

INTERGENERATIONAL CONFLICT:
DOES LONGER WORKING LIFE OF
OLDER GENERATION THREATENS
YOUTH EMPLOYMENT IN
TRANSITION COUNTRIES?

by

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Abstract

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During the recent decades, changes in the age structure of population provoked tensions between generations of young and old people concerning work places. This paper analyzes whether higher participation rate of old people in the economy worsens the situation with youth unemployment in transition countries. The data for research is taken from the Key Indicators of the Labor Market (7th edition) and World Development Indicators and contains 27 countries for years 1991-2011. The results show that participation of old in the economy influences negatively both unemployment and employment while raising the inactivity rate of youth in transition countries. These findings are robust to various specifications and inclusion of additional controls.

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Chapter 1

INTRODUCTION

The issue of aging of nations is currently a hot topic throughout the world. Improvements in living conditions, better medicine, as well as overall economic growth have made it possible to elongate people's life expectancy. Though such changes seem to be positive, there also exists the reverse side of the coin. Due to a larger number of old people in society (both in absolute and relative terms) a huge increase in social payments in terms of pensions occurs. While looking for some possibilities to decrease social costs related to a bigger number of retirees, governments of many countries found it important to increase retirement age. Thus, older people stay economically active longer. Although it leads to a decrease in pension fund obligations, it also increases concerns on how longer employment of old will influence unemployment of youth.

This paper seeks the answer to the following question: how does the participation rate of older people in the economy influence the unemployment rate of youth?

This question is important for a number of reasons. First of all, nowadays people are living longer (average life longevity in Euro Area changed from 76 in 1990 to 80.73 in 2010), but tend to start families later (average age of first child birth in Britain climbed from 26.5 in 2000 to 27.8 in 2010). So there is a slower renewal of the workforce (World Development Indicators). Secondly, there are also changes in the elderly dependency ratio and youth dependency ratio across countries. While the former is growing, the latter is going down (Dixon S., 2003; World Development Indicators). It is obvious that with such trends, there will be a growing number of retirees per one worker each year.

Not only general population is aging, the age of the labor force is also on the rise. For example, in Britain between 1991 and 2001 the mean age of workers went up by approximately 1.5 years (from 37.5 to 39 years) (Dixon S., 2003).

All stated above provoked a significant number of similar social reforms in different countries. Governments in many states decided to increase retirement age. Such reforms took place in Germany (retirement age was increased from 65 to 67 and from 61 to 63 for early retirement), Spain (65 to 67 and 61 to 63), Bulgaria (for men increase from 63 to 65, for women from 60 to 63), and Slovakia (for women it will increase from 57 to 62 to be equalized with men). In France in 2010, it was decided to increase the regular retirement age from 65 to 67 and early retirement age from 60 to 62 (BBC News). This reform met strong opposition. People showed their disagreement by a series of strikes and demonstrations. One of the reasons for such indignation was a concern that such changes would negatively affect job market, particularly the labor market for young workers. Youth unemployment is an acute problem in France and in many other countries, so such reaction was quite predictable.

On the 1st of October, 2011, Ukrainian government passed a law, which requires that the retirement age for women will rise from 55 to 60 years and for men at civil service from 60 to 62. Although such decision can constitute a possible solution to the deficit of the Pension Fund, it also can negatively affect youth employment.

On the contrary, there are some countries, which make more programs for earlier retirement. Belgium, e.g., has the retirement age of 65 for both men and women, but in recent years numerous programs for earlier retirement were implemented. Similarly, in Luxemburg retirement age is set at 65, but retirement is possible from the age of 57. In Norway the official age of retirement is 67, but 60% of the

population leaves the labor market at the age of 62. In Sweden the pension system is really flexible (includes private pensions and saving pensions) and state pension is available from the age of 62. Policymakers claim that these initiatives were introduced to provide more job places for youth (Gruber, 2010).

French Prime Minister Pierre Mauroy on the 27th of September 1981 stated (Gruber, 2010):

“I would like to speak to the elders, to those who have spent their lifetime working in this region, and well, I would like them to show the way, that life must change; when it is time to retire, leave the labor force in order to provide jobs for your sons and daughters”.

These contradictions in policies may be explained by contradictions in theories. Some theories describe young and old workers as substitutes (Kapteyn et al., 2004; Lefebvre M., 2012), others – as compliments (Disney, 1996).

The proponents of the lump labor theory believe that when old people stay at work longer they may take over working places of young specialists. The opponents, in turn, state that old and young workers are not direct substitutes, because they have different levels of skills and experience. Moreover, when older people participate in the economy there is bigger labor force, which stimulates growth of GDP, and new work places are being created. In addition, higher retirement age causes reduction in social payments. There are also claims that people live longer if they work longer (Mayers R., 1954; Waldron H., 2002).

It is important to understand whether longer “working life” of the older individuals influences the unemployment rate of younger generation. This research addresses the case of transition countries. The previous research has been performed for developed countries only. We suggest that there may be some differences in results if we consider transition countries. First, the differences may

arise from the differences in industrial structure of the economy. Due to the transition process, a lot has changed in transition countries. Moreover, in sectors that require more physical strength younger workers may be more productive. If retirement age is increased and older workers are encouraged to work longer, youth unemployment may increase. Secondly, there is a difference in labor force structure. As the structure of these economies changed significantly during transition, a lot of knowledge and experience gained during Soviet times by older generation became obsolete. Not all the knowledge has been transferable between the two systems. In addition, older people often have had more paternalistic views and at the same time have been less flexible. That is why many companies may prefer younger workers even with less experience in transition countries compared to the developed countries.

Using fixed effect model we extend the literature by investigating not only the employment and unemployment rate of youth but also youth inactivity rate and adding several new control variables (productivity of workers, services value added and general government expenditures) The analysis is based on the cross-country data for 27 transition countries for years 1991-2011 taken from the Key Indicators of the Labor Market (7th edition) and World Development Indicators.

Our preferred specification shows that the average participation rate of old people significantly reduces the level of youth unemployment. Similarly, the effect on employment of youth is negative. At the same time, the inactivity rate of youth rises with the increase in the participation rate of old. Thus, we can make a conclusion that higher participation rate of older people in the economy discourages young workers and make them exit the labor force.

The structure of the remainder of the paper is the following. Chapter 2 provides a review of the literature on the relation between old and young workers

participation in the economy. Chapter 3 describes the methodology used in the research followed by Chapter 4 with the data description. Estimation results are presented in Chapter 5. Chapter 6 concludes and offers the discussion of the results and possible policy possible.

Chapter 2

LITERATURE REVIEW

We start from general overview of the literature related to the aging of population and its influence on the labor market. The second part is focused on the theoretical approach to modeling the influence of retirement age on the labor market. And finally, in the third part, we concentrate on the empirical evidence regarding the influence of the average retirement age on the level of youth unemployment.

Changes in the Age Structure of the Population

The trend of aging population is not so novel. A popular topic in 1980's was the changing structure of the economy. Baily (1986) looks at the consequences of an increase in the retirement age for workers in physically demanded occupations. The author states that as the structure of economy changes, it is very likely that older people would be replaced by physically stronger youth in physically demanding occupations, because with the age people have less strength. Thus aged people could be unable to work until the retirement, especially if pension age is increased. According to the author, it may lead to 6-7% lower income at retirement. This notion is important in terms of comparison of developed and transition countries. As they have different structures of the economies, the influence of higher retirement age on the youth unemployment could also differ.

Dixon (2003) analyzes different patterns in employment for old and young people. It is mentioned that older workers are less likely to become unemployed, while it takes them longer to find a new job. Moreover, there is a high probability for them to quit labor market after being fired. Important notice is that according to Disney (1996) older people are more productive in terms of gained experience, so it is

really hard for young to compete with them. Another impact brought to the labor market by older workforce is lower mobility of workers between jobs (Groot and Verberne, 1997) and smaller geographical mobility (Smeeding and Quinn, 1997).

The topic of the influence of retirement age on the youth unemployment becomes virtually important in the last few decades. There are changes in the elderly dependency ratio (ratio of population aged more than 65 to that of the age 15-64) – it increases gradually. This ratio changed from 0.1 in 1950 to 0.2 in 2000 and is approximately 0.27 in 2011 for European countries, according to the World Bank data. For Ukraine this index in 2011 was 0.22 (World Development Indicators). It is expected that this indicator will reach the level of 0.45 for European countries by 2050 (Dixon S., 2003).

Another trend is seen in youth dependency ratio (ratio of population aged less than 14 to those of age 15-64). This ratio is decreasing, contrary to elderly dependency ratio. It has fallen from 0.4 in 1950 to 0.25 in 2000 and was on average 0.21 in Europe in 2011 (Dixon S., 2003). For Ukraine this indicator was 0.2 in 2011 (World Development Indicators).

According to the literature, there are also some benefits from the extension of retirement age. It is proved that those, who retire earlier, live less. One of the first works published in this topic (Myers R., 1954) uses data from three government programs and examine the connection between retirement and workers' mortality. He finds that in the absence of any special circumstances, the mortality rates of workers, who are voluntary retired, are considerably higher during the first and second year compared to what otherwise could be expected. On the contrary, when the author considers those, who retire under plan, he finds negative correlation between decision to retire and his future health. Those who still at work after retirement show better health. Results are still doubtful, because there

could be reverse causality problem. Waldron (2002) discusses the same issue and finds negative correlation between age of retirement and mortality risk, using three different databases.

Theoretical Model

Lefebvre (2012) introduces a theoretical model, in which workers of old and young ages compete for the same jobs. There is also a retirement opportunity. The author shows that higher retirement age has a positive impact on the employment rate. The reason is that the number of working places offered by employers among other things is influenced by the probability that an old worker is going into retirement.

One of the important findings is that productivity of both cohorts of workers determines to which extent youngest are influenced by retirement of oldest. If older workers are more productive than younger ones (e.g. in terms of gained experience), the effect on employment of youth will be positive (e.g. to substitute one older worker employer will need two young people). This implies that the productivity is important variable to control for. One more assumption is needed: old and young workers should be seen as perfect substitutes. Lefebvre (2012) makes a simulation model and estimates parameters of the model using the data from a panel of OECD countries. Both procedures show consistent results that youth unemployment increases when older workers retire earlier.

Empirical Evidence

Commander and Heitmueller (2007) in their work discuss the influence of labor market institutions, particularly unemployment benefits on the level of unemployment in transition countries. They make cross-country survey in which find little evidence that institutions can explain the level of unemployment, although such effect was significant for OECD countries (Nickel et al., 2005). Nevertheless, Commander and Heitmueller (2007) find important evidence that benefits might influence outflow from unemployment to inactivity. This important notion shows the necessity to add social protection as an independent variable in our research and to look at the influence of participation rate of older people on the level of youth inactivity rate.

The most comprehensive empirical research on this topic is done by Gruber et al. (2010). This is a multi-country study based on twelve papers for different countries (Belgium, Canada, Denmark, France, Germany, Italy, Japan, Netherlands, Spain, Sweden, United Kingdom, United States) with similar research question and methodology. All the studies analyze how retirement age influences the youth unemployment. The analysis is done both at the country level and at the aggregate level.

All these economies report quite significant levels of youth unemployment. Youth unemployment is divided into three types according to the level of education: high, middle or low. It is shown, that the highest rate of youth unemployment is observed among low-educated people. All three types of unemployment were taken as dependent variables in different regressions at country level research, as well as employment rate of youth (both at country and at aggregated levels). As independent variables, they take participation rate and employment rate of the old workers (aged 55-64), GDP per capita, growth of GDP and the share of

manufacturing in GDP. The data is provided by three different sources: European Labor Force Survey, International Labor Organization and OECD database.

In case of Belgium (Jousten et al., 2010) they proceed in two steps: the first – check the direct relationship between the employment of young people and participation of old people; the second – analyze how incentives faced by older workers (concerning earlier retirement) influence the unemployment rate of youth. All regressions are estimated in levels (OLS regression) and in differences.

For aggregated data, the authors use fixed effect regression analysis. For all countries, as well as for aggregated data, the authors get the same results: the unemployment of youth is negatively correlated with the employment of older people. It should be the case that there exists some macro “shock” in the economy that affects employment of both young and old people and makes them move together. Another possible reason might be that young and old workers are complements, not substitutes.

There are several drawbacks of the model used in Gruber et al. (2010). First of all, they add too few control variables, which might cause omitted variable bias. Secondly, in regression with aggregated data they use participation rate of old people aged 55-64, but there might be people older than 65 years in the economy.

The existing study (Gruber et al., 2010) is based on the data for developed countries. We suggest that there might be some other results if we take data for transition countries. First of all, the difference might arise from the differences in labor force structure. As it was stated above, problem of unemployment is sharper for low-skilled young workers. The second difference lies in sectoral structure of the economy. Developing countries often have bigger share of agricultural sector and smaller share of services in GDP. Agricultural sector requires less skilled labor

and experience is not so important. Moreover, physical strength might be important in this sector. So again, youth can easily substitute older generation.

Transition countries are also special in terms of changes, which took place during the transition process. Widespread shutdowns left many people out of the labor market. Besides, new economic sectors and branches emerged. Thus, people needed new knowledge and human capital of older people could be outdated. People of older age may also have more paternalistic views and be less flexible. At the same time, changes in developing economies are quite fast and thus need quick adaptation. Many companies might prefer younger workers due to their flexibility and ability to learn quicker.

Taking all stated above into account, we may conclude, that in transition countries younger and older people are more likely to be complements. Each cohort has special human capital, which might be applicable in specific sectors of the economy.

There is not enough studies considering this topic across transition countries. Audas (2005) finds, that youth with better education has smaller probability to be unemployed.

More research for transition countries is needed. The contribution of this paper lies in approaching transition countries. Also, we are going to control for other important variables, such as productivity of workers, government expenditures as a proxy for social protection and services value added as one more way to control for structure of the economy. Besides, we will use inactivity rate of youth as one more dependent variable.

Chapter 3

METHODOLOGY

The main objective of this paper is to estimate an influence of average retirement age on the employment level of youth. The average retirement age is measured following the literature as a participation rate of people older than 55 years in the economy.

The research methodology used in this paper is built upon the empirical research done by Jonathan Gruber et al. (2010). The basic model from this paper is the following:

$$\begin{aligned} \text{Youth. Unempl}_{it} = & \beta_0 + \beta_1 \text{Avg. ParticipationRateOLD}_{it} \\ & + \beta_2 \ln \text{GDP}_{it} + \beta_3 \text{GDPgrow}_{it} + \beta_4 \text{SHAREmanuf}_{it} + u_{it} \end{aligned} \quad (1)$$

For deriving labor force indicators, internationally recognized definitions were used as provided by ILO. All variables and their sources are described in Table 1.

The *average participation rate of old* is the variable of interest. The coefficient of this variable shows the relation between the employment of old and young people. We expect that higher participation rate of old people decreases youth unemployment in transition countries according to the reasons discussed in the Chapter 2.

GDP per capita is taken into account to control for average level of development of the country. The more developed country is, the smaller youth unemployment rate we expect. So GDP is expected to be negatively correlated with the dependent variable (youth unemployment rate).

GDP growth controls for the speed of development and thus approximates the possibility of emergence of new job places. This variable should also decrease the youth unemployment.

Share of manufacturing in GDP is used to control for sectoral structure of the economy. The sign of the coefficient for this variable is ambiguous, but most probable it will be negative, because manufacturing requires more skilled labor force than, for example, agriculture. Thus, in countries with the bigger share of manufacturing more experienced workers are more valued. Youth often does not have such experience.

This model is taken as basic in our research. We also control for other important variables, such as the services value added in GDP, productivity of workers and total government expenditures as a percentage of GDP. Let us shortly describe importance of each variable.

Share of services in GDP should be considered to describe structure of the economy better, share of manufacturing itself is not enough. Developed countries usually have bigger share of services in the economy. In addition, countries with bigger share of services are usually growing faster. People working in this sphere usually should be communicative and active that is true about youth. Share of services in GDP is expected to be negatively correlated with the youth unemployment.

Productivity of workers according to the literature discussed in Chapter 2 is an important indicator. Literature predicts that productivity of young and old workers should be taken into account, because it determines to what extent old and young workers could be substitutes. But the data is available only for general productivity of workers, so we control for it and see if general productivity has an impact on the level of youth unemployment. General productivity mostly describes

productivity of older cohorts, because youth takes smaller share in total labor force. Thus, we expect that higher general productivity enhances youth unemployment, because it is harder for youth to compete.

Social benefits often discourage people to work. Higher unemployment benefits, for example, extend the period of finding new job. Moreover, as young people are generally less get used to work, they are more likely to be exposed to demotivation. We expect youth unemployment to grow with the growth of social benefits.

The question is addressed with the help of fixed-effects regression to capture county-effects. Also we add dummies for years to control for time-specific changes, which took place in transition countries.

To make some robustness check we are going to look at different specifications (with different controls) and in addition run the regression with employment rate of youth and inactivity rate of youth.

In our work we also use alternative approach in measurement of important variables, such as youth unemployment rate and the participation rate of old people. While youth unemployment is measured as a ratio of unemployed youth to the labor force of youth, the participation rate of old is calculated as a ratio of labor force of old people to the general population of people aged more than 55. As it is discussed in Chapter 1, current trends in population changes show, that there are more and more people of older age and at the same time less and less people of young age. So if we assume the situation where both number of youth unemployed people and number of people in the labor force of old *are constant*, but the total population of youth (and labor force of youth) goes down and total population of old is growing, the youth unemployment rate will go up and participation rate of

old will go down. So, using these two variables we can not be sure on what effect is really captured in the model.

As an alternative, we propose another approach. If we find unemployment rate of young people as a ratio of youth unemployed to total population and participation rate of old people as a ratio of labor force of old to total population, both variables will have the same denominator and thus changes in rates will capture actual changes in number of people engaged. The same calculations we do for employment and inactivity rates of youth.

One of the most probable econometric problems is endogeneity. It may arise because of some omitted variable, which influence both dependent and independent variables (participation of old and unemployment rate of youth). As it is discussed in Gruber et al. (2010), there might be some economic “shock”, which influence both employment of young and employment of old, but is not captured by other independent variables.

Another concern is about the productivity of young and old workers. As it was discussed earlier, both types of productivity should be taken into account separately, but the data is available only for general productivity of workers. Also, as research is done for transition countries, where mechanisms of gathering the information are not very good, there might be some measurement mistakes. Besides that, there is usually high rate of shadow economy in transition countries, so again some numbers may show not correct values. Nevertheless, the data should capture general trends in the economy and results achieved are enough reliable.

Chapter 4

DATA DESCRIPTION

We use the cross-country data for 27 transition countries (list of the countries is available in Table 2) for years 1991-2011. The data is combined from The Key Indicators of the Labor Market (7th edition) and World Development Indicators.

There are 474 observations in the main model and 460 observations for models with main variables calculated as a ratio of total population. As there were only 297 (236 with controls) observation available in the initial dataset, we found another variables, which made it possible to derive more observations for youth unemployment. We proceeded with the following steps.

We derive the total youth population as a share of total population:

$$PopYoung = TotPop * \frac{PopYoung\%}{100} \quad (2)$$

Next, find number of youth unemployed:

$$YouthUn000 = PopYoung000 - \\ InactYoung000 - EmplYouth000 \quad (3)$$

The third step is to find the level of youth labor force:

$$LFYoung = YouthUN000 + EmplYouth000 \quad (4)$$

The last step is to find the youth unemployment rate according to the formula:

$$YouthUnRate = \frac{YouthUn000}{LFYoung} * 100 \quad (5)$$

Summery statistics for obtained variable is quite close to initial one. The test for equality of means is presented in Table 3.

The general description of data is given in Table 4. As we can see, the average level of youth unemployment in transition countries in 1991-2011 was near 22% with standard deviation of 12.7%. Participation of old people was on average equal to 28.8% with deviation of 12.4%.

Figures 1 to 4 present some illustrative data to set the stage. They show trends on labor markets of two countries (Ukraine and Poland) that took place during the last twenty years. It is obvious from the graphs that participation rates of old people in these two countries went up during the last 10 years. The increase is seen both in absolute and relative terms. Employment of youth on the graphs replicates to large extent the trend of participation of old in the economy. Again, both in absolute and relative terms indicators move together. Nevertheless, figures do not show strong link between the unemployment of youth and participation rate of older people. There is no direct relation between labor market activity of elderly people in the economy and youth unemployment. Trends of youth unemployment are much more volatile on the graphs. Figures 5 and 6 show trends of indicators calculated as a ratio to the total population. This new indicators are very similar to the trends shown in thousands. Therefore, new variables replicate the true movements on the labor market.

Table 5 shows the test for comparison of means of youth unemployment depending on the participation rate of old people. We divide participation rate of old to four groups (by percentiles) and look at the means of youth unemployment in each group. As we can see from the table, with increase in participation rate of

old in the economy, the average value of youth unemployment goes down and the difference in means is statistically significant. However, such statistics does not take into account neither specifics of countries nor other important variables, which influence unemployment rate of youth. Thus, estimation that is more rigorous is needed.

We will turn now to empiric estimations. First of all, we apply the model from theory to our data (for employment and unemployment rates of youth as a dependent variables) and compare results of regressions with extended model, which includes more controls. We then proceed with regressions with inactivity rate of youth as a dependent variable. Finally, we use the new dependent variables calculated by new methodology and compare, how the results differ from the initial model.

Chapter 5

EMPIRICAL RESULTS

In this section empirical results are shown and discussed. The concluding part (Chapter 6) then discusses their interpretation and possible implications.

Basic Model

We start with the basic model from the literature. We estimate regressions with unemployment and employment rates of youth as dependent variables. We try the first regression without controls (1) and then add control variables described in the previous sections (2).

As could be seen from Column (1) of Table 6 participation rate of old people decreases youth unemployment. The magnitude of the coefficient differs from those obtained in Gruber et al. (2010). Their estimation was that ten percentage point increase in the participation rate of older people drives the unemployment rate of youth down by 2.3 percentage points. In our model the change in youth unemployment has the same direction, but the magnitude of the change is smaller and accounts for 1.78 percentage points. Moreover, $\ln\text{GDP}$ and ShareManuf are not statistically significant in the basic model for transition countries' data.

The results of the analysis for the employment rate of youth as a dependent variable differs even more (Table 7, Column (1)). Gruber et al. (2010) estimate the coefficient to be 0.91, while the coefficient from our analysis has not only a different value, but also the opposite sign, which is also not statistically significant.

As the next step of this research, we add some extra control variables to the basic model. The results are presented in Column (2) of Tables 6 and 7. We find that the new specification better fits the data. The coefficients on the new control variables are significant statistically and have the expected signs (except for services value added in the regression with youth unemployment). The coefficient on $\ln\text{Prod}$ (productivity of workers) has similar value but a different sign in models with youth employment and unemployment rates and in both cases the coefficient is highly significant both statistically and economically. Keeping other variables constant, an increase of an average workers' productivity by \$1 per workers leads to an increase in youth unemployment by nearly 6 percent and a decrease in youth employment by almost 7 percent.

We obtain economically interesting and important result from the new augmented models. First of all, as we can see from regressions (Tables 6 and 7, columns 2), higher participation of old people decreases both employment and unemployment of youth. Thus, old and young workers cannot be treated neither as substitutes nor as compliments. It looks like a contradiction, because trends of employment are not going together, but unemployment rate does not go up with higher participation of old either. The question arise, what is then going on the labor market? This question we address with the regressions with inactivity rate of youth as a dependent variable. Secondly, we find that the average productivity of workers is an important variable to control for. Services value added is also significant in the model of youth employment.

We can conclude that the model described in the literature is not full and shows biased results. There are other important variables, which are significant and which make model better (especially productivity of workers). Nevertheless, we need to proceed further to explain, where do young people go from labor market due to

higher participation of older in the economy and look at one more dependent variable – youth inactivity rate.

Youth inactivity rate

Table 8 presents the results of the analysis of youth inactivity rate as a dependent variable.

In the extended model coefficients on all additional control variables are significant, while the standard control variables do not show any significant impact. The influence of higher participation rate of old on inactivity rate of youth is positive and close in magnitude to the sum of coefficients on employment and unemployment rates of youth. The coefficient shows that when participation rate of old in the economy increases by 10 percentage point, inactivity rate of youth goes up by almost 2 percentage points.

It is hard to escape the conclusion that higher participation of older people in the economy discourages young workers and make them leave the labor market. There might be several reasons for it. During the periods of economic recessions, “young people are often the “last in” and the “first out” – the last to be hired, and the first to be dismissed” (United Nations World Youth Report, 2011). So in cases when young people are in long search of a job, they may stop seeking for employment. One more explanation for growing inactivity rate of youth in transition countries may be shadow economy. when workers are registered neither as employed nor as unemployed. Finally, young people may temporarily migrate to other countries and work there, sometimes also unofficially. Average productivity of workers also has a significant positive effect on youth inactivity rate.

Thus, in our research we have approached one more side of the youth labor market. It is important to study this tendency further and explain better into what kind of

inactivity are driven young people and what are other factors that influence the inactivity rate of youth.

Alternative approach

Although, the regressions discussed above show very interesting results, there is a big question concerning the method of calculation of the two most important variables. This concern has been discussed in Chapter 3 and in this section we use an alternative approach to the calculation of those indicators – weight them all by total population.

These models show more robust results than those, in which ordinary indicators are used. Moreover, coefficients are mostly significant (or jointly significant). We can see now negative signs for coefficient of participation of old in all models. It seems strange, because people should exist somewhere, at least in one of the states (employed, unemployed, inactive). These coefficients may capture the general tendency in decrease of youth population across countries. Also, it can be the case, that the model with inactivity rate requires another specification model. These questions need to be further researched.

The second model (Table 9) looks at the effect of general government expenditures on the level of youth unemployment. Though the coefficient does not show much of economic significance, it is statistically significant, so should be included into regression. For future studies, it would be better to obtain the information on unemployment benefits. It may help to get more precise results.

Chapter 6

CONCLUSIONS

This research seeks the answer to the question, whether higher participation rate of old depresses youth employment in transition countries. The question is approached with the help of fixed effect regressions and using the data for 27 transition countries taken from the Key Indicators of Labor Market (7th edition) and World Development Indicators.

Our research shows that participation rate of old negatively affects both youth employment and unemployment rates in transition countries. At the same time, it positively affects the inactivity rate of youth. When participation rate of old in the economy increases by 10 percentage point, unemployment rate of youth goes down by 1.4 percentage points, youth employment rate decreases by 1 percentage point and inactivity rate of youth goes up by almost 2 percentage points. Thus, young people leave labor force and become economically inactive due to higher participation rate of old people in the economy.

Though, the numbers are not so economically significant, the results should be taken into account by policymakers. There is no perceptible threat to youth employment caused by older workers, but there is a need to find the reasons of such labor market reaction.

There might be several possible reasons for such results. During recession times, young workers are more exposed to be fired and are “the last” to be hired. Long periods of job searching discourages them from looking for jobs, so young people may leave the job market. As an alternative, those people may find a job in informal sector of the economy. One more solution for youth in this case is to become

engaged in volunteer jobs, so that they may achieve necessary experience and skills for future employment. Such volunteer unregistered job is also accounted as inactivity. In addition, young people might migrate to the other countries and look for a job there. It is especially probable in transition countries, as living conditions there are often not very high.

One of the tasks for governments is to bring young people from inactivity to active participation in the economy. There is no evidence of sharp competitiveness between young and old workers, but instead there are concerns about the government policy against discouraging young people and against shadow economy.

We have also found several important variables, which showed to be significant in research, such as services value added, productivity of workers and general government expenditures. Average productivity of workers is mostly economically significant in the models and increases significantly unemployment and inactivity of youth. The explanation to this might be that average productivity mostly captures the productivity of middle-aged and older people, so if this productivity is higher it is harder for youth to compete with them and to find jobs. Services value added influences negatively employment and unemployment rate of youth, but increases inactivity rate, but coefficient not always is significant. So this variable should be addressed in future research. General government expenditures increase youth unemployment, as it was expected.

We address the question of methodological approach in calculation of unemployment and participation rates. We argue, that it makes more sense to look at these two values as a part of something common, so we use total population as a denominator. Although such approach gives more robust results, it does not make much sense when we extrapolate it to regressions with youth employment

and inactivity rates as dependent variables. The reason may lie in the need of other model specification for those variables. This approach needs more attention of researchers.

To conclude, we may state that old and young workers are not direct substitutes on the labor market and higher retirement age will not threaten much the labor market of youth. Nevertheless, youth employment issues deserve an attention of policymakers. For future research, it is important to test new approach in calculation of labor market indicators, control for productivity of young and old workers separately and also to look at the influence of participation of old people on the youth employment in different sectors of the economy.

WORKS CITED

- Audas, Rick, Éva Berde, and Peter Dolton. 2005. Youth Unemployment and Labour Market Transitions in Hungary. *Education Economics*, Vol. 13, No. 1: 1-25
- Baily, Martin. 1986. Increasing the social security retirement age: Older workers in Physically demanding occupations. *Social security Bulletin* Vol. 49, No.10: 5-23
- Chapman, Steven H., Mitchell P. LaPlante, and Gail Wilensky, 1986. Life expectancy and age status of aged. *Social security Bulletin*, Vol. 49, No.10: 24-48
- Commander, Simon, Alex Heitmueller. 2007. Does unemployment insurance help explain unemployment in transition countries? IZA Working Paper.
- Disney, Richard. 1996. *Can we afford to grow older? A perspective on the economics of aging*. MIT Press, Cambridge, Mass.
- Dixon, Sylvia. 2003. Implications of population ageing for the labour market. *Labour Market trends*, Vol.111, No.2: 67-76
- Groot, W., and Verberne, M. 1997. Ageing, Job Mobility, and Compensation. *Oxford Economics Papers*, Vol. 49(3): 380-403.
- Gruber, Jonathan, Kevin Milligan, and David A. Wise. 2010. *Social security programs and retirement around the world: the relationship to youth employment*. Chicago: University of Chicago Press.
- Jousten, Alain, M. Lefebvre, S. Perelman, and P. Pestieau. 2008. The Effects of Early Retirement on Youth Unemployment: The Case of Belgium. IMF Working Paper.
- Lefebvre, Mathieu. 2012. Unemployment and early retirement in a model with age-specific heterogeneity. *Labour*. Vol. 26, Issue 2: 137–155
- Myers, Robert. 1954. Factors in Interpreting Mortality after Retirement. *Journal of American Association of University Teachers of Insurance*. No. 6: 3-7
- Nickell, S., L. Nunziata, and W. Ochel. 2005. Unemployment in the OECD since the 1960s. What Do We Know? *Economic Journal*, No. 115: 1-27.

- Smeeding, T., and Quinn J. 1997. Cross-National Patterns of Labor Force Withdrawal. Boston College Department of Economics, Working Paper No. 371
- Waldron, Hilary. 1997. Do Early Retirees Die Early? Evidence from Three Independent Data Sets. ORES Working Paper Series No.97
- Wendy Loretto, Colin Duncan, and Phil J. White. 2000. *Ageism and employment: controversies, ambiguities and younger people's perceptions*. Cambridge University Press.
- World Development Indicators. Age dependency ratio (% of working-age population). [Web-resource:
<http://search.worldbank.org/data?qterm=elderly%20dependency%20ratio&language=EN>]

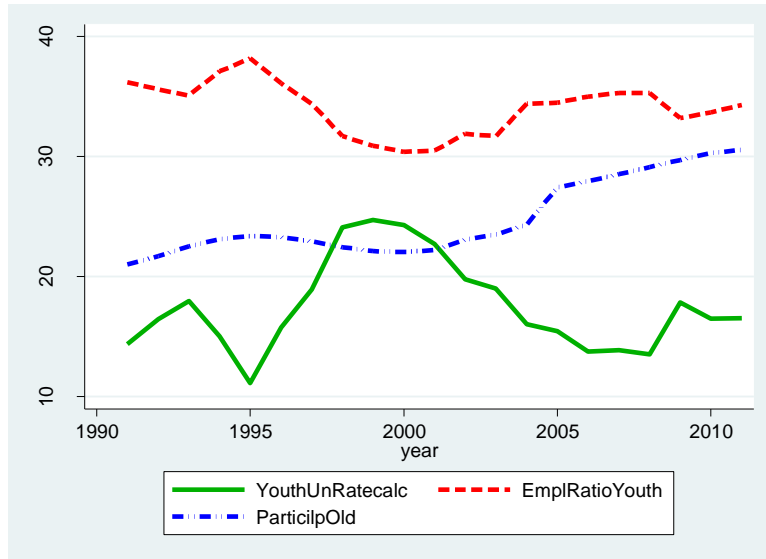


Figure 1. Trends of youth unemployment rate, employment rate and participation rate of old in Ukraine

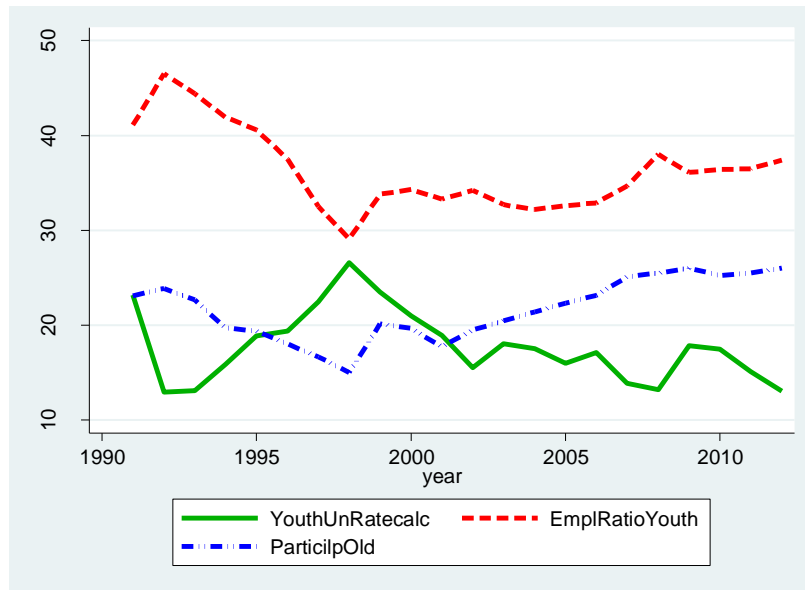


Figure 2. Trends of youth unemployment rate, employment rate and participation rate of old in Poland

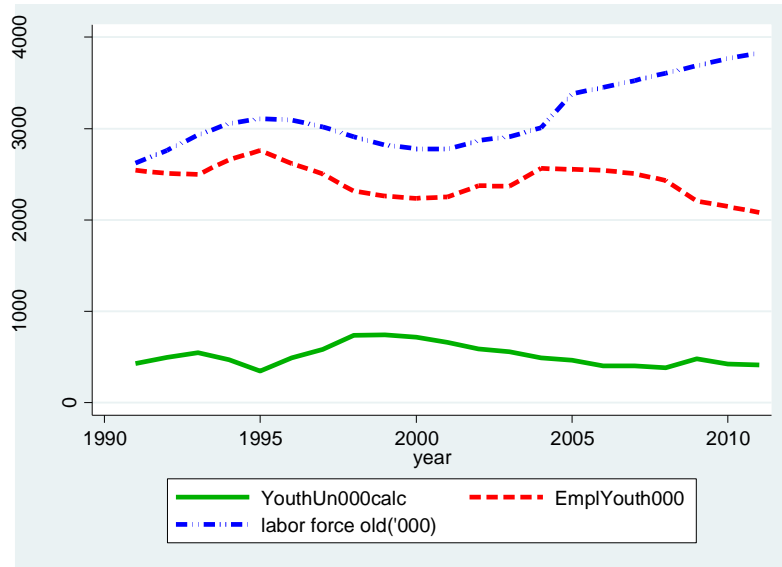


Figure 3. Trends of employed and unemployed youth and labor force of old (thousands of people) in Ukraine

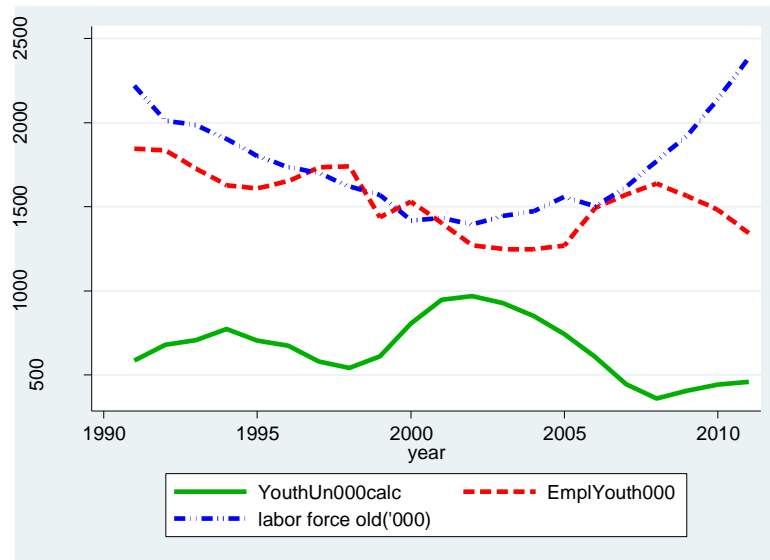


Figure 4. Trends of employed and unemployed youth and labor force of old (thousands of people) in Poland

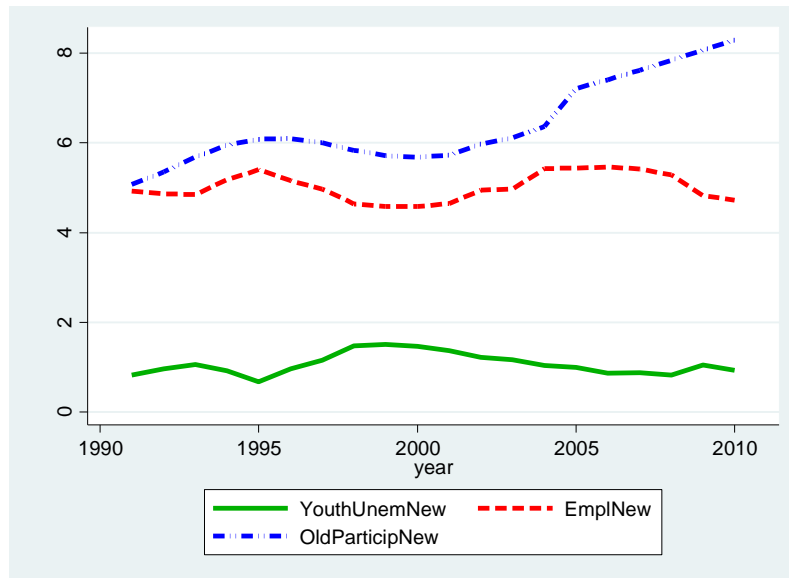


Figure 5. Trends of youth unemployment rate and participation rate of old [calculated as a share of total population] in Ukraine

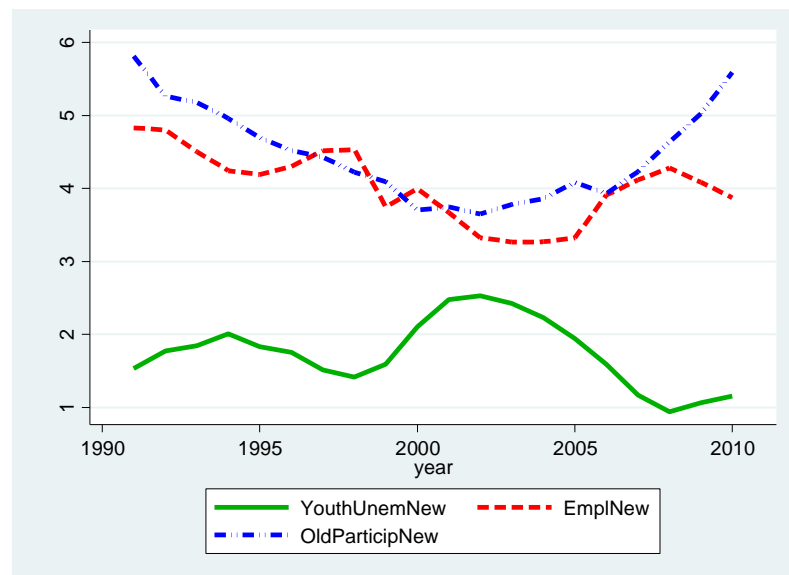


Figure 6. Trends of youth unemployment rate and participation rate of old [calculated as a share of total population] in Poland

Table 1. Data Description

Variable	Description	Source
<i>YouthUnemRate</i>	the level of the youth unemployment – ratio of youth unemployed to total youth labor force (15-24 years) (%);	Key Indicators of Labor Market, 7th edition
<i>EmplRatioYouth</i>	Employment rate of youth – employed to total youth labor force (%);	World Development Indicators
<i>InactRateYoung</i>	average inactivity rate of youth in the country (%);	Key Indicators of Labor Market, 7th edition
<i>ParticipOld</i>	participation rate of old people (aged 55-64) in the country – ratio of labor force of old to total population of old (%);	Key Indicators of Labor Market, 7th edition
<i>lnGDP</i>	natural logarithm of Gross domestic product per capita, current prices(U.S. dollars)	World Development Indicators
<i>GDPgrowth</i>	annual growth of GDP (%);	World Development Indicators
<i>ShareManuf</i>	value added of manufacturing in GDP (%);	World Development Indicators
<i>ShareServ</i>	value added of services sector in GDP (%);	World Development Indicators
<i>lnProd</i>	logarithm of GDP per person engaged;	Key Indicators of Labor Market, 7th edition
<i>SoProt</i>	ratio of social benefits to GDP (%);	World Development Indicators
<i>GovExp</i>	general government total expenditure (% of GDP)	Key Indicators of Labor Market, 7th edition

Table 2. List of countries

List of countries	# of observations	Years
Albania	21	1991-2011
Armenia	21	1991-2011
Azerbaijan	21	1991-2011
Belarus	21	1991-2011
Bulgaria	21	1991-2011
Cambodia	21	1991-2011
Croatia	21	1991-2011
Czech Republic	21	1991-2011
Estonia	21	1991-2011
Georgia	21	1991-2011
Hungary	21	1991-2011
Latvia	21	1991-2011
Lithuania	21	1991-2011
Kazakhstan	21	1991-2011
Kyrgyz Republic	21	1991-2011
Republic of Macedonia	21	1991-2011
Republic of Moldova	21	1991-2011
Poland	21	1991-2011
Romania	21	1991-2011
Russia	21	1991-2011
Slovak Republic	21	1991-2011
Slovenia	21	1991-2011
Tajikistan	21	1991-2011
Turkmenistan	21	1991-2011
Ukraine	21	1991-2011
Uzbekistan	21	1991-2011
Viet Nam	21	1991-2011

Notes: all transition countries according to 2000 IMF listing

Table 3. Test for equality of means of initial and calculated datasets

Paired t test					
Variable	Obs	Mean	Std. Dev.	[95% Conf. Interval]	
YouthUnemRate	307	23.15512	.12.23685	21.78086	24.52938
YouthUnRatecalc	307	22.62443	11.91613	21.28618	23.96267
diff	307	.5306925	4.850613	-.0140568	1.075442

Ha: mean(diff) != 0

Pr(T > t) = 0.0562

Note: Reject the alternative hypothesis that difference of means in not equal to zero, so means of two samples statistically are not different.

Table 4. Descriptive statistics

Variable	Number of observations	Mean	Std. Dev.
YouthUnRatecalc	474	22.36594	12.74996
YouthUnemNew	474	3.435707	2.102942
EmplRatioYouth	474	34.58207	12.30712
InactRateYoung	474	56.10163	10.71064
ParticipOld	474	28.80233	12.42744
OldParticipNew	474	10.92521	4.430503
lnGDP	474	7.596081	1.231738
GDPgrowth	474	3.084837	8.033074
ShareManuf	474	19.6187	7.1983
ShareServ	474	51.27587	12.83607
lnProd	474	9.370365	.6777848
GovExp	474	17.92269	8.116242

Table 5. Comparison of means of Youth Unemployment Rate depending on the Participation Rate of Old

Groups by participation of old	Obs	Mean	Std. Dev.	test for difference in means	
ParticipOld < 20.0428	152	26.79634	13.85733	t=3.6	
20.0428 < ParticipOld < 27.98851	144	21.86406	9.07565	Ha:diff<0 Pr (T<t)=0.999	
27.98851 < ParticipOld < 33.93906	148	20.00227	6.822581	t=1.98 Ha:diff<0 Pr (T<t)=0.97	
ParticipOld > 33.93906	142	18.07268	15.99622		t=1.34 Ha:diff<0 Pr (T<t)=0.91

Table 6. Estimation results for models with Youth Unemployment Rate as a dependent variable

VARIABLES	(1)	(2)
	YouthUnRatecalc	
ParticipOld	-0.178** (0.0689)	-0.141* (0.0721)
lnGDP	-0.292 (0.924)	-3.456** (1.404)
GDPgrowth	-0.130*** (0.0379)	-0.147*** (0.0386)
ShareManuf	-0.0412 (0.0550)	-0.0581 (0.0610)
ShareServ		-0.00903 (0.0478)
lnProd		6.164*** (2.104)
Constant	31.57*** (7.427)	-3.068 (15.22)
Observations	474	474
R-squared	0.155	0.172
Number of country	27	27

Notes:

1. Standard errors in parentheses (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$)
2. Model (1) uses only controls used by Gruber et al. (2010)
3. Model (2) is extended by new important control variables
4. Both regressions include year effects

Table 7. Estimation results for models with Youth Employment Rate as a dependent variable

VARIABLES	(1)	(2)
	EmplRatioYouth	
ParticipOld	-0.0176 (0.0523)	-0.100* (0.0537)
lnGDP	-3.277*** (0.702)	-0.177 (1.046)
GDPgrowth	0.0338 (0.0288)	0.0339 (0.0288)
ShareManuf	0.0387 (0.0418)	-0.0104 (0.0455)
ShareServ		-0.108*** (0.0356)
lnProd		-6.887*** (1.568)
Constant	61.38*** (5.641)	110.8*** (11.34)
Observations	474	474
R-squared	0.398	0.433
Number of country	27	27

Notes:

1. Standard errors in parentheses (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$)
2. Model (1) uses only controls used by Gruber et al. (2010)
3. Model (2) is extended by new important control variables
4. Both regressions include year effects

Table 8. Estimation results for models with Youth Inactivity Rate as a dependent variable

VARIABLES	(1)	(2)
	InactRateYoung	
ParticipOld	0.103*	0.199***
	(0.0542)	(0.0552)
lnGDP	4.180***	0.630
	(0.727)	(1.075)
GDPgrowth	0.0213	0.0217
	(0.0298)	(0.0296)
ShareManuf	-0.0803*	-0.0217
	(0.0433)	(0.0468)
ShareServ		0.128***
		(0.0366)
lnProd		7.918***
		(1.612)
Constant	19.89***	-37.29***
	(5.846)	(11.66)
Observations	474	474
R-squared	0.548	0.581
Number of country	27	27

Notes:

1. Standard errors in parentheses (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$)
2. Model (1) uses only controls used by Gruber et al. (2010)
3. Model (2) is extended by new important control variables
4. Both regressions include year effects

Table 9. Estimation results for models rates calculated as a share of total population

VARIABLES	(1) YouthUnemNew	(2) YouthUnemNew	(3) EmplNew	(4) InactNew
OldParticipNew	-0.151*** (0.0213)	-0.143*** (0.0216)	-0.194*** (0.0627)	-0.106** (0.0474)
lnGDP	-0.213** (0.0997)	-0.213** (0.0995)	-0.615** (0.294)	-0.636*** (0.222)
GDPgrowth	-0.00958*** (0.00268)	-0.00916*** (0.00268)	0.0132* (0.00790)	0.0183*** (0.00597)
ShareManuf	-0.000299 (0.00428)	-0.000507 (0.00427)	0.0296** (0.0126)	0.000971 (0.00954)
ShareServ	-0.00173 (0.00328)	-0.00359 (0.00345)	-0.00124 (0.00967)	0.0423*** (0.00732)
lnProd	0.330** (0.149)	0.319** (0.149)	-0.261 (0.439)	3.195*** (0.332)
GovExp		0.00830* (0.00492)		
Constant	1.017 (1.031)	1.019 (1.029)	13.31*** (3.040)	-18.07*** (2.299)
Observations	460	460	460	460
R-squared	0.317	0.321	0.132	0.689
Number of country	27	27	27	27

Notes:

1. Standard errors in parentheses (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$)
2. Model (2) contains Government Expenditures as a proxy for social protection as one more control variable
3. All regressions include year effects

