other ethnic group for survey respondents was 20.26 % and approximately 80 % of survey respondents had less than 50 % of their friends belonging to other ethnic groups. This might be a result of low interethnic mixing in the place of living reported by the survey respondents (with the mean value of interethnic mixing in the place of living being 0.23, as shown in Table 4), while, at the same time, most survey respondents reported that they belong to majority ethnic group within their place of living (Figure 10).

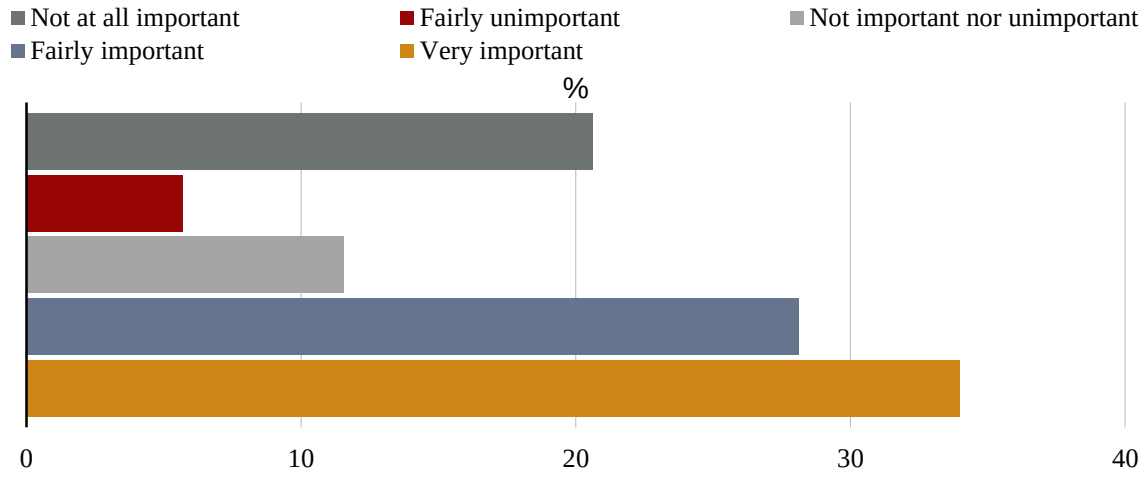
Figure 10. Respondents belonging to majority or minority group



[33] Although, as already mentioned, most of the variables (where it was appropriate) were transformed into binary variables, original ordered variables are shown for some of the questions which are considered to be of extreme importance.

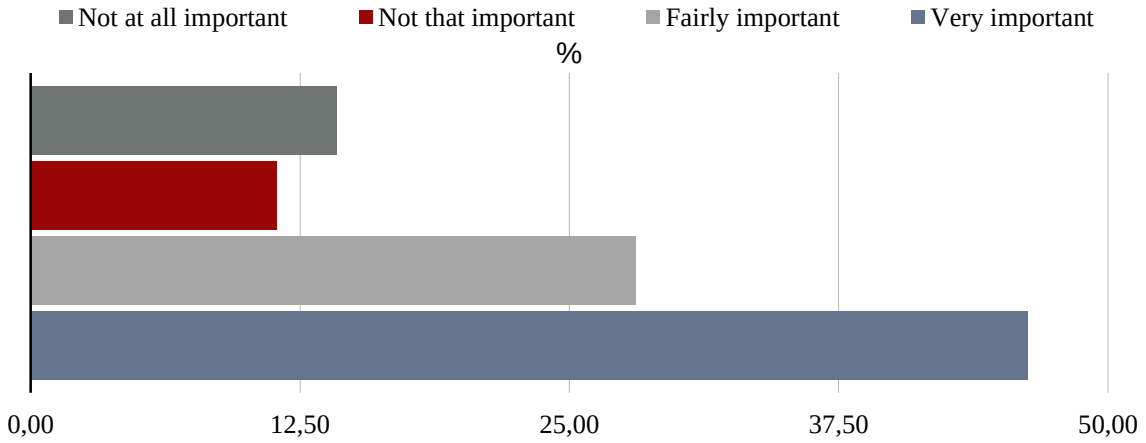
Furthermore, importance of ethnicity and extent of interethnic tensions will be discussed. Ethnicity appears to be very important for survey respondents (Figure 11). 62.08 % of survey respondents have indicated that their ethnicity is important to them personally, whereas 11.57 % were indecisive about its importance for them personally. Majority of survey respondents reported that they have never experienced tensions on the grounds of ethnicity and believe that ethnic tensions are not present in Bosnia and Herzegovina.

Figure 11. Importance of ethnicity for survey respondents



Given that Bosnia and Herzegovina is a multiethnic country and it has always been such, it is quite expected that survey respondents consider multiculturalism as important determinant of their identity. Figure 12 shows the breakdown of the responses to the question about importance of multiculturalism in the place of living. Only 14.20 % of the respondents believe that multiculturalism is of no importance, while 74.38 % of the respondents believe that multiculturalism in the place of living is important for their personal identity.

Figure 12. Importance of multiculturalism for the respondents' personal identity



Next, we consider past, war-related experiences of survey respondents. Approximately half of the respondents had to leave their home during the 1992–1995 war in Bosnia and Herzegovina. Out of those who left their home, 34.41 % returned to their pre-war place of living in the years after the war. Another war-related variable in the survey–whether the experience of the war was traumatic for survey respondent personally despite where they were in the period 1992–1995–shows that war was very traumatic experience (with mean of 0.25, as shown in Table 4) for majority of the survey respondents, despite whether they were in Bosnia and Herzegovina or outside its borders at the time of the war.

Table 4. Summary statistics[34]

Variables	Obs	Mean	Std. Dev.	Min.	Max.
Income (original variable from the survey)[35]	683	5.534	3.406	1	11
Income (transformed variable)[36]	527	637.066	450.243	50	3000
Trust	683	0.328	0.470	0	1
Interethnic friendships	683	20.259	22.503	0	100
Interethnic friendships (10 levels)[37]	683	1.933	2.300	0	10
Belonging to majority/minority ethnic group	683	0.842	0.365	0	1
Interethnic mixing in the place of living	683	0.234	0.424	0	1
Importance of ethnicity	683	0.379	0.486	0	1
Presence of ethnic tensions in the place of living	683	0.955	0.208	0	1

table continues

[34] Descriptions of binary variables are presented in Appendix 3.
[35] Individuals were asked to report their income in predetermined ranges (intervals).
[36] No income variable was marked as missing variable in this case and intervals were transformed using the following pattern: (lower boundary + upper boundary)/2. Mean, minimum and maximum values are reported in BAM.
[37] Originally reported number of interethnic friends (that ranged from 0–100 %) was divided into 10 different levels.

Table 4. Summary statistics (continued)

Variables	Obs	Mean	Std. Dev.	Min.	Max.
Personal experience - interethnic tensions	683	0.958	0.202	0	1
Importance of multiculturalism	683	0.744	0.437	0	1
War trauma	683	0.245	0.430	0	1
Conflict-induced displacements	683	0.502	0.500	0	1
Gender	683	0.480	0.500	0	1
Age	683	44.152	13.806	18	85
Education	683	3.297	1.028	1	6
Marital status	683	0.675	0.469	0	1
Employment status	683	0.490	0.500	0	1
Entity	683	1.419	0.539	1	3
Location of living	683	0.350	0.477	0	1
Potential experience	683	26.060	15.042	0	79

3 ECONOMETRIC ANALYSIS

This section presents analysis of determinants of employment and income using econometric tools. The purpose of this econometric analysis is to determine the existence and the extent of influence of ethnicity-related variables on employment and income, in addition to set of control variables. The null hypothesis is that none of the variables (individual experiences and characteristics, environment-related variables or socio-demographic variables) has an influence on employment and income. Econometric analysis will employ two econometric models: (1) binary choice model, to test the influence of ethnicity-related variables on employment, and (2) Heckman selection model, to test the influence of ethnicity-related variables on income. Average marginal effects and marginal effects at the mean will be analysed within the scope of binary choice model as

they will show the magnitude of the impact of each ethnicity-related variable on employment, conditional on holding all other variables constant. Furthermore, Heckman selection model allows determination of marginal effects for the expected income–a product of probability of employment and income. Results of econometric analysis will be discussed in details.

3.1 Estimation methodology

As mentioned, econometric analysis consists of two parts:

1. Analysis of the impact of the set of independent variables (e.g. ethnicity-related variables, potential experience, education, type of settlement, marital status, etc.) on employment status, and this part of the analysis will be done using binary choice model, namely probit model,
2. Analysis of the impact of the same set of independent variables on income only for employed individuals within the sample, and this part of the analysis will be done using Heckman selection model.

3.1.1 Probit model

Binary choice models are used to model decisions that can be represented with two mutually exclusive options. Among the two available options, individuals are expected to choose utility-maximizing option. (Greene, 2012, pp. 721-798) Individuals (indexed with $i = 1,2,3,\ldots,n$) are expected to make binary decision, $j = 0,1$; outcomes of such binary decision can be represented as follows (Mittelhammer, Judge, & Miller, 2000, p. 565):

$$Y_i = \begin{matrix} \text{1 if one of the alternatives is chosen (e.g. } \textit{yes} \text{ in case of} \\ \text{the decision about whether or not to buy certain product)} \\ \text{0 if the opposite alternative is chosen (e.g. } \textit{no} \text{ in case of} \\ \text{the decision about whether or not to buy certain product)} \end{matrix} \quad (8)$$

However, the decision on employment and income is not determined only by individuals. Individuals are suppliers of labour in the labour market and their choice to supply labour does not result in employment. On the other side, we have employers who represent demand side in the labour market. Employment results as an equilibrium outcome between individuals who supply labour and employers who demand labour.

Greene (2012, pp. 723-724) discusses labour force participation model. In such a model, binary choice is influenced by both observable characteristics (those characteristics were: presence of children, age, total household's income and tax rates) and characteristics such

as individuals' preferences that are not observable. Probabilities that person is employed (Y=1) or unemployed (Y=0), respectively, can be expressed as following:

$$Prob(Y=1 \mid x) = F(x, \beta) \tag{9}$$
$$Prob(Y=0 \mid x) = 1 - F(x, \beta) \tag{10}$$

Vector x in this case represents observable characteristics, whereas β is a set of parameters that are going to be estimated and that affect the outcome. Variety of models can be applied to the right-hand side of the equation above. Linear regression model is specified as follows:

$$Y_i = x_i\beta + \varepsilon_i \tag{11}$$

Although linear probability model is simple to estimate and interpret, it is often inadequate due to the fact that the estimated probabilities may lay beyond [0,1] interval[38] and result in negative variances. Error term of the linear probability model is heteroskedastic[39] as it is dependent on x. Furthermore, the partial effect of the exploratory variable is constant. Instead, estimations can be made by non-linear regression models that will restrict the predicted probabilities within the [0,1] interval:

$$lim_{x'\beta \to +\infty} Prob\ (Y=1 \mid x) = 1 \tag{12}$$
$$lim_{x'\beta \to -\infty} Prob\ (Y=1 \mid x) = 0 \tag{13}$$

One of such non-linear regression models that fulfils such conditions is probit model.[40] The predicted probabilities of a probit model are less likely to be close to either 0 or 1 as opposed to linear probability model. Probit model follows the standard normal cumulative distribution function[41] and is symmetric around zero-value means, while the probability function of the probit model is the following:

$$Prob\ (Y=1 \mid x) = \int_{-\infty}^{x'\beta} \phi(t)\, dt = \phi(x'\beta) \tag{14}$$

where:

$$\phi(t) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}t^2} \tag{15}$$

[38] Linearity condition is not satisfied as conditional expectations do not vary linearly with X.
[39] Problem of heteroskedasticity can be dealt with using Huber-White robust standard errors.
[40] The other popular binary choice model is logit model, which follows logistic cumulative distribution function. Logit model is not used in this empirical analysis as the selection model is developed under the assumption of normality. Compared to normal distribution, logistic distribution has fatter tails, which can result in significantly different marginal effects. As in the further sections, only probit model will be applied, it is the only model that will be presented in more details in this section.
[41] Where mean is equal to 0 and variance to 1.

Unlike the linear probability model which can be easily estimated by ordinary least squares method, probit model is estimated using the maximum likelihood approach. The maximum likelihood is a technique that is based on estimating multiple regressions. The technique results in estimates that maximize the likelihood that the values are the same as the ones that can be found in the sample. Parameters obtained from probit regression do not correspond to marginal effects, because in probit model, all values of regressors affect the changes in probability. From the estimated parameters, we can infer only the sign of marginal effects and not the magnitude of the effect. The predicted probability for given values of explanatory variables is:

$$E[y \mid x] = F(x'\beta) \tag{16}$$

Therefore, marginal effects obtained when estimating a probit model have the following form:

$$\frac{\partial E[y|x]}{\partial x} = \phi(x'\beta)\beta \tag{17}$$

Hence, marginal effects need to be additionally calculated. We can distinguish between three types of marginal effects: (1) average marginal effects, where average value of all individual estimated marginal effects is calculated, (2) marginal effects at the mean, where marginal effects are calculated at the mean of data, and (3) marginal effects at the specific observation. One of the problems that can arise when calculating marginal effects of binary choice models is calculation of marginal effects for dummy variables. (Greene, 2012; Mittelhammer, Judge, & Miller, 2000; Goldberger, 1998; Gujarati, 2003; Hayashi, 2000)

McFadden pseudo-R^2 is reported as a goodness of fit measure for probit models[42]. It shows how much of variation in dependent variable is explained by the model.

3.1.2 Heckman selection model

In this particular econometric analysis, we are faced with issue of incidental truncation. Data on income (data on *y*) is not observed for individuals who are not income recipients (i.e. that are not employed or that are not self-selected in employment) and hence, the data on income is only available for the subset of the population. Selection rule employed in the data analysis disregards individuals who receive no income. Selection and regression equation, respectively, of the model are:

$$y_1 = x_1\beta_1 + u_1 \tag{18}$$

[42] Pseudo R^2 is reported for other models with dependent dummy variables as well.

$$y_2 = 1[x\delta_2 + v_2 > 0]^{43} \quad (19)$$

The desired equation to be estimated in sample selection problem is:

$$E(y_1 \mid x, y_2=1) = x_1\beta_1 + \gamma_1\lambda(x\delta_2) \quad (20)$$

Ordinary least squares method is not suitable method as it leads to inconsistent estimates of β_1. Consistent estimates of β_1 and γ_1 can be obtained by using selected sample. Heckman's method suggests that consistent estimates of β_1 and γ_1 can be obtained when y_{i1} is regressed on x_{i1}, $\lambda(x_1, \delta_2)$. (Wooldridge, 2002, pp. 551-603)

Heckman's two step procedure involves following two steps and results in consistent and asymptotically normal estimators (Wooldridge, 2002, p. 564):

1. First step is to obtain probit estimations of y_{i2} on x_i by using all the available data, in order to obtain the $\hat{\delta}_2$. After obtaining $\hat{\delta}_2$, an inverse Mills ratio for $i = 1,..., N_1$ can be determined:

$$\widehat{\lambda}_{i2} = \lambda(x_i\hat{\delta}_2) \quad (21)$$

2. From a selected sample, obtain ordinary least square regression estimates of $\hat{\beta}_1$ and $\hat{\gamma}_1$ by regressing y_{i1} on x_{i1}, $\hat{\lambda}_{i2}$ where $i = 1,..., N_1$ ($y_{i2} = 1$ for $i = 1,..., N_1$).

3.2 Econometric results

3.2.1 Probit estimates

In the first part of the empirical analysis estimated by probit model, employment status of an individual is the dependant variable, whereas all the other previously listed variables such as: belonging to the majority ethnic group, importance of multiculturalism for the respondent her/himself, presence of ethnic tensions within one's neighbourhood as well as her/his exposure to ethnic tensions, trust in others, war-related displacements, war trauma, education, gender, location of living, interethnic friendships and marital status are used as explanatory variables.

As mentioned, the results obtained from probit regression model provide us only with the signs of marginal effects and not the magnitude of the effect. Therefore, in the following text, only marginal effects at the mean and the average marginal effects will be presented and discussed. Let us focus first on the marginal effects at the mean. These are presented in

[43] y_2 is a selection indicator and y_1 is observed only when $y_2 = 1$.

Table 5 for the two entities combined, Federation of Bosnia and Herzegovina and Republic of Srpska[44], and separately for each entity and district. As the primary goal of the research was to determine the existence and magnitude of the impact of ethnicity on the probability of being employed, further analysis was done in order to determine whether we can observe differences across entities and district. The results presented in Table 5 show that differences in magnitude of marginal effects at mean are negligible between entities/district levels. Combined results of Federation of Bosnia and Herzegovina and Republic of Srpska will be analysed in more details in the further text.

Although significant only at 10 % level, being more trustful towards others increases the probability of employment by 7.9 percentage points at mean. Large differences in magnitude and statistical significance exist depending on the percentage of friends belonging to other ethnic groups. Statistical significance and magnitude of the effect is the highest around 30 and 40 % level of friends belonging to other ethnic groups and the probability of employment at this level increases by 20.6 percentage points. The effect is significant at 5 % level for 50 % of friends belonging to other ethnic groups and the increase in probability of employment at mean is 15.8 percentage points. A possible conclusion that can be drawn is that it is the best for individual to have friends belonging to different ethnic groups, however, that there should be a moderate mix of friends belonging to the same and other ethnic groups.

The magnitude of the effect of several other ethnicity variables measuring ethnicity and personal experience is large (e.g. belonging to majority ethnic group), however, they are statistically insignificant. Interethnic mixing at the place of living is statistically significant indicating that larger interethnic mixing in the place of living decreases the probability of employment for 12.0 percentage points at the mean.

Education largely impacts chances of finding employment in Bosnia and Herzegovina. The variable is significant at 1 % level for Master's or Ph.D. level of education, university education and college education. Having a Master's degree or Ph.D. significantly increases the chances of employment, increasing the probability of employment for 48.2 percentage points compared to individuals with no elementary education. Furthermore, having a university degree increases the probability of employment by 34.8 percentage points when compared to individuals with no elementary education, while having college education increases it by 34.1 percentage point. The evidences suggest large importance of gender in Bosnian and Herzegovinian labour market as females have significantly lower probability of employment (of approximately 13.2 percentage points). Furthermore, marital status of an individual impacts the probability of employment in Bosnia and Herzegovina. Being married increases the probability of employment for 14.2 percentage points. Living in an

[44] Brčko District was not included in the analysis in order to avoid the problem of multicollinearity.

urban area also has a statistically significant impact on probability of finding employment – it increases it for approximately 13 percentage points at mean.

Table 5. Marginal effects at mean[45]

Variables	Federation of Bosnia and Herzegovina and Republic of Srpska	Federation of Bosnia and Herzegovina	Republic of Srpska	Brčko District
Trust	0.079 (1.74)*	0.078 (1.71)*	0.078 (1.72)*	0.079 (1.75)*
Interethnic friendships (10 levels)				
1	0.119 (1.95)*	0.121 (2.00)**	0.120 (1.97)**	0.120 (1.98)**
2	0.093 (1.38)	0.090 (1.34)	0.092 (1.37)	0.088 (1.32)
3	0.206 (2.83)***	0.207 (2.85)***	0.206 (2.84)***	0.209 (2.87)***
4	0.211 (1.86)*	0.215 (1.91)*	0.215 (1.90)*	0.195 (1.70)*
5	0.158 (2.29)**	0.165 (2.40)**	0.161 (2.34)**	0.164 (2.38)**
6	0.219 (1.63)	0.228 (1.71)*	0.225 (1.68)*	0.207 (1.54)
7	0.038 (0.24)	0.037 (0.23)	0.037 (0.23)	0.048 (0.30)
8	0.059 (0.38)	0.080 (0.52)	0.069 (0.45)	0.069 (0.45)
9	0.066 (0.35)	0.066 (0.35)	0.065 (0.35)	0.070 (0.38)
10	-	-	-	-
Belonging to majority ethnic group	-0.081 (-1.36)	-0.077 (-1.30)	-0.078 (-1.32)	-0.083 (-1.39)
Interethnic mixing in the place of living	-0.120 (-2.34)**	-0.114 (-2.24)**	-0.117 (-2.30)**	-0.112 (-2.21)**

table continues

[45] Z-values are in parentheses.
* Significance level: 0.1; z-critical value: 1.645
** Significance level: 0.05; z-critical value: 1.96
*** Significance level: 0.01; z-critical value: 2.58.

Table 5. Marginal effects at mean (continued)

Variables	Federation of Bosnia and Herzegovina and Republic of Srpska	Federation of Bosnia and Herzegovina	Republic of Srpska	Brčko District
Importance of ethnicity	0.009 (0.20)	0.006 (0.14)	0.008 (0.18)	0.002 (0.05)
Presence of ethnic tensions in the place of living	0.114 (1.17)	0.111 (1.14)	0.113 (1.16)	0.108 (1.11)
Personal experience - interethnic tensions	-0.035 (-0.33)	-0.040 (-0.37)	-0.038 (-0.35)	-0.033 (-0.31)
Importance of multiculturalism	-0.029 (-0.59)	-0.032 (-0.65)	-0.032 (-0.65)	-0.019 (-0.38)
War trauma	0.055 (1.10)	0.051 (1.03)	0.053 (1.07)	0.051 (1.02)
War-related displacements	0.010 (0.24)	0.009 (0.22)	0.010 (0.23)	0.010 (0.24)
Gender	-0.132 (-3.14)***	-0.133 (-3.19)***	-0.134 (-3.20)***	-0.121 (-2.91)***
Potential experience	-0.001 (-0.76)	-0.001 (-0.80)	-0.001 (-0.76)	-0.002 (-0.93)
Education				
No elementary education	-	-	-	-
Elementary	-0.103 (-0.68)	-0.100 (-0.67)	-0.103 (-0.69)	-0.084 (-0.55)
Highschool	0.198 (1.39)	0.191 (1.34)	0.193 (1.36)	0.205 (1.43)
College	0.341 (2.90)***	0.339 (2.86)***	0.339 (2.88)***	0.343 (2.89)***
University education	0.348 (2.74)***	0.343 (2.67)***	0.345 (2.70)***	0.356 (2.80)***
Master's/Ph.D.	0.482 (7.67)***	0.481 (7.49)***	0.481 (7.51)***	0.487 (8.37)***
Marital status	0.142 (3.03)***	0.145 (3.09)***	0.143 (3.06)***	0.143 (3.06)***
FBiH/RS/BD[46]	-0.104 (-0.70)	0.078 (1.80)*	-0.091 (-2.10)**	0.137 (0.96)

table continues

[46] FBiH stands for Federation of Bosnia and Herzegovina, RS for Republic of Srpska and BD for Brčko District.

Table 5. Marginal effects at mean (continued)

Variables	Federation of Bosnia and Herzegovina and Republic of Srpska	Federation of Bosnia and Herzegovina	Republic of Srpska	Brčko District
RS	-0.190 (-1.30)			
Location of living	0.133 (2.91)***	0.132 (2.88)***	0.133 (2.92)***	0.122 (2.69)***
Pseudo R2	0.133	0.131	0.133	0.129
No. of variables	681	681	681	681
LR χ^2(29[47]) (28)	125.53	123.88	125.04	121.55
Prob > χ^2	0.000	0.000	0.000	0.000

In the following paragraphs, average marginal effects will be analysed (Table 6). Estimates for Federation of Bosnia and Herzegovina and Republic of Srpska combined show that on average, having more trust in others increases the probability of being employed for 6.8 percentage points. The effect is slightly lower (for 0.1 percentage point) when estimates are made only for the area of Federation of Bosnia and Herzegovina, whereas it is slightly higher (0.1 percentage point) when estimates are made only for Brčko District. The highest level of interethnic friendships variable that are statistically significant[48] is 60 %[49] of friends belonging to the other ethnic groups and it suggest that it can increase probability of employment for approximately 20 percentage points. On average, larger interethnic mixing in the place of living lowers the probability of being employed for 10.2 percentage points. The significance of the variable is the same on all four analysed levels; however, its magnitude is the lowest for Brčko District.

On average, being female significantly reduces the chance of employment – approximately 11 percentage points. This effect is statistically significant at 1 % level. The effect is about one percentage point lower in Brčko District compared to Federation of Bosnia and Herzegovina and Republic of Srpska. Some of education dummy variables are highly significant and largely impact the probability of finding employment. Individuals with Master's or Ph.D. have 45.0 percentage points higher probability of finding employment

[47] Only for column one.
[48] Significance at 10 % level is achieved.
[49] Variable is not statistically significant for Brčko District.

compared to individuals who did not complete elementary education[50], while individuals with university education have 30.8 percentage points higher probability of finding employment compared to individuals who did not complete elementary education. Being married and being located in urban area both increase probability of employment for approximately 12 percentage points.

Reported pseudo R^2 values are quite low meaning that approximately 13 % of the variation in dependent variable (employment status, in this case) is explained by the model. The null hypothesis, that states that none of the variables have an impact on employment, can be rejected.

Table 6. Average marginal effects[51]

Variable	Federation of Bosnia and Herzegovina and Republic of Srpska	Federation of Bosnia and Herzegovina	Republic of Srpska	Brčko District
Trust	0.068 (1.73)*	0.067 (1.71)*	0.068 (1.72)*	0.069 (1.74)*
Interethnic friendships (10 levels)				
1	0.105 (1.94)*	0.108 (1.99)**	0.106 (1.96)**	0.107 (1.97)**
2	0.083 (1.38)	0.080 (1.34)	0.082 (1.37)	0.079 (1.32)
3	0.182 (2.81)***	0.184 (2.83)***	0.183 (2.81)***	0.186 (2.85)***
4	0.187 (1.84)*	0.191 (1.89)*	0.191 (1.88)*	0.174 (1.69)*
5	0.140 (2.28)**	0.147 (2.39)**	0.143 (2.33)**	0.146 (2.37)**
6	0.194 (1.62)*	0.202 (1.70)*	0.200 (1.67)*	0.185 (1.53)
7	0.034 (0.24)	0.033 (0.23)	0.033 (0.23)	0.043 (0.30)

table continues

[50] The magnitude of the effect is slightly larger in Brčko District compared to Federation of Bosnia and Herzegovina or Republic of Srpska.

[51] Z-values are in parentheses.
* Significance level: 0.1; z-critical value: 1.645
** Significance level: 0.05; z-critical value: 1.96
*** Significance level: 0.01; z-critical value: 2.58.

Table 6. Average marginal effects (continued)

Variable	Federation of Bosnia and Herzegovina and Republic of Srpska	Federation of Bosnia and Herzegovina	Republic of Srpska	Brčko District
8	0.052 (0.38)	0.071 (0.52)	0.061 (0.45)	0.062 (0.45)
9	0.058 (0.35)	0.059 (0.35)	0.058 (0.35)	0.062 (0.38)
10	-	-	-	-
Belonging to majority ethnic group	-0.069 (-1.37)	-0.066 (-1.31)	-0.067 (-1.33)	-0.071 (-1.40)
Interethnic mixing in the place of living	-0.102 (-2.36)**	-0.098 (-2.26)**	-0.101 (-2.32)**	-0.097 (-2.22)**
Importance of ethnicity	0.008 (0.20)	0.005 (0.14)	0.007 (0.18)	0.002 (0.05)
Presence of ethnic tensions in the place of living	0.098 (1.16)	0.096 (1.13)	0.098 (1.15)	0.094 (1.10)
Personal experience - interethnic tensions	-0.030 (-0.33)	-0.035 (-0.37)	-0.033 (-0.35)	-0.029 (-0.31)
Importance of multiculturalism	-0.025 (-0.59)	-0.027 (-0.65)	-0.027 (-0.65)	-0.016 (-0.38)
War trauma	0.047 (1.10)	0.044 (1.03)	0.046 (1.07)	0.044 (1.02)
War-related displacements	0.009 (0.24)	0.008 (0.22)	0.008 (0.23)	0.009 (0.24)
Gender	-0.114 (-3.13)***	-0.116 (-3.18)***	-0.116 (-3.19)***	-0.105 (-2.89)***
Potential experience	-0.001 (-0.76)	-0.001 (-0.80)	-0.001 (-0.76)	-0.001 (-0.93)
Education				
No elementary	-	-	-	-
Elementary	-0.090 (-0.67)	-0.088 (-0.66)	-0.090 (-0.68)	-0.074 (-0.54)
Highschool	0.164 (1.47)	0.159 (1.41)	0.161 (1.43)	0.171 (1.52)
College	0.300 (2.85)***	0.298 (2.82)***	0.299 (2.83)***	0.303 (2.85)***

table continues

Table 6. Average marginal effects (continued)

Variable	Federation of Bosnia and Herzegovina and Republic of Srpska	Federation of Bosnia and Herzegovina	Republic of Srpska	Brčko District
University education	0.308 (2.74)***	0.304 (2.68)***	0.305 (2.70)***	0.316 (2.82)***
Master's/Ph.D.	0.450 (5.99)***	0.448 (5.89)***	0.448 (5.88)***	0.456 (6.53)***
Marital status	0.123 (3.04)***	0.125 (3.10)***	0.124 (3.07)***	0.125 (3.07)***
FBiH/RS/BD	-0.089 (-0.71)	0.067 (1.80)*	-0.079 (-2.10)**	0.118 (0.96)
RS	-0.162 (-1.34)	-	-	-
Location of living	0.117 (2.88)***	0.116 (2.85)***	0.117 (2.88)***	0.108 (2.65)***
Pseudo R2	0.133	0.131	0.133	0.129
No. of variables	681	681	681	681
LR χ^2(29[52]) (28)	125.53	123.88	125.04	121.55
Prob > χ^2	0.000	0.000	0.000	0.000

3.2.2 Heckman selection model estimates

Second part of the analysis is done using Heckman selection model. Income is observed only for individuals who are "self-selected" into employment. Logarithm of disposable income is used as the dependent variable, while independent variables are: belonging to the majority ethnic groups, importance of multiculturalism for the respondent her/himself, presence of ethnic tensions within one's neighbourhood as well as her/his exposure to ethnic tensions, trust in others, war-related displacements, war trauma, education, gender, location of living, interethnic friendships and marital status.

Table 7 shows the desired estimates using ordinary least squares method and Heckman selection model, to depict the differences between the two. Table 7 presents output of both selection and outcome equations of Heckman selection model. Ordinary least squares method was also used only for individuals whose income is positive (i.e. those who are

[52] Only for column one.

employed). However, we can still see that significant differences in the magnitude of the effects exist between these two methods.

Only two variables in income equation appear to be statistically significant when estimated by Heckman selection model. Estimates using Heckman selection model show that belonging to majority ethnic group has a statistically significant influence on income. Belonging to majority ethnic group increases the disposable income of individual by 19.5 %. The variable is significant at 5 % level. Potential experience has a weakly significant impact on disposable income, which is consistent with findings of Mincer (1974) and many others who found positive effect of experience on earnings. The magnitude of the effect is quite low as well–additional year of potential experience increases disposable income by 0.6 %.

Reported ρ value is negative meaning that the correlation between unobservable characteristics (residuals) in the model is negative. σ, which measures the standard error of residuals in the equation of logarithm of disposable income, has the value of 0.65. λ is not statistically significant, indicating that selectivity is not an issue. This was also confirmed by additional test.[53]

Table 7. Heckman selection model estimates

Variables	**OLS**	**Coef.**
Trust	-0.015	-0.078
	(-0.23)	(-0.75)
Interethnic friendships (10 levels)	0.0002	-0.016
	(0.02)	(-0.63)
Belonging to majority ethnic group	0.169	0.195
	(1.91)	(1.96)**
Interethnic mixing in the place of living	0.046	0.135
	(0.62)	(0.98)
Importance of ethnicity	-0.105	-0.097
	(-1.72)	(-1.40)
Presence of ethnic tensions in the place of living	-0.200	-0.286
	(-1.31)	(-1.44)
Personal experience - interethnic tensions	-0.121	-0.097
	(-1.09)	(-0.60)

table continues

[53] Mean of expected logarithm of income predicted by Heckman selection model is equal to 3.695, whereas mean value of expected logarithm of income conditional on being employed is equal to 6.395. Mean of actual logarithm of income variable is 6.503. Expected logarithm of income conditional on being employed is better predictor of actual, observed logarithm of income than mean of expected logarithm of income.

Table 7. Heckman selection model estimates (continued)

Variables	**OLS**	**Coef.**
Importance of multiculturalism	-0.069	-0.061
	(-0.92)	(-0.78)
War trauma	0.048	0.008
	(0.71)	(0.09)
War-related displacements	-0.026	-0.044
	(-0.44)	(-0.63)
Gender	-0.253	-0.142
	(-4.10)	(-0.92)
Potential experience	0.004	0.006
	(1.23)	(1.65)*
Education	0.245	0.142
	(7.35)	(1.07)
Marital status	0.023	-0.099
	(0.29)	(-0.58)
FBiH	-0.036	0.015
	(-0.24)	(0.07)
RS	-0.278	-0.161
	(-1.89)	(-0.64)
Location of living	0.146	0.034
	(2.30)	(0.22)
Constant	5.911	6.739
	(22.80)	(6.30)
SELECT		
Trust		0.213
		(1.89)*
Interethnic friendships (10 levels)		0.049
		(2.09)**
Belonging to majority ethnic group		-0.098
		(-0.67)
Interethnic mixing in the place of living		-0.286
		(-2.20)**
Importance of ethnicity		-0.005
		(-0.05)
Presence of ethnic tensions in the place of living		0.264
		(1.06)
Personal experience - interethnic tensions		-0.126
		(-0.47)
Importance of multiculturalism		-0.036
		(-0.29)
War trauma		0.140
		(1.14)

table continues

Table 7. Heckman selection model estimates (continued)

Variables	OLS	Coef.
Conflict-induced displacements		0.050 (0.49)
Gender		-0.353 (-3.39)***
Potential experience		-0.003 (-0.75)
Education		0.345 (5.61)***
Marital status		0.367 (3.18)***
FBiH		-0.241 (-0.66)
RS		-0.446 (-1.21)
Type of settlement		0.356 (3.09)***
Constant		-1.163 (-2.10)
λ		-0.540 (-0.82)
ρ		-0.835
σ		0.647
No. of observations	328	676
R2	0.305	
F (17, 310) (OLS) Wald χ^2 (Heckman)	9.01	33.26
Prob > F (OLS) Prob > χ^2 (Heckman)	0.000	0.0104

CONCLUSION

The main part of the thesis explores the link between ethnic tensions, unemployment and income in Bosnia and Herzegovina. Employment and income of individuals are used as dependent variables, while the independent variables are:

1. socio-demographic characteristics (age, gender, marital status, education and location of living),

2. individual characteristics and experiences (engagement into interethnic friendships, belonging to majority ethnic groups, importance of ethnicity, personal experience of interethnic tensions, importance of multiculturalism, trust, war trauma, war-related displacements), and
3. environment-related characteristics (interethnic mixing in the place of living and presence of ethnic tensions in the place of living).

By using standard probit model, influences of three above mentioned categories of variables on employment status of individuals are explored. The null hypothesis states that none of the variables describing individual characteristics and experiences, environment or socio-demographic characteristics will have an influence on employment. The null hypothesis was rejected by econometric analysis.

It is of great importance to, once again, emphasise the influence of various socio-demographic characteristics on employment status of individuals, such as: gender, marital status, location of living and especially, education. In addition, it is also very important to note that the largest magnitude of the effect on employment status is produced by education, which is consistent with existing studies on the effect of education for many countries (Angrist & Krueger, 1991; Psacharopoulos, 1994; The Organisation for Economic Co-Operation and Development, 2015). Education increases the chances of employment. Within group of individual characteristics and experiences, statistically significant variables are: trust and engagement into interethnic friendships. Both being more trustful as well as being more tolerant towards other ethnic groups (measured by the engagement into interethnic friendships) has a positive impact on employment. Among the set of environment-related variables, interethnic mixing in the place of living is a statistically significant variable. Large interethnic mixing in the place of living lowers the chances of employment. Certain degree of ambiguousness is present in the results–at the same time, larger interethnic mixing decreases chances of employment, while larger tolerance increases chances of employment.

Influence of the three above mentioned categories of variables on income was tested by using Heckman selection model. As proven by numerous other studies, experience[54] has a positive impact on income. Among the ethnicity related variables, belonging to majority ethnic group was shown to have statistically significant and positive impact on income.

Based on my results, we can conclude that ethnicity and tolerance are relevant for the labour market of Bosnia and Herzegovina, besides numerous socio-demographic characteristics, whose relevance was proven in numerous occasions and in various countries. In addition, we can conclude that assortative matching theory - practice that best

[54] Potential experience in this econometric analysis.

employees tend to find the best possible employment opportunities - does not hold in the labour market of Bosnia and Herzegovina.[55]

The statistical significance of ethnicity-related variables suggests that certain degree of discrimination is present in the labour market of Bosnia and Herzegovina. In addition, in part one, certain examples of discrimination in labour market were presented: discrimination on the basis of ethnicity and discrimination based on gender. The nature or categorisation of discrimination in labour market of Bosnia and Herzegovina can be a subject of a separate research and no definite inferences can be made as they are dependent on certain, exact cases. However, discrimination based on ethnicity can be safely categorised as taste-based discrimination, as there are no prevalent prejudices or stereotypes that categorise one ethnic group as being more productive than the other.[56] Gender-based discrimination, on the other hand, is often based on certain stereotypes and hence, can be understood as statistical discrimination.

As already mentioned, unemployment in Bosnia and Herzegovina is largely structural, meaning that there is a mismatch of supply and demand in the labour market (either occupational or regional) (Samuelson et al., 1995, p. 239). Furthermore, as seen from the analysis of unemployment presented in part one, unemployment in Bosnia and Herzegovina increased as a consequence of global financial crisis, implying presence of cyclical unemployment. Although search frictions might exist in the labour market of Bosnia and Herzegovina, it is very unlikely that they are cause of overall unemployment.

Analysis in the part one of the thesis has revealed strategic documents proposed on both state and entities' levels have emphasised large number of common goals, such as:

1. improvement of human capital,
2. increasing the employability of individuals,
3. increasing the match of labour supply and labour demand, or
4. lowering unemployment rates, increasing inactivity rates and dealing with the problem of long-term unemployment rates.

Generally, those strategies covered the period between 2009 and 2014 and we have not witnessed significant changes in unemployment rates in that period (as shown in the part

[55] Further tests can be done in order to determine whether best employees are matched with best companies in Bosnia and Herzegovina.

[56] It is true that official languages in Bosnia and Herzegovina are Bosnian language, Croatian language and Serbian language, however, due to similarity of languages and general common understanding of all three languages, there are no troubles in understanding between speakers of either of the three languages that could affect productivity.

one). As mentioned, both active and passive labour market policies are implemented in the labour market of Bosnia and Herzegovina.

By taking into account all of the mentioned, the need for investment in human capital exists–largely suggested by previous researches, widely accepted economic theories and further emphasised by this empirical analysis. Considering that many individuals in Bosnia and Herzegovina have low educational attainment (i.e. census data from 2013 shows that only 9.56 % of Bosnians and Herzegovinians have advanced schools/faculty/academy/university educational attainment) and the largest proportion of unemployed is among those with low educational attainment, there is scope for such policies.

Active labour market policies are aimed to improve the access of individuals to labour market (i.e. reduce search costs) and increase employability. Although active labour market policies did not always show to be very effective (van Ours, 2015), some evidences do suggest that active labour market programmes negatively influence unemployment (Scarpetta, 1996). Martin (1998) emphasises the importance of proper targeting and execution of active labour market policies, as different policies may have different impacts on different groups.

Active labour market policies, in terms of various specific trainings schemes, can potentially improve the employability of those individuals whose skills are generally outdated for current conditions (i.e. technological progress made the jobs almost or entirely redundant). General training schemes might also be implemented in order to improve employability. However, effectiveness of active labour market policies is determined by the availability of job openings (Martin, 1998).

Importance of life-long learning should be emphasised more strongly in Bosnia and Herzegovina, both among job seekers and those who are not seeking for a job, due to rapidly changing nature of many jobs. As previously mentioned, there is constant need to adjust education system to needs of labour market (i.e. match the demands of labour market (e.g. evaluate the industries that will grow over the future period) and supply (e.g. quotas on enrolment to universities).

Results of econometric analysis suggest that there is a need for labour market policies, to the extent possible, to take into account importance of ethnicity and tolerance on labour market outcomes. Subsidised employment is one of the active labour market policies that can potentially address the problem of discrimination.

As defined by Cahuc et al. (2014), net employment change is the difference between job creation and job destruction. The issue of great importance for Bosnia and Herzegovina is

to increase competitiveness and create environment that would promote job creation given that unemployment rates are high and persistent. Some evidences suggest that small and medium companies can be the source of job creation[57] (Bah & Brada, 2014, p. 33). As there is no one-size-fits solution that would enhance job creation, more throughout analysis should be done before implementing any of the actual measures.

Global competitiveness rankings indicate the lack of competitiveness of Bosnia and Herzegovina--Global competitiveness index 2016-2017 places Bosnia and Herzegovina on 107th out of 138 places in total. Furthermore, Bosnia and Herzegovina is currently not very attractive environment for doing business–World Bank's Doing Business (2016) puts Bosnia and Herzegovina on 81st place out of total 190 places according to the ease of doing business. Just to point out to few problems, Bosnia and Herzegovina is ranked on 174th place according to starting a business, on 170th place according to dealing with construction permit, on 133rd place according to paying taxes, on 123rd place according to getting electricity and on 99th place according to registering property. Compared to year before, ranking increased only in two categories: starting a business and paying taxes. Making appropriate reforms in these segments can be crucial for promotion of job creation, for increasing investments (both domestic and foreign) and for promotion of entrepreneurship. According to data from the World Bank (2016), personal remittances received in Bosnia and Herzegovina in 2015 are equal to 11.1 % of GDP and this percentage was even higher in the past. Stimulation of investments of remittances can also be very beneficial.

An interesting approach for creating stimulative environment and promotion of learning through industrial policy[58] is proposed by Stiglitz and Greenwald (2014). They believe that distinguishing characteristic between developed and developing economies is the gap in knowledge and that markets are not perfectly efficient in creation of learning society. While developed countries aim for much more, developing countries aim to close their knowledge gap with the developed countries. Their approach suggests that industrial policies should be supportive towards the industries with greatest learning potential. Hence, the central part of economy becomes learning. Technological progress emerges as a product of learning that can occur in two manners: learning by doing and learning from others. Many aspects of learning exist, each of them aimed to improve the economies and further enhance the whole learning process. Just some of the benefits of a learning society are: enhanced economic growth, productivity improvements within the companies, positive

[57] Data from Agency for statistics of Bosnia and Herzegovina for 2012 shows that 61.48 % of all employed persons are employed in micro, small and medium size enterprises[57], with 11.2 % of persons being employed in micro enterprises, 20.8 % in small enterprises and 29.5 % in medium sized enterprises.

[58] Industrial policies do impact employment opportunities within the country. However, some of the criticisms of industrial policies suggest that, especially in developing countries, government might not be able to implement industrial policies effectively.

externalities produced by learning, greater tax revenues, human capital development and development of financial sector within the economy.

There is no one-size-fits all solution to Bosnian and Herzegovinian problem of large unemployment rates, especially since, considering its persistence, it was never dealt with appropriately. However, understanding the influences on employment, provided by this and many other empirical analyses, is an important first step towards addressing the problem adequately. The econometric analysis points out to the great importance of already proven influences on prospects of finding employment and income in Bosnian and Herzegovinian labour market: importance of education and other socio-demographic characteristics on employment as well as importance of experience on income. However, the results also indicate that ethnicity and tolerance do matter both for employment prospects and income.

REFERENCE LIST

1. Abowd, J.M., Kramarz, F., Perez-Duarte, S., & Schmutte, I. (2009). A formal test of assortative matching in the labour market. *NBER Working Paper No 15546*. Retrieved November 1, 2016, from http://www.nber.org/papers/w15546.pdf
2. Abowd, J.M., Kramarz, F., Perez-Duarte, S., & Schmutte, I. (2014). Sorting between and within industries: A testable model of assortative matching. *IZA Discussion Papers No. 8439*. Retrieved December 9, 2016, from ftp.iza.org/dp8439.pdf
3. Agency for gender equality of Bosnia and Herzegovina. (2015). *Izvještaj o ravnopravnosti spolova u Bosni i Hercegovini 2012 - 2014. godine* [Report on gender equality in Bosnia and Herzegovina 2012 - 2014]. Retrieved November 15, 2016, from http://arsbih.gov.ba/project/3319/
4. Agency for statistics of Bosnia and Herzegovina. (2013). *Statistički poslovni registar: Osnovni podaci o preduzećima za 2012*.[Statistical business register: Basic data on enterprises for 2012]. Retrieved November 20, 2016, from http://www.bhas.ba/saopstenja/2013/SPR_001_01_bos.pdf
5. Agency for statistics of Bosnia and Herzegovina. (2016a). *Census of population, households and dwellings in Bosnia and Herzegovina, 2013*. Retrieved October 20, 2016, from http://www.popis2013.ba/popis2013/doc/Popis2013prvoIzdanje.pdf
6. Agency for statistics of Bosnia and Herzegovina. (2016b). *Labour force survey 2016*. Retrieved October 20, 2016, from http://www.bhas.ba/?option=com_content&view=article&id=113&lang=en
7. Alexander, M., & Christia, F. (2011). Context modularity of human altruism. *Science, 334*(1392), 1392-1394,
8. Angrist, J.D., & Krueger, A.B. (1991). Does compulsory school attendance affect schooling and earnings? *Quarterly Journal of Economics, 106*(4), 979-1014.
9. Arrow, K. (1971). *The theory of discrimination*. Retrieved November 20, 2016, from http://econ.arts.ubc.ca/nfortin/econ560/arrow73.pdf
10. Bah, E., & Brada, J.C. (2014). Labour markets in the transition economies: An overview. *The European Journal of Comparative Economics, 11*(1), 3-53.
11. Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labour market discrimination. *The American Economic Review, 94*(4), 991-1013.
12. Bhaskar, V., Manning, A., & To, T. (2002). Oligopsony and monopsonistic competition in labour markets. *Journal of Economic Perspectives, 16*(2), 155-174.
13. Bieber, F. (2004). Institutionalising ethnicity in the Western Balkans: Managing change in deeply divided societies. *Working Paper 14.* Retrieved November 5, 2016, from http://www.ecmi.de/uploads/tx_lfpubdb/working_paper_19.pdf
14. Bisogno, M., & Chong, A. (2002). Poverty and inequality in Bosnia and Herzegovina after the civil war. *World Development, 30*(1), 61-75.

15. Busteed, B., & Mourshed, M. (2016, October 3). The health effects of youth unemployment. *Harvard Business Review*. Retrieved October 19, 2016, from https://hbr.org/2016/10/the-health-effects-of-youth-unemployment
16. Cahuc, P., Carcillo, S., & Zylberberg, A. (2014). *Labor Economics* (2nd ed.). Cambridge, MA: The MIT Press.
17. Case, A., & Deaton, A. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *PNAS*. Retrieved November 21, 2016, from http://www.pnas.org/content/112/49/15078.full.pdf
18. Charles, K.K., & Guryan, J. (2008). Prejudice and wages: An empirical assessment of Becker's The economics of discrimination. *Journal of Political Economy, 116*(5), 773-809.
19. Cheung, C., Kam, P.K., & Ngan, R.M. (2011). Age discrimination in the labour market from the perspectives of employers and older workers. *International Social Work, 54*(1), 118-136.
20. Collier, P. (1998). The political economy of ethnicity. *Working Paper Series 98-8*. Retrieved December 10, 2015, from https://pdfs.semanticscholar.org/6c27/2b54ccb68ce391e46e0e6e1c1a742e85b6a9.pdf
21. Constant, A.F., & Zimmermann, K.F. (2007). Measuring ethnic identity and its impact on economic behaviour. *IZA Discussion Papers No. 3063*. Retrieved December 10, 2015, from http://ftp.iza.org/dp3063.pdf
22. Constitution of Bosnia and Herzegovina (n.d.). Retrieved November 12, 2016, from http://www.ccbh.ba/public/down/USTAV_BOSNE_I_HERCEGOVINE_engl.pdf
23. Criado, H., Herreros, F., Miller, L., & Ubeda, P. (2015). Ethnicity and trust: A multifactorial experiment. *Political Studies, 63*(S1), 131-152.
24. Desmet, K., Ortuno-Ortin, I., & Wacziarg, R. (2016). Culture, ethnicity and diversity. Retrieved December 8, 2016, from www.eco.uc3m.es/~desmet/papers/CultureDiversity.pdf
25. Durlauf, S.N., & Seshadri, A. (2003). Is assortative matching efficient? *Economic Theory, 21*, 475-493.
26. Dyrstad, K., Ellingsen, T., & Rod, J.K. (2015). Ethnonationalism in post-war Bosnia-Herzegovina and Kosovo: The effects of local violence and ethnic composition. *International Area Studies Review, 18*(1), 4-25.
27. Eder, C. (2014). Displacement and education of the next generation: evidence from Bosnia andHerzegovina. *IZA Journal of Labour and Development,3*(12), 1-24. Retrieved from http://izajold.springeropen.com/articles/10.1186/2193-9020-3-12.
28. Efendić, A. (2003). Macroeconomic policy for poverty reduction - Bosnia and Herzegovina. *World Bank*. Retrieved January 20, 2016, from http://info.worldbank.org/etools/docs/library/85673/devdebates/ECA1/bih_macropilicy_eng.pdf
29. Efendić, A., Silajdžić, S., & Atanasovska, V. (2014). Empirical analysis based on household survey in B&H. In *Ethnic tensions and economic performance: Bosnia and*

Herzegovina and Macedonia (pp. 34-65). Saarbruecken: Lambert Academic Publishing.
30. Feldstein, M. (1977). The private and social costs of unemployment. *NBER Working Paper No. 223.* Retrieved December 10, 2016, from http://www.nber.org/papers/w0223
31. Furaker, B. (2010). On the social consequences of employment. *European Parliament*. Retrieved November 19, 2016, from http://www.europarl.europa.eu/RegData/etudes/note/join/2010/429996/IPOL-CRIS_NT(2010)429996_EN.pdf
32. *GDP growth (Annual %).* (n.d.). Retrieved November 1, 2016, from http://data.worldbank.org/country/bosnia-and-herzegovina
33. Goldberg, A.S. (1998). Binary response models. In *Introductory econometrics* (pp. 183-195). Cambridge, MA: Harvard University Press.
34. Government of Republic of Srpska. (2011). *Strategija zapošljavanja Republike Srpske 2011–2015. godine* [Strategy employment of Republic of Srpska 2011–2015]. Retrieved November 24, 2016, from http://www.vladars.net/sr-SP-Cyrl/Vlada/Ministarstva/mpb/Documents/prijedlog%20strategija%20zaposljavanja%20republike%20srpske%202011-2015.pdf
35. Greene, W. H. (2012). *Econometric analysis* (7th ed.). Essex, England: Pearson.
36. Gujarati, S.N. (2003). Qualitative response regression models. In *Basic econometrics* (4th ed.) (pp. 608-619). New York, NY: McGraw-Hill Higher Education.
37. Halcoussis, D. (2005). Qualitative choice models: The dependent variable is binary. In *Understanding econometrics* (pp. 258-265). Mason: South-Western.
38. Hayashi, F. (2000). Extremum estimators. In *Econometrics* (pp. 451-466). Princeton: Princeton University Press.
39. Hooghe, M., Reeskens, T., Stolle, D., & Trappers, A. (2009). Ethnic diversity and generalised trust in Europe: A cross-national multilevel study. *Comparative Political Studies, 42*(2), 198-223.
40. Heckman, J.J. (1979). Sample selection bias as a specification error. *Econometrica, 47*(1), 153-161.
41. Heckman, J., Tobias, J.L., & Vytlacil, E. (2000). Simple estimators for treatment parameters in a latent variable framework with an application to estimating returns to schooling. *NBER Working Paper No. 7950*. Retrieved July 10, 2016, from http://www.nber.org/papers/w7950
42. Institute for Statistics of Federation of Bosnia and Herzegovina. (2012). *Employment, unemployment and wage in the Federation of Bosnia and Herzegovina–2011*. Retrieved November 2, 2016, from http://fzs.ba/index.php/publikacije/godisnji-bilteni/trziste-rada-zaposlenost-nezaposlenost-i-place/
43. Institute for Statistics of Federation of Bosnia and Herzegovina. (2013). *Employment, unemployment and wage in the Federation of Bosnia and Herzegovina–2012*.

Retrieved November 2, 2016, from http://fzs.ba/index.php/publikacije/godisnji-bilteni/trziste-rada-zaposlenost-nezaposlenost-i-place/

44. Institute for Statistics of Federation of Bosnia and Herzegovina. (2014). *Employment, unemployment and wage in the Federation of Bosnia and Herzegovina–2013*. Retrieved November 2, 2016, from http://fzs.ba/index.php/publikacije/godisnji-bilteni/trziste-rada-zaposlenost-nezaposlenost-i-place/
45. Institute for Statistics of Federation of Bosnia and Herzegovina. (2015). *Employment, unemployment and wage in the Federation of Bosnia and Herzegovina–2014*. Retrieved November 2, 2016, http://fzs.ba/index.php/publikacije/godisnji-bilteni/trziste-rada-zaposlenost-nezaposlenost-i-place/
46. Institute for Statistics of Federation of Bosnia and Herzegovina. (2016). *Employment, unemployment and wage in the Federation of Bosnia and Herzegovina–2015*. Retrieved November 2, 2016, http://fzs.ba/index.php/publikacije/godisnji-bilteni/trziste-rada-zaposlenost-nezaposlenost-i-place/
47. Institute for Statistics of Republic of Bosnia and Herzegovina. (1993). *Etnička obilježja stanovništva – rezultati za Republiku i po opštinama 1991*. [Ethnic affiliation of population – results for republic and on municipality level 1991]. Retrieved December 9, 2016, from http://fzs.ba/index.php/1992/05/15/3-etnicka-obiljezja-stanovnistva/
48. Institute of Statistics of Republic of Srpska. (2016). *Wages, employment and unemployment: statistical bulletin*. Retrieved November 19, 2016, from http://www.rzs.rs.ba/front/category/180/
49. International Labour Organisation (n.d.). *Youth employment and migration - Country brief: Bosnia and Herzegovina*. Retrieved November 15, 2016, from http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ed_emp_msu/documents/publication/wcms_230114.pdf
50. Kaas, L., & Manger, K. (2012). Ethnic discrimination in Germany's labour market: a field experiment. *German Economic Review, 13*, 1-20.
51. Krstić, G., & Sanfey, P. (2006). Mobility, poverty and well-being among the informally employed in Bosnia and Herzegovina. *European Bank for Reconstruction and Development*. Retrieved November 2, 2016, from http://www.ebrd.com/downloads/research/economics/workingpapers/wp0101.pdf
52. Lent Hirsch, M. (2012, February 8). Conflict profiles–Bosnia. *Women under siege*. Retrieved December 10, 2015, from http://www.womenundersiegeproject.org/conflicts/profile/bosnia
53. Malcolm, N. (2011). Uvod [Introduction]. In *Bosna–Kratka povijest* [Bosnia–A short history] (pp. 37-43). Sarajevo, Bosnia and Herzegovina: Buybook.
54. Marmaros, D., & Sacerdote, B. (2006). How do friendships form? *The Quarterly Journal of Economics, 121*(1), 79-119.
55. Martin, J.P. (1998). What works among active labour market policies: Evidence from OECD countries' experiences. *OECD Labour Market and Social Policy Occasional*

Papers, 35. Retrieved December 13, 2016, from http://www.oecd-ilibrary.org/social-issues-migration-health/what-works-among-active-labour-market-policies_267308158388

56. Mendes, R., van den Berg, G., & Lindeboom, M. (2007). An empirical assessment of assortative matching in the labour market. *Working Paper No. 62*. Retrieved December 10, 2016, from http://www.carloalberto.org/assets/working-papers/no.62.pdf
57. Mincer, J.A. (1974). Schooling and earnings. In *Schooling, experience, and earnings* (pp. 41-63). Retrieved December 10, 2016, from www.nber.org/chapters/c1765.pdf
58. Ministry for human rights and refugees of Bosnia and Herzegovina. (2013, December 16). *Gender akcioni plan Bosne i Hercegovine za period 2013–2017. godine* [Gender action plan for Bosnia and Herzegovina for 2013–2017]. Službeni glasnik BiH. Retrieved November 20, 2016, from http://arsbih.gov.ba/wp-content/uploads/2014/01/GAP_BIH.pdf
59. Ministry of civil affairs of Bosnia and Herzegovina. (2010). *Strategija zapošljavanja u Bosni i Hercegovini 2010–2014. godine* [Strategy of employment of Bosnia and Herzegovina 2010–2014]. Retrieved November 22, 2016, from www.mcp.gov.ba/zakoni_akti/strategije/?id=1530
60. Ministry of employment and social politics of Federation of Bosnia and Herzegovina. (2008). *Strategija zapošljavanja Federacije Bosne i Hercegovine (2009–2013)* [Strategy of employment of Federation of Bosnia and Herzegovina (2009–2013)]. Retrieved November 22, 2016, from http://fmrsp.gov.ba/s/images/stories/Strategija%20zaposljavanja%20FBIH%20Ministarstvo.pdf
61. Ministry of security of Bosnia and Herzegovina. (2016). *Migracioni profil Bosne i Hercegovine za 2015. godinu* [Migration profile of Bosnia and Herzegovina for 2015]. Retrieved November 23, 2016, from http://sps.gov.ba/dokumenti/strateski/Migracioni%20profil%20BiH%20za%202015.pdf
62. Mittelhammer, R.C., Judge, G.G., & Miller, D.J. (2000). Qualitative-censored response models. In *Econometric foundations* (pp. 565-570). Cambridge, England: Cambridge University Press.
63. N.N. (2007, June 21). Bosnia war dead figure announced. *BBC.* Retrieved October 13, 2015, from http://news.bbc.co.uk/2/hi/europe/6228152.stm
64. *Output per worker (GDP constant 2011 international $ in PPP)-ILO estimates and projections*. (n.d.). Retrieved November 19, 2016, from http://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_adf.ctrl-state=65lkw52ds_93&_afrLoop=1797635687518&_afrWindowMode=0&_afrWindowId=65lkw52ds_119#!
65. Pierce, J.R., & Schott, P.K. (2016). Trade liberalization and mortality: Evidence from U.S. counties. *Finance and Economics Discussion Series 2016-094*. Retrieved

December 9, 2016, from https://www.federalreserve.gov/econresdata/feds/2016/files/2016094pap.pdf
66. Psacharopoulos, G. (1994). Returns to investment in education: a global update. *World Development, 22*(9), 1325-1343.
67. *Reform Agenda 2015–2018*. Retrieved November 20, 2016, from http://reformskaagenda.ba
68. Ringdal, G.I., & Ringdal, K. (2010). Does religiosity protect against war-related distress? Evidence from Bosnia and Herzegovina. *Politics and Religion*, 3, 389-405.
69. Rubinstein, Y., & Brenner, D. (2014). Pride and prejudice: Using ethnic-sounding names and inter-ethnic marriages to identify labour market discrimination. *Review of Economic Studies*, 81, 389-425.
70. Samuelson, P., Nordhaus, W., & Mandel, M. (1995). Business cycles and unemployment. In *Macroeconomics* (pp. 235-246). New York: McGraw Hill, Inc.
71. Scarpetta, S. (1996). Assessing the role of labour market policies and institutional settings on unemployment: a cross-country study. *OECD Journal-Economic Studies*. Retrieved December 13, 2016, from https://www.researchgate.net/profile/Stefano_Scarpetta/publication/265568042_Assessing_the_role_of_labour_market_policies_and_institutional_settings_on_unemployment_a_cross-country_study/links/54b503740cf26833efd053ca.pdf
72. Stiglitz, J., & Greenwald, B. (2014). *Creating a learning society*. New York: Columbia University Press.
73. Strandh, M. (2001). State intervention and mental well-being among the unemployed. *Journal of social policy*, *30*(1), 57-80.
74. The Organisation for Economic Cooperation and Development. (2015). Education at a Glance. Retrieved December 10, 2016, from http://www.oecd-ilibrary.org/education/education-at-a-glance-2015_eag-2015-en
75. The United Nations Refugee Agency. (2000, November 21). Dayton–5years after. Retrieved December 10, 2015, from http://www.unhcr.org/en-au/news/briefing/2000/11/3ae6b82540/dayton-5-years.html
76. *Unemployment rate by sex and age-ILO estimates and projections (%)*. Retrieved November 19, 2016, from http://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afrLoop=1588044691595&_afrWindowMode=0&_afrWindowId=null#!%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D1588044691595%26_afrWindowMode%3D0%26_adf.ctrl-state%3D65lkw52ds_93
77. United Nations (2012, August 17). *Voices of youth: Survey of youth in BiH - Quantitative research findings*. Retrieved November 15, 2016, from http://www.ba.undp.org/content/bosnia_and_herzegovina/en/home/library/democratic_governance/voices-of-youth.html

78. van Ours, J. C. (2015). The Great Recession was not so great. *CentER Discussion Papers 2015-006*. Retrieved December 12, 2016, from https://pure.uvt.nl/portal/files/4963032/2015_006.pdf
79. Whitt, S., Wilson, R.K. (2007). The dictator game, fairness and ethnicity in postwar Bosnia. *American Journal of Political Science, 51*(3), 655-668.
80. Wooldridge, J.M. (2002). Sample selection, attrition, and stratified sampling. In *Econometric analysis of cross section and panel data* (pp. 551-603). Cambridge, MA: The MIT Press.
81. Woodward, S. (1995). *Socialist unemployment: The political economy of Yugoslavia, 1945-1990.* New Jersey: Princeton University Press.
82. Woodward, S. (2009). The political economy of ethnonationalism in Yugoslavia. *Socialist Register*. Retrieved December 10, 2015, from http://socialistregister.com/index.php/srv/article/view/5793#.WEgd-7nO-So
83. World Bank. *(2016). Ease of doing business in Bosnia and Herzegovina*. Retrieved November 26, 2016, from http://www.doingbusiness.org/data/exploreeconomies/bosnia-and-herzegovina
84. World Economic Forum. (2016). *Bosnia and Herzegovina: Global competitiveness index 2016-2017*. Retrieved December 12, 2016 from http://reports.weforum.org/global-competitiveness-index/country-profiles/#economy=BIH

APPENDIXES

TABLE OF APPENDIXES

APPENDIX A: Povzetek

Bosna in Hercegovina je majhna, multietnična država v razvoju. Historično gledano in vse do danes, je stopnja brezposelnosti v Bosni in Hercegovini visoka. Namen magistrske naloge je odkriti vplive, ki otežujejo zaposlovanje, da bi lahko našli najprimernejšo rešitev za ta problem. Prvi del magistrske naloge predstavlja bralcu pojem brezposelnosti, številne ekonomske teorije o zaposlenosti/nezaposlenosti (kot so: assortative matching, diskriminacija na trgu dela) in podrobno analizo brezposelnosti v Bosni in Hercegovini. Vse zgoraj omenjeno predstavlja uvod v glavni del magistrske naloge: empirično analizo povezave med etničnimi napetostmi in brezposelnostjo v Bosni in Hercegovini. Začetna predpostavka je, da imajo številne osebne značilnosti in izkušnje (poleg izobraževanja, starosti, spola in drugih družbeno demografskih značilnosti) in okolje, pomemben vpliv na zaposlenost in dohodek posameznikov. Rezultati delno potrjujejo predpostavko: nekatere variable, ki opisujejo osebne značilnosti in izkušnje ter okolje, imajo pomemben vpliv na zaposlenost in na dohodek. Vse zgoraj omenjeno, nas vodi do spoznanja, da politike, ki naj bi svoje vir usmerjala k reševanju problema brezposelnosti, morajo vzeti v obzir vidikov, ki presegajo posameznikovih spretnosti, sposobnosti in produktivnosti (čeprav, kot kaže so izredno pomembni).

APPENDIX B: Summary

Bosnia and Herzegovina is a small, developing and multiethnic country. Both historically and nowadays, unemployment rates in Bosnia and Herzegovina are high. The purpose of the thesis is to determine the influences on employment in order to be able address the problem appropriately. Part 1 of the thesis introduces the reader to the concept of unemployment, various economic theories related to the employment/unemployment (such as: assortative matching, discrimination on labour market) and analyses unemployment in Bosnia and Herzegovina in details. All of this serves as an introductory part for the main part of the Master's thesis: empirical investigation of the link between ethnic tensions and unemployment in Bosnia and Herzegovina. The underlying assumption is that a series of individual characteristics and experiences (besides education, age, gender and other socio-demographic characteristics) and environment-related variables (most of them ethnicity-related) have an influence on the employment of an individual and individual's income. The results show that the assumption is partially supported: some of the variables that describe individual characteristics and experiences as well as environment do influence employment and income. All of this leads us to important conclusion that the policies that are aimed to address the problem of unemployment should take into account the aspects that go beyond individual's skills, competences and productivity (although, as shown, these are extremely important).

APPENDIX C: Explanation of binary variables

Table 1. Explanation of binary variables

Variable	Description of the variable
Trust	1 = High level of trust
Belonging to majority ethnic group	1 = Majority ethnic group
Interethnic mixing in the place of living	1 = Large interethnic mixing
Importance of ethnicity	1 = Ethnicity is not considered as important
Presence of ethnic tensions in the place of living	1 = No or small degree of interethnic tensions present
Personal experience – interethnic tensions	1 = No interethnic tensions experienced
Importance of multiculturalism	1 = Multiculturalism is important
War trauma	1 = Does not apply/Experience of the war was not extremely traumatic
War-induced displacements	1 = Individual did not leave home during the war
Gender	1 = Female
Marital status	1 = Married
Employment status	1 = Employed
Location of living	1 = Urban area