

PAGE

policy analysis on growth and employment



Mismatch Unemployment: the case of Macedonia -with special reference to young adults-

RESEARCH PROPOSAL

Presented to

Partnership for Economic Policy (PEP)

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Before you begin

Please consult the following webpages/documents regarding PEP's expectations in terms of:

- [Specific policy issues to be addressed by projects supported under the PAGE programme](#)
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SECTION A – For all projects

1. Abstract (100 to 250 words)

The abstract should state the main research question, the context and its relevance in terms of policy issues/needs in relation to PAGE thematic foci, complete with a brief description of the data that will be used.

The forces of globalization and liberalization, as well the last financial crisis have led to significant transformations in labour markets giving rise to mismatch between education, skills and (un)employment around the globe. Mismatch unemployment literature has expanded recently, given that the current research agenda includes this topic, especially because mismatch is found to explain substantial portion of unemployment (Sahin et al., 2012; Barlevy, 2011; Bauer 2013; Di Pietro and Urwin, 2006). Transition countries, including Macedonia, are more likely to experience mismatch unemployment given the long transitional phase and the inflow of foreign capital, which force substantial restructuring in the labour market. Whether labour market in Macedonia is adjusted to meet these requirements of the labour demand side is unknown, but it is known that unemployment rate is among the highest, especially for the young people. Since the independence of Macedonia and adoption of the concept of market economy, young individuals have had great difficulty in finding and maintaining a job (Arandarenko and Bartlett, 2012). The literature argues that in transition economies, the companies are not reluctant to hire employees, but that they face difficulties in finding “the right person”, raising the issue of mismatch unemployment.

P-YES (Project for Youth Employment Support) aims to examine the mismatch between education and employability in Macedonia with focus on young people, in particular to investigate: (i) the mismatch index and counterfactual unemployment; and (ii) whether there is a systemic variation in the mismatch across different age-classes, industries and regions (given that large portion of young people in Macedonia in the last decade extensively migrate from rural to urban areas, especially in the capital city, Skopje). P-YES further aims to investigate personal experience of young people in the school to work transition and their job satisfaction (match between their qualifications and the job required qualifications, the level of income conditional on their education, mobility, etc.).

To answer the research questions, P-YES employs the Sahin et al. (2012) econometric approach to estimate the mismatch index and counterfactual unemployment. In addition the approach of Cuesta (2005) is exploited to analyze the transition from school to work. To explain further complex (socio-cultural) impacts of specific variables that cannot be quantified (experience in the school to work transition and job satisfaction) P-YES employs qualitative analysis (focus groups and in-depth interviews with young adults across the country). In terms of data, for the quantitative analyses the Labour Force Survey, the School-to-Work Transition Survey and detailed data on vacancies and hires will be used. Data will be obtained from the Statistical Office, Agency for Employment and Ministry for Labour and Social Affairs.

Answering these questions is of special policy relevance, since creation of effective and successful national strategies and policies for enhancing youth employment should initially rely on in-depth analyses which reflect the current labour market condition in Macedonia. However, to our knowledge there is a lack of empirical studies with regard to this. This study promises a range of evidence-based policy mainly aimed in promotion of youth employment, directions for active labour policies for regions and industries at risk in terms of mismatch, implications for educational institutions in terms of qualifications needed for different sectors in the economy. Finally, the proposed topic is within the framework of the priority issue requested by PAGE: **Youth employment and entrepreneurship**.

2. Main research questions and contributions

Explain the focus (or key questions) of your research and its policy relevance.

- 2.1. Explain why you think this is an interesting research question and what the potential value added of your work might be (knowledge gaps). You might want to explain whether or not this question has been addressed before in this context (including key references), and if so, what do you wish to achieve (in addition) by examining the question again?

We organize this section, by first presenting why knowledge of possible unemployment mismatch is important along with the reasons for it, the consequences on individual level and macroeconomic situation. The discussion on these issues presents a self-fulfilment prophecy in terms of the relevance of this analysis.

Then we turn our focus to Macedonian labour market and the urgency for analysis which will provide relevant policy implications which aim in improving the critical situation of the Macedonian labour market, with special reference to young people. The question of (youth) unemployment due to mismatch, to our knowledge, has not been subject to analysis in Macedonia (not even in the region countries). Hence, P-YES presents a contribution to knowledge.

Sattinger (2012) is a comprehensive study regarding the types of mismatch, their reasons, consequences as well as policy relevance with this regard, hence for the proposal purposes we mainly draw on this study (for realization of P-YES the literature will be further critically examined). Mismatches result from differences in the qualifications or skills of workers, individually or in the aggregate compared to the qualifications or skills required or their jobs. Such mismatches in turn lead to losses to individual workers in reduced wages, career interruptions, and reduced job satisfaction, while firms experience decline in productivity and the country faces limited growth potential. Hence, given the importance of this phenomena, major research institutions have conducted studies to understand future skill needs and mismatches (OECD, 2011b, Chapter 4; Glenda Quintini, 2011b; the European Expert Network on Economics of Education, 2008; the National Research Council, 2008 and the European Centre for the Development of Vocational Training-CEDEFOP, 2010a, 2010b).

We can differentiate between **short-run and long-run mismatch**. Short run mismatches result due to extensive job and worker variety in combination with imperfect information and frictions in the labour market that require workers and employers to engage in search to establish employment. Sattinger (2012) defines "search" in terms of the process of workers' in finding a job, and how firms recruit workers. As a consequence of this search, the characteristics of the worker and firm are not perfectly matched compared to the best assignment determined with perfect and costless information. Such short-run mismatches are inevitable; however they cause losses to both worker (the opportunity cost of being unemployed and on-the-job search to obtain further advancement in career) and firm (a job may remain vacant until a worker is found and less productivity than expected).

Long run mismatches result from the changes in economy by altering the mix of job characteristics, or the incentives for individuals to obtain education and training change in a way that alters the mix of worker characteristics. For job characteristics, the causes

could be technological change, capital investments, globalization, or organizational change. For worker characteristics, the causes could be subsidies to different levels of education, quality of preparation at earlier educational levels, or private costs of education. To understand the nature of a long run aggregate qualitative mismatch, it is convenient to consider a single labour market for jobs with a particular combination of characteristics and a corresponding group of workers (an argument applying for P-YES which focuses on Macedonia). A long run mismatch presents a situation in which a shift in demand in this market is not balanced by a shift in supply over a longer period of time, perhaps because the changes are not fully anticipated. Moreover, the school to work transition becomes longer and very difficult.

Sattinger (2012) summarizes the differences between short run and long run qualitative mismatches as presented in the table below.

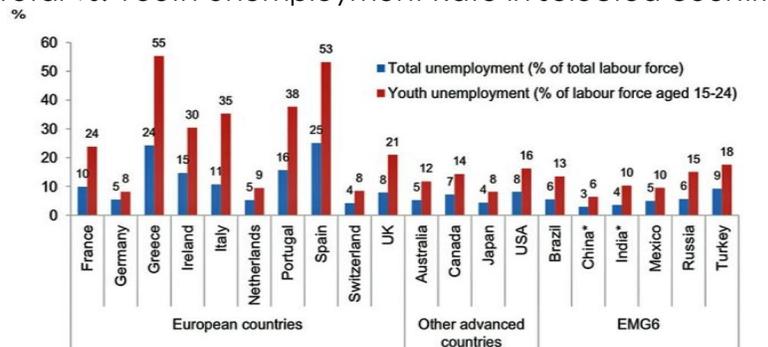
	Short Run	Long Run
Causes	Costs of searching by worker or firm prevent best matches	Unbalanced shifts in supply and demand
Methods of observation and measurement	Differences in individual job and worker characteristics	Forecasts of aggregate differences in supply and demand for labour categories
Methods of analysis	Study how workers search for jobs and how firms recruit workers	Examine consequences of trends in technological and organizational change, globalization, education
Consequences	Costly search for workers and firms, losses in worker wages and lower firm output	Lost returns to worker investments in education and training, inadequate labour force for firm expansion and growth
Policies that address mismatches	Labour institutions that encourage more efficient matches, reduction in search	Adapt educational policies to anticipated changes

Source: Sattinger (2012)

Trends of youth unemployment around the world and Macedonia:

High and persistent youth unemployment rates have been a major global issue in the last three decades. Following a report by the International Labour Organization the global youth unemployment in 2012 reached 73.8 million, which represents a 3.4 million increase since 2007 (Global Environment Trends, 2013). Given the increasing rates of youth unemployment and the long-run risks related with persistent unemployment urges attention, because young persons' employment prospects can have significant implications on economic development.

Total vs. Youth Unemployment Rate in selected countries, 2012



Source: ILO, OECD for China

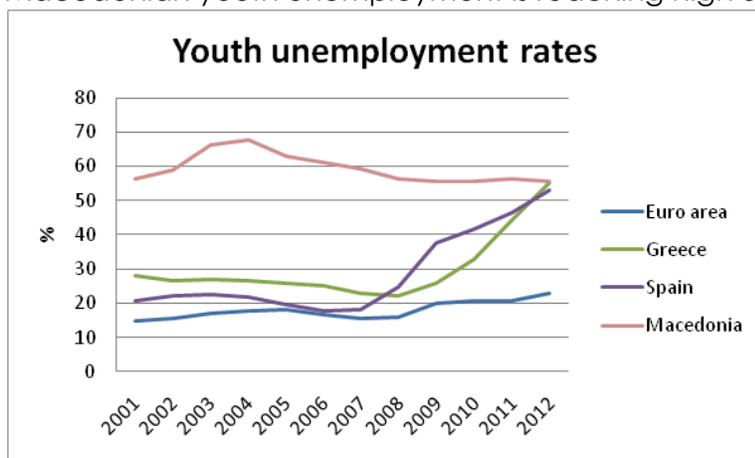
The fact that youth unemployment rates in most countries is twice as high as the total unemployment rate is a serious concern, because it refers to people that have freshly invested in human capital – their investment has not paid off and it further raises their risk of being excluded from the labour market. In the context of youth unemployment' determinants many scholars believe that one main reason for high unemployment is the growing mismatch between the supply and demand for skills, which is disproportionately affecting young people in developing countries (Dur, 1999, Marimon and Zilibotti, 1999, Albaek and Hansen, 2004, Barlevy, 2011, and Sahin, et al., 2013).

Regardless of the growing body of literature considering the determinants of youth unemployment, to the best of our knowledge there are only few studies investigating the association between mismatch and unemployment in developing countries with none of them with focus on Republic of Macedonia and especially mismatch and unemployment across young people. The instability of developing economies in an era of recurrent global economic disabilities may have solidified the already disadvantaged status of young workers hence understanding youth labour in developing economies such as Macedonia could allow policy makers to gain new perspectives regarding the mismatch and youth unemployment and give better informed directions for solving this chronic problem. Considering the fact that Macedonia was faced with a delayed implementation of major economic reforms due to political events, this country represents an interesting context for analyzing youth unemployment in terms of mismatch.

Macedonia faces many challenges in creating opportunities for social and economic development. Unemployment is the major problem, with an average rate of over 30 percent after 1995. The legal and institutional reforms, macroeconomic reforms, microeconomic reforms, structural reforms and the social reforms undertaken during the

transition process did not facilitate the growth levels necessary to absorb high levels of unemployment; both the people that were unemployed and the new entrants in the labour market. The high unemployment at the early stages of transition mainly can be explained with the process of privatization when significant portion of employees are left jobless. The transition from planned to market economy took longer than in other countries with similar socio-economic setting. In the latter stage of the transition it is likely to exist a mismatch between required skills and education mismatch (for example, the foreign direct investments are mainly in the manufacturing industry, telecommunication sector and financial sector, while young people are mainly enrolled for social-sciences degrees and job creation for such qualification is low). In addition, a stylized fact for the Macedonian labour market is the long period of time a person has to spend in order to penetrate the labour market, which is reflected in high unemployment rates. The youth unemployment is alarming high, second highest in Europe (just after Greece). The country is facing brain drain, high poverty rates and high illiteracy despite the program for free mandatory secondary education for all under age of 18.

Even though latest unemployment figures suggest a slight trend of improvement, these are negligible and the unemployment rates are still very high, comparing to other countries in Europe. According to the latest Eurostat figures, Macedonia has the highest youth unemployment rate after Greece. As it can be seen on the figure below Macedonian youth unemployment is reaching high 58%:



Source: State statistical office and authors calculations.

A study conducted by Atanasovska and Angjelkovska (ERSTE Foundation, Working Paper, 2013) on the differentiated influence of several determinants on the total youth unemployment rate, the authors' findings suggest that on the example of Republic of Macedonia, there is a long transition between education and job employment and highly politicized employment channels which greatly discourage young people to actively participate in the labour market. Consequently such findings justify the need for analyzing mismatch and youth unemployment in Macedonia. By the end of 2012, the unemployment rate was 31%, but youth unemployment was almost double reaching high 58%. Macedonia has a very low labour force participation rate which, remaining flat at 55-56%, which is low for Central and Eastern Europe countries standard. According to Urdinola and Marcias (2006), after Turkey, Macedonia has the lowest LFP rate among the working population in the region (Greece can be considered as exception given the

critical economic situations in the last years). The low participation rate of young people can be arguably explained by high rates of young people engaged in fulltime education. This can be considered as positive investment in education and the expected return to it should be a suitable job position. However, in most of the cases, young people see the higher education as a "rescue plan" against being unemployed or having a job which is not related to one's education and skills, suggesting a high level of mismatch, which still has not been investigated in Macedonia. Moreover, being full-time involved in education, young people perceive it as a possibility for obtaining visa for traveling and in some cases emigrating in the Western countries. Another specificity for Macedonia is the huge development discrepancy across regions and immobility of people to migrate within the country, which further rises the probability of high short-run matches (search process)

The recent study by Elder et al. (2013) supported by Statistical Office in Macedonia which present the main results (descriptive statistics) of the School to work transition Survey (for the first time conducted in Macedonia in 2012) reveal interesting picture related to young people (un)employment. In particular, 76.9% of the young people seek for a job for more than a year, while almost 50% of young people already employed have spent more than a year to find that job. More than 65% of the self-employed young people decide to undergo self-employment because could not find a paid job. More than 56% of the unemployed young people who do not actively seek for a job declared to be discouraged because could not find a job earlier. Furthermore, according to the data from the school to work transition survey the young unemployed persons find the following obstacles as most important: 54% claim that there is not enough available positions related to their qualifications; 14.4% argue that the requirements for job were higher than education/training received; 10% find the low wages in the available jobs as a main obstacle for being unemployed; 8% claim that having no prior working experience is the main obstacle and even 3% of the young unemployed do not where and how to seek for a job. As main reasons for refusing the offered job the young people stated the following: 65% because the offered wage was too low; 20% the family did not approve the position and around 13% work did not match the level of gained qualifications. That there is a lack of organized way of enhancing youth employment is found in the figures of the survey, where the young people as the most famous method for job search is asking family members, friends or acquaintances (34.4%), while only 4% have contacted the official Agency for Employment, suggesting that the official institutions are still not recognized to be a centre where labour demand and supply should meet.

All these reasons for idle youth are alarming signal for addressing youth employment opportunities on policy level, where a starting point for radical improvements in the labour market would be investigation of mismatch unemployment (to our best knowledge such study has not been conducted yet, in general there are lack of empirical studies for the Macedonian labour market). The figures presented above suggest a gap to be filled with employability strategies and active labour policies which are expected to contribute in reduction of the mismatch and/or facilitate and shorten the search process.

Therefore, the study examines the following questions:

- 1. To estimate a mismatch index and counterfactual unemployment in Macedonia with special reference to young people.**
- 2. If mismatch is found (almost no doubt), to investigate whether there is a systemic variation in the mismatch across different age-classes (special reference to young people), industries and regions (given that large portion of young people in Macedonia in the last decade extensively migrate from rural to urban areas, especially in the capital city, Skopje).**
- 3. To investigate whether there is a systemic variation in the mismatch across different industries.**
- 4. To investigate whether there is a systemic variation in the mismatch across different regions (given that large portion of young people in Macedonia in the last decade extensively migrate from rural to urban areas, especially in the capital city, Skopje).**
- 5. To investigate the the early labour market experience, in particular transition from school to work for people aged 15-29, with focus on how the first unemployed job search period is related to the subsequent employment duration and the quality of the accepted matches.**
- 6. To analyse personal experience of young people in the search process and their satisfaction on job (match between their qualifications and the job required qualifications, the level of income conditional on their education, mobility, etc.)**

In order to answer these research questions the following research objectives will be pursued:

1. To learn in details the characteristics of the labour market in Macedonia current condition
2. To critically review the literature on the mismatch unemployment and transition from school to work with special reference to transition economies (TEs);
3. To develop and estimate a model to assess mismatch index and its contribution in the unemployment rate, with special reference to youth unemployment and sub-markets divided on industry and geographical level.
4. To develop and estimate a model to simultaneously assess the main components of the transition process from school to work, that is search time, job duration and skill mismatch are modelled simultaneously;
5. To prepare open-ended questions related to the personal experience of young people in the search process and their satisfaction on job; to conduct in-depth interviews and focus groups in order to collect information, which otherwise are not quantifiable. Finally, to conduct a qualitative analysis based on the information obtained from the in-depth interviews and focus groups to assess the personal experience of young people in the early labour market stage.
6. To provide policy implications especially in the area of promoting youth employment and provide directions to primary audience (Minister for Labour and Social Affairs and Minister for Education) and secondary audience (NGOs actively working on youth unemployment, trade associations, educational institutions) for potential national strategies and active policies for promotion of youth employment.

By answering these questions, we aim to gain knowledge for mismatch unemployment in

and for the transitional process from school to work in Macedonia, especially given that in present time analyzing mismatch unemployment is the leading edge of research in labour market, given the problem of high (youth) unemployment in the world, especially after the last financial crisis (Barlevy, 2011; Cuesta, 2005; Sahin et al., 2013; Di Pietro and Urwin, 2006; Arandarenko and Bartlett, 2012).

Our analysis will provide **three contributions** to the debate. First, P-YES is the first study examining the mismatch (youth) unemployment, hence P-YES will contribute to the general debate and will be promoting this debate for the first time in Macedonia (P-YES presents a contribution from academic point of view as well). Second, P-YES will provide knowledge regarding the early labour market experience, in particular the transition process from school to work, and to our knowledge there is no such study for Macedonia. Third, from the perspective of policy relevance, P-YES is supposed to serve as an "alphabet" and "guidance" for creation effective national strategies and active labour policies for supporting youth employment, because only correctly "diagnosed" deficiencies in the labour market could be effectively and efficiently treated by spectrum of strategies and policies.

- 2.2. Describe the specific policy issues/needs that your research aims to address; how your potential outcomes/findings may be used in policy making?
- Justify timing of your research in terms of policy and socioeconomic needs/context – e.g. reference to existing/planned/potential policies at the national level.
 - Evidence of previous consultation with potential users (e.g. policymakers and key stakeholders) to help define your research question is strongly encouraged. Include a list of names, institutions and email addresses when possible.

The proposed topic is within the framework of the general focus of the current call "Grants to Build Research Capability in Developing Countries", and in particular to the sub-topic "Youth employment and entrepreneurship" with a special focus on mismatch between education, skills and youth unemployment and transitional process from school to work. P-YES is supposed to serve as an "alphabet" and "guidance" for creation effective national strategies and active labour policies for supporting youth employment, because only correctly "diagnosed" deficiencies in the labour market could be effectively and efficiently treated by spectrum of strategies and policies. The empirical findings from the analyses will provide recommendations regarding efficient education-job skills matches, greater participation of youth in the labor market (as well to bring back to the labor market the high proportion of discouraged youth as discussed in Section 2.1) as well as recommendations for facilitating the transition process from school to work and hence decreasing the period of finding a job especially for the "beginners" who take part in the labor market.

This research is particularly important if considered in the context of current developments in Macedonia. In particular, the Macedonian government has from recently begun to recognize the economic benefits of effective career guidance for young people and in the beginning of 2014 the government implemented seven project designed for

motivating youth employment. One such project is the "Self Employment Program" which is a part of the national strategy for employment and will support 900 small businesses and the hiring of over 1000 young entrepreneurs. P-YES can greatly contribute this purpose, in the sense that P-YES aims to lay ground for Macedonian policy makers to appropriately approach youth unemployment issues and facilitate creation of effective national strategies and active policies. In other words, improvements can be made only through in-depth understanding of county-specific (un)employment and labor market issues which this paper will provide. If we can allow ourselves to be objectively critical about the way labour active policies are created in Macedonia, we should acknowledge that they are rather ad hoc instead of evidence-based. In particular, a priori investigations are not conducted when decision-makers create strategies and policies, which in turn could easily produce ineffective labour policies. That this is a right timing for such research is the new measure implemented by the Macedonian Government (at the beginning of March 2014) which aims to promote youth employment. In particular, any firm which will employ a young person (15-29) is released of paying personal income tax and contributions for that person in the first two years of engagement. However, we cannot evaluate the results of this measure, but it is likely that due to moral hazard after the first two years when the benefits expire, the employers may lay off the employees. Given that the Macedonian government has introduced such active policies from recently, it is impossible to discuss any results from those measures.

Considering the growing concerns regarding youth unemployment and its long-term impact on the economy, the existing literature on labour market performance and dynamics suggests the use of a large set of explanatory variables in investigating youth unemployment. In the context of the Euro Area, Gomez-Slavador and Leiner-Killinger (2008) identify the determinants of youth unemployment by reviewing the main results from the existing literature on labour market outcomes. The authors classify the factors that influence young persons' employment prospects in four categories: i) demographic trends, ii) economic environment, iii) labour market institutions and policies and iv) education. In a single-country context, by conducting a review of the existing literature, Kabaklari et al. (2011) investigate the economic determinants of Turkish youth unemployment problem with long-term co-integrated analysis. Following the results from their investigation, Kabaklari et al. (2011) suggest that education and economic activity are the main variables in determining youth unemployment. Demidova and Singnorelli (2012) analyze the key factors affecting youth unemployment rate for 75 Russian regions using a GMM panel data analysis. The results from this investigation provide evidence confirming that in the considered regions, youth unemployment rates are persistently higher than total unemployment rates and that the level of regional economic development has profound impact on youth unemployment. This been said, it is clear that youth unemployment depends significantly of macro-factors but in principle, there is a significant amount of heterogeneity among developed and developing regions in terms of the trends in unemployment. Hence, countries with strong economic growth may experience mismatch, but this may be insignificant if many job openings are created and youth unemployment is decreased for all skills levels (Global Employment Trends for Youth, 2013). In developing countries, on the other hand, there is a large share of workers which are outside of formal, wage employment hence unemployment rates have a weaker correlation with macroeconomic changes compared to developed economies (Global Employment Trends for Youth, 2013). This in turn could signal that skills mismatch is a much

more significant determinant of unemployment in developing economies such as Macedonia.

Policy relevance:

In terms of policy relevance Sattinger (2012) argues that investigation of the mismatch and unemployment provides policy implications for both short-run and long-run.

In particular, the extent of the losses from mismatches in the short run depends on policies that promote efficient matching. Labour market intermediaries and temporary help agencies can reduce short run qualitative mismatches by placing workers in jobs more efficiently than the rest of the labour market. Short run mismatches would arise even in the absence of the long run aggregate mismatches and would not disappear as a result of long run adjustments in the labour market.

Sattinger (2012) argues that straightforward policy recommendations are relevant for specific circumstances of mismatches. Since many workers are in horizontal mismatches, better guidance services would increase the likelihood of studying in a field related to a worker's job. This is also likely to reduce overeducation. Second, raising the minimum level of competences (specifically numeracy and literacy which is of concern in Macedonia) would reduce the likelihood of individuals seeking and getting jobs with insufficient skills. Regarding the young adults finishing their schooling face difficulties in making the transition to employment and often take short term jobs at which they are overqualified before finding stable employment (Quintini and Manfredi, 2009). These are some of the stylised facts that have characterised the poor performance of the Macedonian youth labour market in recent years, and that have made the transition from school to work one of the key topics of current social research and policy interests. Apprenticeships and dual labour programs in some countries substantially reduce the time taken to reach stable employment and consequently reduce the time spent in mismatches for this group. Moreover, educational institutions with establishing a career development centers could help graduates to penetrate labour market and find a job in shorter period of time.

The causes of mismatches are closely tied to the features of the labour market that generate unemployment. Costly job search, arising from frictions and imperfect information about workers and jobs, leads workers to accept jobs that do not fully correspond to their qualifications, rather than continue to be unemployed (given our knowledge for the Macedonian labour market this is the case, given that usually the salaries are not enough to cover living expenses if the individuals decide to migrate in another city to match her qualifications with the ones of the job position, hence young people tend to live with their families and are reluctant to migrate and are likely to accept jobs which do not match the obtained qualifications).

Long run mismatches would respond to policies that anticipated changes on the demand side and promoted changes in the educational and training system that balanced the shifts in demands for skills with shifts in supplies. Long run mismatches are studied by examining the consequences of trends in economies and societies that generate shifts in demands and supplies, including technology, globalization, organization of work, and educational institutions. Therefore, policies need to be developed to prepare individuals for future work through formal education, on-the-job training, and life-long learning.

Economists have attempted to explain differences in the unemployment rate between the United States and European countries in terms of the degree of flexibility in the labor market. Taxes at low income levels, the minimum wage, employment protection legislation, levels of unemployment compensation, and active labour market policies can affect how much mobility there is in the labor market and overall levels of unemployment. These institutional features can also be expected to affect mismatches, by affecting the decisions of workers to accept jobs and employers to make offers to workers. Slonimczyk and Skott (2012) argue that monopsonistic effects arise when firms prefer low skill workers for low tech jobs rather than overeducated high skill workers. Then an increase in the minimum wage would raise employment of low skill workers along with aggregate employment and would also reduce wage differences. Wasmer et al (2007) argue that employment protection legislation increases the incidence of mismatches as well as increasing unemployment levels.

3. Methodology

Presentation of the specific techniques that will be used to answer the research questions and how exactly they will be used to do so. Explain whether you will use a particular technique normally used in other contexts or whether you intend to extend a particular method and how you will do so. Explain if these methods have already been used in the context you are interested in (including key references).

We use two different approaches in order to investigate possible unemployment mismatch in Macedonia, with special reference to youth. First, we estimate the so-called mismatch index, for country level and later for youth in order to examine whether doubled rate of youth unemployment compared to the overall rate of unemployment may be partially explained by mismatch. Second, we aim to conduct a qualitative analysis, in addition to the quantitative, in order to learn in-depth the challenges and problems young people face in finding and maintaining a job. The qualitative analysis is based on focus groups and individual in-depth interviews. We strongly believe that such analysis will enrich the analysis, by better understanding the reasons for unemployment mismatch, since they are not quantifiable factors elsewhere available. What follows is a brief expose of the methodologies employed.

Quantitative analysis- Mismatch index and counterfactual unemployment

During 1980's and 1990's mismatch unemployment is mainly investigated by employing two approaches. The first approach examines measures of dispersion in unemployment rates across sectors (Jackman et al., 1991). The second approach links aggregate demand and supply to the distribution of vacancies and unemployment at a disaggregated level (Jackman and Roper, 1987).

This study follows the recent approach of Sahin et al. (2012). They define mismatch unemployment as "distance from a benchmark allocation" (p. 4) and the same insights of the vast literature on misallocation and productivity (Lagos, 2006; Restuccia and Rogerson, 2008; Hsieh and Klenow, 2009; Jones, 2011; Moll, 2011). This approach has two distinctive features: (i) does not require equilibrium allocations (no specific assumptions

about firms' and workers' behaviour, their information set, price determination, etc.), instead the empirical joint distribution of unemployment and vacancies across sectors are considered as equilibrium outcome; and (ii) it allows for estimation of the counterfactual distribution (in absence of mismatch, "desired") from a simple planner's problem which can be solved analytically.

Technical detail regarding the mismatch index and counterfactual unemployment by Sahin et al. (2012)

This index measures hire losses due to mismatch by comparing the actual (observable) number of hires h with planner's (desired) number of hires h^* . The number of hires (actual and planners's) depends on the distribution of unemployed workers and job vacancies over a distinct labour markets (region, industries ...). In each distinct market, hires are governed by a Cobb-Douglas type matching function with CES (constant returns to scale). In the simplest version, the only heterogeneity between the markets is matching efficiency, which captures the amount of search frictions within markets:

$$h_{it} = \Phi_t \phi_i m(u_i, v_i) = \Phi_t \phi_i v_{it}^\alpha u_{it}^{1-\alpha} \dots 1.$$

The number of hires h_{it} in submarket i is linked to the number of unemployed workers u_{it} and vacancies v_{it} . The matching efficiency consists of a time-varying component Φ_t and a market specific component ϕ_i . The matching elasticity α (alpha) is common across markets. Summarizing across all markets yields the aggregate number of hires:

$$h_t = \Phi_t v_{it}^\alpha u_{it}^{1-\alpha} = \left[\sum_{i=1}^I \phi_i \left(\frac{v_{it}}{v_t} \right)^\alpha \left(\frac{u_{it}}{u_t} \right)^{\alpha-1} \right] \dots 2$$

The number of hires in the economy depends on the aggregate stocks of unemployment (u_t) and vacancies (v_t) as well as on the vacancy and unemployment shares $\left(\frac{v_{it}}{v_t}, \frac{u_{it}}{u_t} \right)$. These shares reflect the allocation of unemployment and vacancies across sectors. Thus, to obtain the "desired" number of hires, first step is to solve for a "desired" (planner's solution) allocation of unemployment and vacancies. Sahin et al. (2012, p.2) argue that "The ideal allocation that we choose as our benchmark is the one that would be selected by a planner who faces no impediment in moving idle labor across sectors except for the within-market matching friction."- (v-u-ratio) across markets. The ideal allocation satisfies the following condition:

$$\phi_i m_i \left(\frac{v_i}{u_i^*} \right) = \phi_j m_j \left(\frac{v_j}{u_j^*} \right) = \dots = \phi_I m_I \left(\frac{v_I}{u_I^*} \right) \dots 3$$

The "desired" number of hires follows directly from the social planner's solution with respect to the "desired" allocation of workers across sectors:

$$h_t^* = \Phi_t \bar{\phi}_t v_{it}^\alpha u_{it}^{1-\alpha} \text{ where } \bar{\phi}_t = \left[\sum_{i=1}^I \phi_i^\alpha \left(\frac{v_{it}}{v_t} \right) \right]^\alpha \dots 4$$

Search frictions exist in both distributions (the ideal and the actual) but are captured by ϕ_i . By comparing the actual number of hires (h_t) to the optimal number of hires (h_t^*), a mismatch index M_t of is derived:

$$M_t = 1 - \frac{h_t}{h_t^*} = 1 - \sum_{i=1}^I \left(\frac{\phi_i}{\bar{\phi}_t} \right) \left(\frac{v_{it}}{v_t} \right)^\alpha \left(\frac{u_{it}}{u_t} \right)^{1-\alpha} \dots 5$$

The mismatch index describes the number of matches that are not realized due to mismatch, or more specifically, misallocation. The index equals zero when there is no mismatch and one when there is only mismatch. The underlying rationale is as follows: in the upper limit of disaggregation, there is only one vacancy or one unemployed worker in a given market, whereas in the lower limit, there is only one market such as in the standard search and matching model. If the number of vacancies and the number of unemployed workers increase in ways that do not affect the vacancy and unemployment shares across sectors, the mismatch index remains the same, i.e., it is invariant to aggregate shocks.

By defining the job finding rate as the ratio of the number of hires to the number of unemployed, the actual and the "desired" (or counterfactual) job finding rate can be calculated. The actual job finding rate f_t is computed as follows:

$$f_t = \frac{h_t}{u_t} = (1 - M_t) \bar{\phi}_t \Phi_t \left(\frac{v_t}{u_t} \right)^\alpha \dots 6$$

The counterfactual job finding rate f_t^* is:

$$f_t^* = \bar{\phi}_t \Phi_t \left(\frac{v_t}{u_t^*} \right)^\alpha = f_t \cdot \frac{1}{1 - M_t} \left(\frac{u_t}{u_t^*} \right)^\alpha \dots 7$$

The counterfactual job finding rate measures the job finding rate in the absence of mismatch. The higher the degree of mismatch and the closer the actual unemployment rate is to the counterfactual, the higher is the counterfactual job finding rate. Given an initial value for u_t^* , a sequence of counterfactual unemployment rates with the standard law of motion (s_t denotes the separation rate) can be calculated as follows:

$$u_{t+1}^* = s_t + (1 - s_t - f_t^*) u_t^* \dots 8$$

The higher the counterfactual job finding rate is, the lower the counterfactual unemployment rate in the next period, which leads to a future increase in the counterfactual job finding rate. Thus, mismatch not only has a direct effect, measurable by the index, but also an indirect effect, which arises from the difference between counterfactual and actual unemployment, i.e. reduced mismatch relaxes labour market conditions with a time delay. By measuring unemployment in the absence of mismatch, the counterfactual unemployment rate demonstrates the impact of mismatch unemployment when it is compared to the actual unemployment rate.

This method for estimating mismatch index and counterfactual unemployment is applied for the US (Sahin et al., 2012), for Germany (Bauer, 2013), Marthin (2013). However, up to our knowledge, such analysis is not conducted for any transition country as well not for

Macedonia.

Quantitative analysis- School to Work Transition (Search time, job duration and skill mismatch)

The Cuesta (2005) study analyses the transition from school to work for a sample of Spanish youths and builds on the econometric model of Bratberg and Nilsen (2000). It is expected that the type of job match may be correlated with search time and employment duration, which can lead to biased results, therefore it is appropriate to simultaneously model the first unemployed job search period, the subsequent employment period and the presence of some type of skill mismatch. The rationale for simultaneity is threefold: (i) unobserved factors increasing the length of the unemployment period may improve the quality of the match; (ii) there could be unobserved factors that simultaneously affect the quality of the match and, at the same time, influence job duration and (iii) it allows to assess the effect of the length of the first unemployment period after completing education on the duration of the first significant job.

The equations to be estimated simultaneously are the following:

$$\begin{aligned} \ln t_s &= \min(x_s' \beta_s + u_1, \ln \tau_s) & (1) \\ over &= (x_0' \beta_0 + \eta \ln t_s + u_2) & (2) \\ \ln t_e &= \min(z_e' \delta_e + \eta \ln t_e + \alpha over + u_3, \ln \tau_e) & (3) \end{aligned}$$

The x_s , z_e and x_0 denote the vectors of covariates (independent variables) that affect search duration (t_s), job duration (t_e) and the probability of being overeducated ($over$), respectively. The corresponding coefficient vectors are denoted β_s , δ_e and β_0 . τ_s and τ_e are the censoring times of the search and job duration respectively. Assuming that the error terms are jointly normal, then, the likelihood of the system may easily be constructed by recognizing the three possibilities of censoring. Firstly, t_s may be censored, in which case, neither employment duration, t_e , nor the probability of being over-educated are observed. Secondly, t_s is uncensored while t_e is censored. And finally, both t_s and t_e are uncensored. More details on censored and uncensored observations in Cuesta (2005).

A reduced form equation for search time includes: (i) personal specific variables (gender, non-Macedonian nationality, age when completing education and its square, the highest educational level completed, and the field of education in case of tertiary education is completed), living in capital city, living in urban/rural; (ii) regional specific characteristics (regional unemployment rate)

The equation for the probability of being over-educated includes: unemployment duration, non-Macedonian nationality, age when beginning the first job, level and field of education, and a set of ten occupational dummy variables.

Finally, the employment equation includes both, personal and job characteristics: gender, age when employed, highest educational degree and field of education, search time before getting the job, the type of job match, regional unemployment rate.

Cuesta (2005) defines over-educated persons if her years of education are above the

mean educational level of the corresponding occupation plus one standard deviation. Adequately educated workers are those whose educational level is higher than the mean educational level of the corresponding occupation minus one standard deviation and lower than the mean educational level plus one standard deviation. A worker is under-educated if his/her educational attainments are below the mean education of the corresponding occupation minus one standard deviation.

For estimation of the three equations is used the so-called *nested Tobit* model (Lee, 1992), an hybrid of the Tobit and the nested logit model. The nested Tobit model uses the nested logit model structure while utilizing the additional quantitative information as the Tobit model does.

Qualitative analysis – Focus groups and in-depth interviews with young people

Qualitative methods in economics are more indicative and complementary to the quantitative research, and due to those characteristics they are useful in informing the selection of criteria and indicators, further more they are necessary to explain further complex (socio – cultural) impacts of specific variables that cannot be quantified in first place. They are useful in determining and explaining complex interactions between contexts, grassroots aspirations and strategies and institutional structures.

Considering the complex nature of transition period school to work and various individual experiences with respect to this process, the quantitative analysis will be complemented by qualitative analysis in the second stage, aiming at further enrichment of the empirical findings. For our purpose we would use in-depth interviews and focus groups. The number and background of people that will be involved in the qualitative research is determined by the characteristics of the study population (size and diversity).

A sample of 50 young people (students, young workers and job-sackers), will be invited to take part in the focus groups organized in five different regions/cities: urban, sub-urban and the capital city, in order to get the feedback from various categories of young people from different regions. The topic for discussion on these focus groups will be challenges and problems for finding a job and satisfaction of the current job in terms of their level of education and skills versus the job position required qualifications (those young people already employed).

For the in-depth interviews we will use local partners around Macedonia for better sampling and capture of the experiences across the age and region. The in-depth individual interviews (total of 30) will be conducted as well across the country. The main aim is to get in-depth knowledge regarding the individual experience on the labour market, including the issues discussed in the focus groups. The questionnaire that will be applied will consists two main parts: (i) general questions - such as age, marital status and employment; and (ii) open questions - regarding their difficulties faced as young people looking for employment, challenges and difficulties, , and suggestion on the necessary supportive instruments for young people to faster and easier integrate in the labour market.

The methods for collecting the data will be transparent and the process of sampling and data gathering will be explained in details at the beginning of the qualitative analysis chapter. The focus groups and in-depth interviews will be recorded, with the permission of the participants being interviewed. After the focus groups, the recordings will be transcribed into computer files. Care will be taken by the researcher to ensure that the respondents that are not identifiable in any subsequent report. Once the final research report will be written, and the research will be accepted by the reviewing committee the tapes from the interviews will be destroyed.

For the purpose of the quantitative analysis econometric software STATA is used, while for the qualitative analysis NVivo software is used.

4. Data requirements and sources

This is a critical part of the proposal. The key issue is to explain the reason for the use of the particular data. You must establish that they are ideal for the question you wish to address. Please consult the "**Guide for designing a research project proposals**" for more detail.

The research primary requires data on unemployment, hires, vacancies, productivity, and job separation rates across individual labour markets. The data sources for the mentioned variables will be obtained from National Statistical Offices, Agency for Employment and other governmental agencies. In terms of our ability to acquire the necessary data, we anticipate to receive all information within a maximum period of 30 days. Namely, Republic of Macedonia in 2006 passed the Access to Information of Public Character Law which ensures transparency in the operations of the holders of information, and enables individuals and legal entities to execute their right of free access to public information. This law ensures our right to free access to all information required for our research, and the relevant institutions are obligated to supply the information within a maximum period of 30 days.

Given the risk of obtaining data on Labour Force Survey, we conduct focus groups and in-depth interviews in order to obtain knowledge on individual levels. So far, this is considered to be the best alternative.

5. Policy influence plan (or research communication strategy)

- Identify potential users of your research findings, including policymakers and other key stakeholders. Provide a list of institutions and, whenever possible, specific individuals to be targeted for effective policy influence. Please also indicate whether you have already made contacts within the institution
- How, in the elaboration and execution of your project (from design to dissemination), will you consult/communicate with these users to both gather their inputs and keep them informed of your project (expected contributions and uses), in order to increase chances of your findings to be taken-up into policymaking?

You can refer to **PEP's research communications strategy and guidance** to have a better idea of what is expected in terms of activities for policy outreach and dissemination.

Institution	Contact	Target
Ministry of Labour and Social Policy		
Employment Agency Macedonia		
Universities including student unions		
National Agency for European Educational Programmes and Mobility		
Association for Adult education of Macedonia		
Youth NGOs		
Media		

It goes without saying that considerable attention has been devoted by policy makers and researchers to the issue of youth unemployment in the last decade. Following our objectives, the study aims at providing professional in-depth analysis and forward-looking policy options regarding reduction in mismatch and unemployment with special reference to young adults (discussed in Section 2.2).

Considering the fact that Macedonia aims at EU accession, this study is also relevant for the Europe 2020 Strategy, which makes explicit reference to promoting 'social innovation for the most vulnerable, in particular by providing innovative education, training and employment opportunities for deprived communities'.

Policy relevance and consultation plan

The expected outcomes are concentrated around four pillars:

- Relevance for the Government in terms of creating national strategies and active labour policies for promoting (youth) employment and reduction in inequality;
- Relevance for the educational institutions;
- Relevance for Chamber of Commerce and related organizations;
- Relevance for Labour Unions;
- Relevance for the further research of the topic

The plan identifies four strategic areas of work for increase youth employability:

1. **Early consultation with relevant institutions** (activities undertaken at the initial stage of project execution /implementation and regular consultations throughout the project period)
2. **Advocacy and campaigning** (*short term activities*)
3. **Assisting school-to-work transition** (volunteering and traineeships) (*medium to long term activities*)
4. **Sustaining and developing school curricula in accordance to the needs of the real sector** (*medium to long term activities*)

1. Early consultation with relevant institutions

Key Outcomes:

Relevant institutions will be communicated to learn about this research. Early consultation will contribute to further cooperation with relevant institutions which are expected to give useful comments and suggestions on this issue given their expertise in this field.

Objectives:

- 1.1 **Organizing meetings with government officials and policy makers in order to present the aims, objectives and expected outcomes of P-YES;**
- 1.2 **Reporting results of each completed stage of the project**

2. Advocacy and campaigning**Key Outcomes:**

Developing a detailed policy brief which will be disseminated through an active campaign with special emphasis, expertise and commitment in supporting youth employment by creation of efficient policies. Policy makers will learn on mismatch unemployment in general, and across different age groups, regions and industries. Moreover, they will obtain a greater understanding in terms of the transition process from school to work for young people. The campaign will promote steps and activities to overcome mismatch unemployment and facilitate transition process.

Objectives:

- 1.1 **Promote the benefits and outcomes of effective (evidence-based) youth employability policies.**
- 1.2 **Lobby and campaign in a coordinated way at a national, regional and local level via political briefings (face-to-face meetings with political parties and policy decision-makers), campaigns, organized conference (for primary and secondary audience) and media press. Moreover, we aim to bring closer representatives from associations of young people (student unions, high-school unions) and decision makers.**
- 1.3 **Co-operate and co-ordinate with other organisations providing youth support programmes in order to influence policy and best practice in this area.**

3. Assisting school-to-work transition (volunteering and traineeships)**Key Outcomes:**

To facilitate the transitional process and proposing a mechanism for efficient match of labour supply and demand. Transition period policy that secures training and development opportunities for young workers in labour force, out of employment.

Objectives:

- 2.1 **Develop processes, including a peer support and practice sharing process, to ease the employment process. Develop a process to enhance consistency of practice and evaluation criteria, where appropriate.**
- 2.2 **Regularly review gaps in provided formal training.**
- 2.3 **Develop training opportunities for young workers throughout the formal and informal educational sector.**
- 2.4 **To propose opening career centers in universities and high-schools.**

4. Sustaining and developing school curricula in accordance to the needs of the real sector**Key Outcomes:**

Targeted curricula based on the needs of the economy, so that the gap between the education and skills will be very narrow and the transition from school to work will be smoother.

Objectives:

3.1 Develop and document particular approach to support the communication between the educational institutions and the economic actors, in favour of so called “targeted” programmes

3.3 Integrate and prioritise specific employability measures

3.5 Establish and develop key relationships regionally and nationally with organisations which provide training and support for requalification.

6. List of team members

Indicating their age (or whether they are under 30), sex, as well as relevant/prior training and experience in the issues and research techniques involved (start with lead researcher).

Note that PEP favors gender-balanced teams, composed of one senior (or experienced) researcher supervising a group of junior researchers, including **at least 50% female researchers** contributing substantively to the research project. PEP also seeks gender balance in team leaders and thus positively encourages female-led research teams. (Each listed member must post an up-to-date CV in their profile on the PEP website – refer to **“How to submit a proposal”**)

Name	Age	Sex (M,F)	Training and experience
Viktorija Atanasovska	31	F	has spent eight years of her education in the UK and has been trained to become an independent researcher, mainly in Economics and other related socio-economic topics for transition economies in particular. As a PhD student (before submission) at Staffordshire University, she has acquainted the most rigorous standards of research and has further developed and advanced research skills and techniques (quantitative and qualitative). In the last few years, she has done research on various applied economics and economic policy issues such as analysis of the labour market with special reference to youth unemployment, gender inequality, social inclusion, ethnic relations and economic development funded by RRPP, ERSTE Foundation, CERGE-I. She has been teaching introduction to microeconomics and macroeconomics, human resource management and statistics at New York University-Skopje. She is a co-founder and researcher in Association of Economic Researchers STOKE, Skopje, Macedonia.

Tijana Angjelkovska	27	F	MSc in Economics from Staffordshire University UK, trained particularly for independent research and analysis. Since 2003 she is actively involved in youth activism for a social change. As a youth club coordinator and youth worker she was working with marginalised groups on empowerment and social inclusion. Currently, she holds junior analyst position at the National Bank of Macedonia and in the same time she is active in the independent socio-economic research field as a co-founder and researcher at the AER STOKE-Skopje, with particular research interest in youth and female unemployment.
Branka Hadzi-Misheva	25	F	MSc in Economics from Staffordshire University UK, trained particularly for independent research and analysis. She has spent one year working as an Independent researcher at Academic Consulting in Macedonia, working in various employment projects at national and international level.

7. Expected capacity building

Description of the research capacities that team members (and potentially their affiliated institutions) are expected to build through their participation in this project.

This is an important aspect in the evaluation of proposals and should be presented in some detail. What techniques, literature, theories, tools, etc. will the team and their institutions learn (acquire in practice) or deepen their knowledge of? How will these skills help team members in their career development? Also indicate which specific tasks each team member would carry out in executing the project.

Main aim is to gain in depth knowledge regarding the mismatch in the labour market in Macedonia and the transitional process from school to work, which can enable us to further make contributions in this field and improve the situation in the country regarding these important issues. For the purpose of P-YES we will follow recent techniques for constructing mismatch index and assess simultaneously the first unemployed job search period, the subsequent employment period and the presence of some type of skill mismatch. That will involve:

- *learning new econometric approach and theory behind it.*
- *Applied economics requires enhancing knowledge in quantitative techniques and appropriate softwares. For the purpose of the study the research team will get familiar with qualitative analysis which is not usually a part of economics research.*
- *For the qualitative part, the team will get familiar with the qualitative analysis software: NVivo*

The team members are going to jointly work on the research questions, the design of the research methodology, the drafting of the questionnaires for the interviews and focus

groups and the final chapter containing conclusions and policy recommendation. Most of the team members have obtained research skills and devotion towards science from one of the strongest educational systems (the United Kingdom), therefore their aspiration is to produce high-quality research paper(s) to be presented on domestic and international conferences and to be published in relevant journals.

Name	Task
Viktorija Atanasovska	Will act as project coordinator on behalf of Association of Economic Researchers STOKE Skopje and will prepare the quarterly progress reports for the project. She will conduct the empirical analyses, interviews and lead the focus groups, and supervise the process of gathering the data with the research specific survey. She will make contacts with relevant decision makers, NGOs and media. She will participate in drafting the conclusions chapter which summarises the empirical findings and qualitative findings and will take the lead role in drafting and presenting the policy recommendations. She will be responsible for dissemination of the written report on a national conference organized by AER STOKE.
Tijana Angjelkovska	She will prepare the context of investigation for the study: provide a statistical overview of the labour markets in Macedonia and a preliminary analysis of the labour market policies. She will also draft the joint literature review for the project, will participate in drafting the empirical chapter. She will assist in conducting in-depth interviews and focus groups and write the qualitative analysis. She will assist in dissemination of the produced written report.
Branka Hadji-Misheva	She will identify relevant secondary sources; assist data preparation and preparing descriptive statistics. Further she will assist in the the empirical analyses, will participate in drafting the conclusions chapter. She will assist in dissemination of the produced written report.

8. List of past, current or pending projects in related areas involving team members

Name of funding institution, title of project, list of team members involved

Name of funding institution	Title of project	Team members involved
RRPP, project coordinated and operated by the Interfaculty Institute for Central and Eastern Europe (IICEE) at the University of Fribourg (Switzerland). The program is fully funded by	Women's Inclusion in the Socioeconomic Life: Determinants of Female Labour Force Participation in the Western Balkan	Viktorija Atanasovska, Tijana Angjelkovska

the Swiss Agency for Development and Cooperation (SDC), Federal Department of Foreign Affairs.		
Erste Foundation – fund for social research.	Opening the black box of the Macedonian labour market special reference to youth	Viktorija Atanasovska, Tijana Angjelkovska
RRPP, project coordinated and operated by the Interfaculty Institute for Central and Eastern Europe (IICEE) at the University of Fribourg (Switzerland). The program is fully funded by the Swiss Agency for Development and Cooperation (SDC), Federal Department of Foreign Affairs.	Ethnic, Institutional and Economic Performance in Bosnia and Herzegovina and Macedonia	Viktorija Atanasovska

9. Describe any ethical, social, gender or environmental issues or risks that should be noted in relation to your proposed research project.

There are no possible evident issues or risks related to conduction of project. Although we will conduct focus groups and in-depth interviews, we cannot find any reason why there will be any risks, since the team members are experienced in doing such activities.