

Declining Supply and Rising Demand for Labor – the Consequences in RS

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ABSTRACT

The aim of this research is to provide projections of the labor market in the Republic of Serbska, as a part of Bosnia and Herzegovina (RS) in the period 2017 - 2021, based on an analytical approach and precise indicators. The basic methodology in creating projections on the labor market in the Republic of Serbska (RS) is statistical extrapolation of trends in demand and supply of labor at the level of the RS. Data for this study were standard reports of statistical institutions (Statistical Yearbook, Labor Force Survey, etc.), as well as special reports generated for the specific needs of this research. The results show that in the next 6 years, the number of working-age population will shrink by a further 59,000 people with 867,000 to 808,000. Out of the total working-age population, ie the active population. labor force (the sum of employed and unemployed) is will not change greatly, while the level of the inactive population, ie. working-age population not seeking employment will drop significantly. On the other hand, our projections show that, even in terms of the decline in the working-age population, the demand for labor will continue to grow. Also, according to projections, the number of unemployed ie. the excess of supply over demand of the labor force will decrease in the period 2017-2021. All this will not be without impact on wage levels. Total average gross wages will rise by 2021, but wage growth in the manufacturing industry will be much more pronounced. Therefore, it is essential to increase productivity and added value of companies because it is the only way to compensate for this increase in wages.

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1. INTRODUCTION

The aim of this research is to provide specific assessments related to developments on the labor market in the Republic of Serbska, as a part of Bosnia and Herzegovina (RS) in the period 2017 - 2021, based on an analytical approach and precise indicators. After analysis of available studies, analysis, research and other work (desk research) in the field of labor market trends in the Republic of Serbska (RS) and analysis of available relevant statistical data on demographic structure, employment and labor force characteristics, the informal economy, education policies and outcomes markets work and economic growth and the dynamics of demand for labor, this analysis is answering the question what are the current trends in the labor market of the Republic of Serbska. The main part of this research are projections of the supply and demand of labor of the Republic of Serbska in the period 2017-2021. with

respect to the identified trends in age and educational structure of the workforce and on the structure and number of employed / unemployed in the period 2010 - 2015 and current labor market trends.

This paper consists of four parts. In addition to the first part – introduction, the second part is a description of methodology and data. The third part is about the macroeconomic situation in which the Republic of Serbia is now, in terms of economic growth, employment, inflation, etc. The fourth part, the most important part of this research are projections for the period 2017-2021, in the categories of the working age population, active and non-active population, labor demand and labor supply. At the end there are some concluding remarks.

2. THE METHODOLOGY AND DATA

The basic methodology in creating projections on the labor market in the Republic of Serbia is statistical extrapolation of trends in demand and supply of labor at the level of the RS. The extrapolation of trend consists of forecasting of future trends based on past situations or trends. The subject of analysis is a collection of chronologically determined values of selected variables in the field of characteristic population, employment and unemployment of the labor force.

A linear trend model that we used here explains the linear movement (positive or negative) of the value of observed time series. In addition to the displaying of the linear movement of the time series based on the estimated model, we performed a prediction of values in some future period.

In theory, the possibility of using a linear trend model exists whenever there is a time series, but in practice, the application of the linear trend is the most suitable time series with a one-year periods. Also, if the trend is calculated on the basis of a small number of data, there should be a reserve at the same interpretation.

A linear trend model is in the following form:

$$Y_t = \hat{\beta}_0 + \hat{\beta}_1 X_1 + e_t$$

where:

Y - the value of the time series; dependent variable,

X - time; independent variable,

e - a random component, which suggests that of a linear trend model there are positive and / or negative deviations from the original values of a linear trend model.

In assessing the trend we used the coefficient of determination (R^2). The coefficient of determination is the ratio of the sum of the squared deviations of a linear trend model and the total sum of the squared deviations. Trend model is more representative of what this indicator is closer to 1 or 100%.

Although very simple, linear extrapolation forecasting method creates results that are often more accurate than the results of some significantly more complex methods. On the other hand, it is clear that linear extrapolation can not be used successfully for forecasting future changes, which are not a continuation of previous changes. Regardless of the mentioned methods disadvantages or information needed for its implementation, linear extrapolation is simple, intuitive, understandable and easily applicable method, which is especially valuable when forecasting carried out at the level of the local labor market.

Data for this study were standard reports of statistical institutions (Statistical Yearbook, Labor Force Survey, etc.), as well as special reports generated for the specific needs of this research.

3. THE ECONOMIC CONTEXT

In this part of the research we will make macroeconomic snapshot of the Republic of Serbia economy. First of all, it is clear that the RS is in a very difficult economic situation. Suffice it to say that in 2015, RS had €3,200 per capita, and that Greece, which is in the focus of Europe and the world due to the economic crisis, had €16,000 per capita. In the case of RS, in the last five years we had a recession and very low growth rates (from -1.1% in 2012 and 1 to 2% in 2010, 2011, 2013 and 2014 and 2.6% in 2015.). Overall socio-economic situation in such circumstances worsened.

In the period before the global financial and economic crisis, real growth rates in the RS amounted to over 5%. However, the global economic recession led to a decline in economic activity. After the fall of real GDP in 2009 for 3% and two years of crisis, with very modest rates of growth, the economy went to recession again. In 2012, there was a decline in GDP of 1.1%, which represents a worsening of

economic situation compared to a modest 0.7% in 2010 and 1% in 2011. In 2013, 2014 and 2015 we also had a modest growth. This is far below the pre-crisis growth rate of over 5%, necessary to achieve the standard of living not only of developed countries but also of most of transition countries. However, preliminary data for 2016 show some positive trends in this area.

Table 1. Summary of key macroeconomic indicators RS, 2008 and 2015.

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Nominal GDP (in millions KM) | 8.490,60 | 8.236,30 | 8.318,20 | 8.682,40 | 8.584,97 | 8.760,80 | 8.847,12 | 9.150,18 |
| GDP, nominal. growth rate in% (g / g) | 15,50 | -3,00 | 1,00 | 4,40 | -1,10 | 2,00 | 0,70 | n/a |
| GDP, real growth rate in% (g / g) | 6,30 | -3,00 | 0,80 | 0,80 | -1,10 | 1,90 | 0,40 | 2,60 |
| GDP per capita (in KM) | 5.907,00 | 5.739,00 | 5.805,00 | 6.073,00 | 6.006,00 | 6.146,00 | 6.225,00 | 6.463,00 |
| The number of unemployed (registered) | 135.102 | 139.536 | 145.343 | 150.344 | 153.225 | 151.29 | 145.919 | 139.465 |
| Number of employees (registered) | 259.205 | 258.634 | 244.453 | 238.956 | 238.178 | 238.64 | 241.544 | 245.975 |
| Formal unemployment rate in% | 34,20 | 35,50 | 37,30 | 38,70 | 39,30 | 38,70 | 37,70 | 36,20 |
| Unemployment rate (LFS - ILO), in% | 20,50 | 21,40 | 23,60 | 24,50 | 25,60 | 27,00 | 25,70 | 25,20 |
| Average wages (in KM) | 755,00 | 788,00 | 784,00 | 809,00 | 818,00 | 808,00 | 825,00 | 831,00 |
| Average pensions (in KM) | 309,00 | 335,00 | 321,00 | 321,00 | 312,00 | 318,00 | 333,00 | 343,00 |
| Consumer price index (avg.% Changes) | 7,20 | -0,40 | 2,50 | 3,90 | 2,10 | 0,00 | -1,20 | -1,40 |

Source: National Institute of the Republic of Serbia statistics

Overall socio-economic situation is worsened in these circumstances especially when comparing year 2008 as the last "pre-crisis" year with 2015. In this crisis period, there were significant increases in the number of unemployed in BiH. The real unemployment rate, in the RS increased from 20.5% to 25.2% in the same period.

When we summarize all the data, it is obvious that the world economic crisis has led to a recession and stagnation of the economy in the RS, which is still continuing. Overall socio-economic situation in these circumstances significantly deteriorated.

4. THE PROJECTIONS OF THE RS LABOR MARKET

4.1. The Projection of the Working Age Population

According to our projections, in the next 6 years, the number of working-age population will decrease by 59,000 people, from 867,000 to 808,000. In relative terms, this means that the working-age population will be reduced by 6.8%.

In the last ten years we have pronounced downward trend in the working-age population. Since it is realistic to assume that in this area there will be no significant changes until 2021, this trend will continue.

This trend will have a different impact on active population (labor force) and inactive population, as components of the working-age population. In fact, our projections indicate that the labor force, should remain at about the same level as in 2016, and that this decrease is mainly related to the reduction of the inactive population.

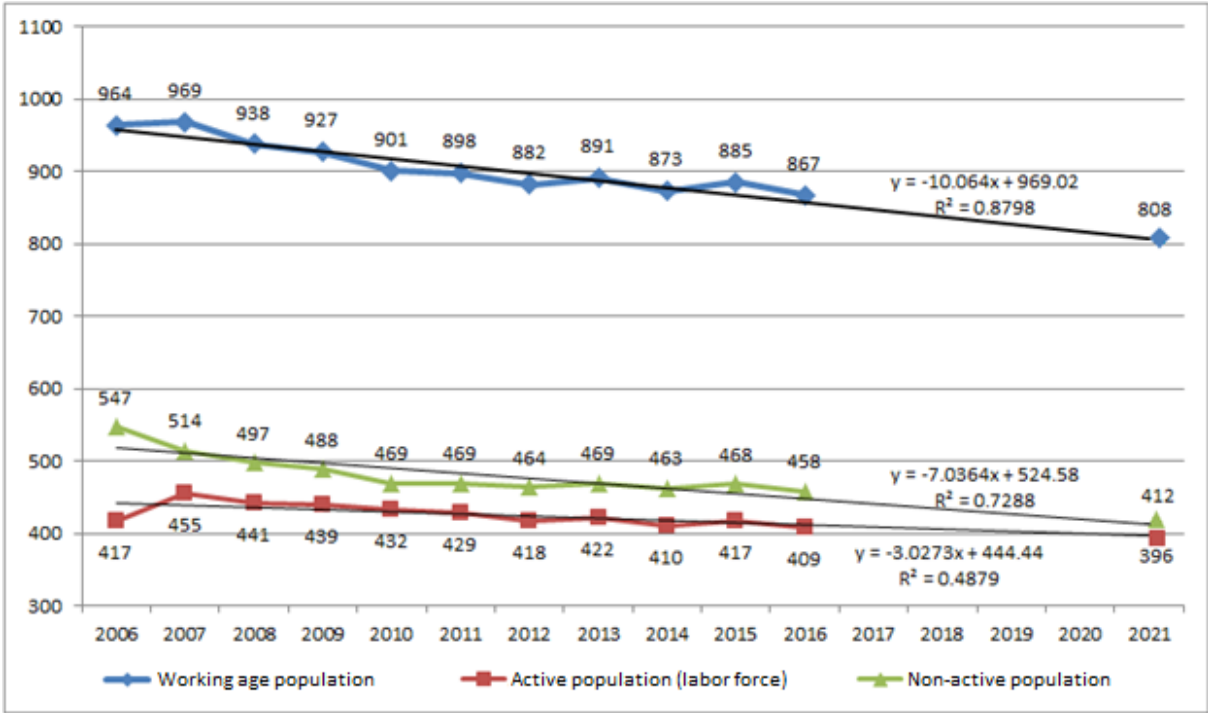


Figure 1. Projection of the working-age population by 2021 in RS, National Institute of Statistics and authors' calculations

The decline in the number of working-age population is slightly affecting the workforce that is decreasing for some 3.2% in the period 2017-2021, compared to 2016, but the reduction of the inactive

population is as high as 10% in the same period. The retention of the workforce at around a similar level, a significant reduction of the inactive population means that there will be increasing fluctuations from inactive to active contingent. This increases the cost of services in the field of training of newly arrived workers who need to meet the demand caused by the increase of production, but also the demand caused by the outflow of skilled workers abroad.

4.2. The Projection of Labor Demand

In terms of the decline of the working-age population, the labor demand will continue to grow. The number of jobs will increase from 257,000 in 2016, to about 268,000 in 2021, a difference of about 11,000 jobs, or an average of 2,200 jobs per year in the period 2017 - 2021.

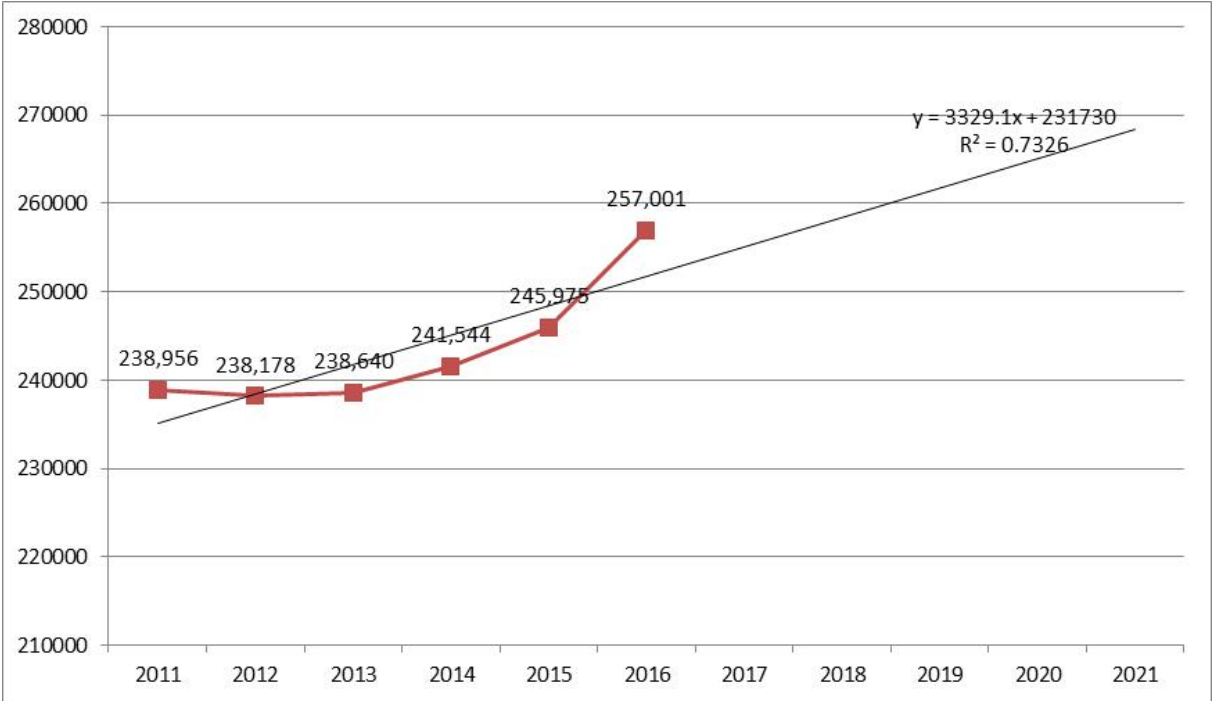


Figure 2. The projection of the number of employees in RS until 2021, National Institute of Statistics and authors' calculations

The economic growth projections are also in favour of this development. The International Monetary Fund predicts the continuation of economic growth in B&H. 10. On the Figure 3. we see the projection of growth made by IMF, and during the entire period they are predicting the growth rate of 3-4%.

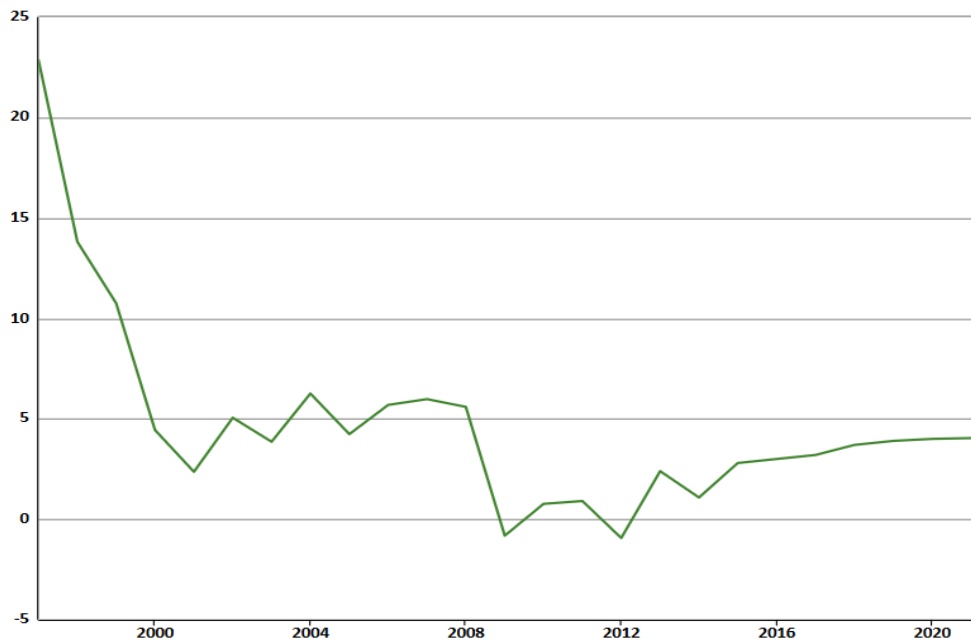


Figure 3. The projection of economic growth in BiH (in percentage), IMF, <https://knoema.com/IMFWEO2016Apr/imf-world-economic-outlook-weo-april-2016?country=1000200-bosnia-and-herzegovina>

It is interesting to analyze where the projected employment growth will take place, in what sectors. According to our projections of employment by sector, the largest number of new jobs will be created in the manufacturing industry, while the biggest loser will be the trade sector.

Table 2. Projection of the number of employees by sector for the period 2017-2021;

| | 2017 | 2018 | 2019 | 2020 | 2021 |
|------------------------------------|--------|--------|--------|--------|--------|
| Agriculture, forestry and fishing | 8,428 | 8,514 | 8,601 | 8,687 | 8,773 |
| Mining and quarrying | 5,417 | 5,513 | 5,610 | 5,706 | 5,802 |
| Manufacturing industry | 51,370 | 52,364 | 53,357 | 54,351 | 55,345 |
| energy | 8,210 | 8,431 | 8,652 | 8,874 | 9,095 |
| Utility services | 5,000 | 5,084 | 5,169 | 5,253 | 5,337 |
| Construction | 9,960 | 9,583 | 9,207 | 8,830 | 8,453 |
| Trade | 39,086 | 37,724 | 36,362 | 34,999 | 33,637 |
| Transportation and storing | 11,655 | 11,751 | 11,846 | 11,942 | 12,037 |
| Tourism and Hospitality | 11,210 | 11,147 | 11,085 | 11,022 | 10,960 |
| Information and communication | 5,193 | 5,217 | 5,241 | 5,266 | 5,290 |
| Financial and insurance activities | 5,831 | 5,902 | 5,972 | 6,042 | 6,113 |

| | | | | | |
|---|--------|--------|--------|--------|--------|
| Professional, scientific and technical activities | 7,117 | 7,154 | 7,191 | 7,228 | 7,265 |
| Administrative and support service activities | 2,920 | 2,987 | 3,054 | 3,121 | 3,188 |
| Public administration and defense; compulsory social security | 25,101 | 25,514 | 25,926 | 26,339 | 26,752 |
| Education | 23,063 | 23,446 | 23,830 | 24,213 | 24,596 |
| Human health and social work | 17,970 | 18,345 | 18,721 | 19,096 | 19,472 |
| Arts, entertainment and recreation | 3,722 | 3,939 | 4,155 | 4,372 | 4,589 |
| Other service activities | 5,931 | 6,345 | 6,758 | 7,172 | 7,586 |

Source: National Institute of Statistics and authors' calculations

What we should keep in mind are the possible changes in terms of employment in the public sector. Because of the problems of the public sector in the RS, it is possible that the upward trend in employment so far recorded in this sector will not continue, so in that case, it may be that we have a smaller number of new jobs in the period in which the projection applies. However, what is evident is the growth of employment in the real sector, particularly in export-oriented manufacturing industry.

4.3. The Projection of Labor Supply

According to the current trend recorded to 2016, the number of unemployed ie. the excess of supply over demand of the labor force will decrease also in the period 2017-2021. Projection expects it to fall from about 128,000 in 2016, to 104,000 workers in 2021, which is a total of 24,000 workers less. Of these 24,000, about 11,000 will be employed in the domestic market (projected employment growth), while the remaining 13,000 is likely to find a job abroad.

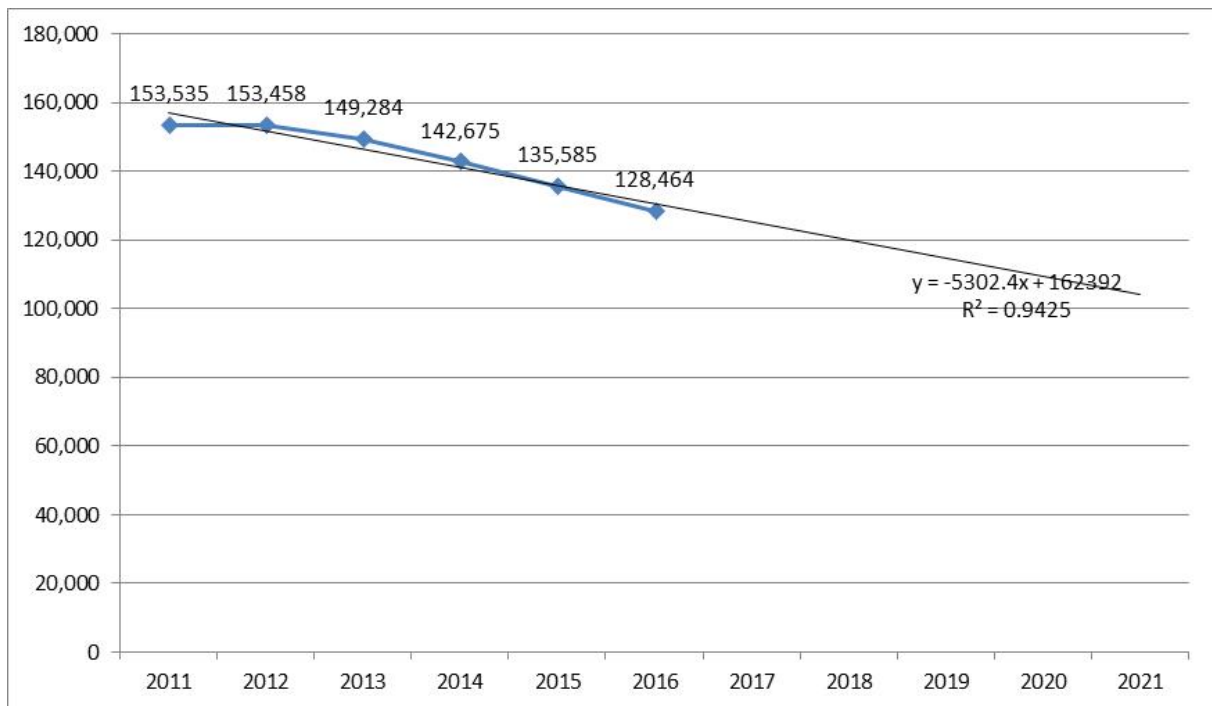


Figure 4. Projected number of unemployed in the RS until 2021, National Institute of Statistics and authors' calculations

Here again it should be noted the difference between formal and real unemployment. Specifically, a portion of the 128,464 workers are people who work in the grey economy or dealing with agriculture. However, based on the methodology of the International Labor Organization, unemployment is well below the totals 101,000. This number is obtained by estimation based on a representative sample and does not include those employed in the grey economy and employed in agriculture.

We did the projection of the number of formally employed people because this number is pure exogenous variable, where there is full coverage. What would be concluded that the projected number of formally unemployed from 104,000 in 2021, mean that the real unemployment rate in 2021 will also be lower and will probably amount to around 80,000 unemployed workers really.

4.4. The Projection of Wages

All this will not be without an impact on wage levels. Total average gross wages will grow by 2021 to about 100 KM (€50). This is not particularly high wage growth, especially if we take into account the changes taking place in our labor market.

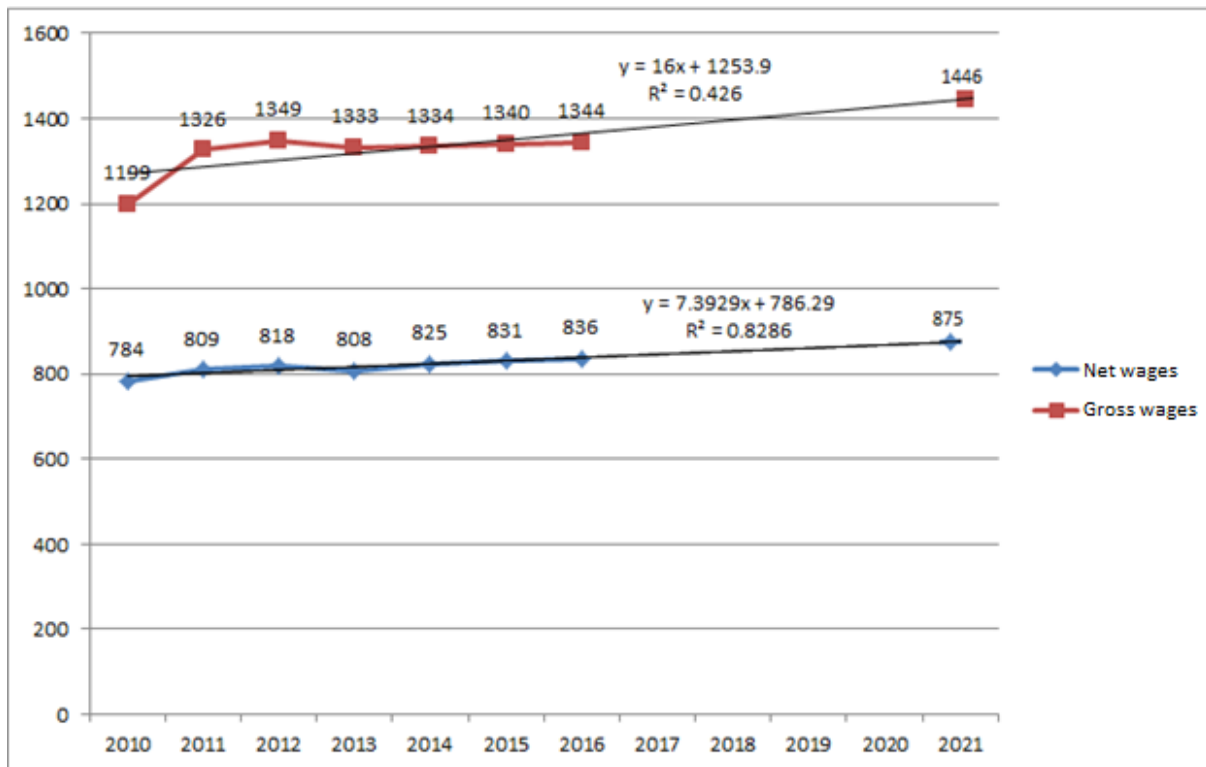


Figure 5. Projection of gross and net salaries in RS, National Institute of Statistics and authors' calculations

However, we must not forget that in RS the state is the largest employer, and salaries in the public sector, although they are much higher than in the private sector, stagnate or decline. Therefore, it is much more informative to look at the projection of salaries only for the manufacturing industry.

When we look at the Figure 6, wage growth in manufacturing, we can see that this growth is much more pronounced. Thus, the average gross wage in the manufacturing industry will, in the period 2017-2021st increase by about 300 KM. What this may mean for the manufacturing industry?

Simply put, if the manufacturing industry does not create productivity growth, this wage increase will significantly reduce their competitiveness, especially in the international market. This applies particularly to labor-intensive sectors, such as leather and footwear, textiles, and all companies performing so called lohn operations. A key competitive advantage of such companies is cheap labor, and when it is more expensive, this advantage is lost. Therefore, it is essential to increase productivity and added value of these sectors, and other companies because it is the only way to compensate for this increase in wages.

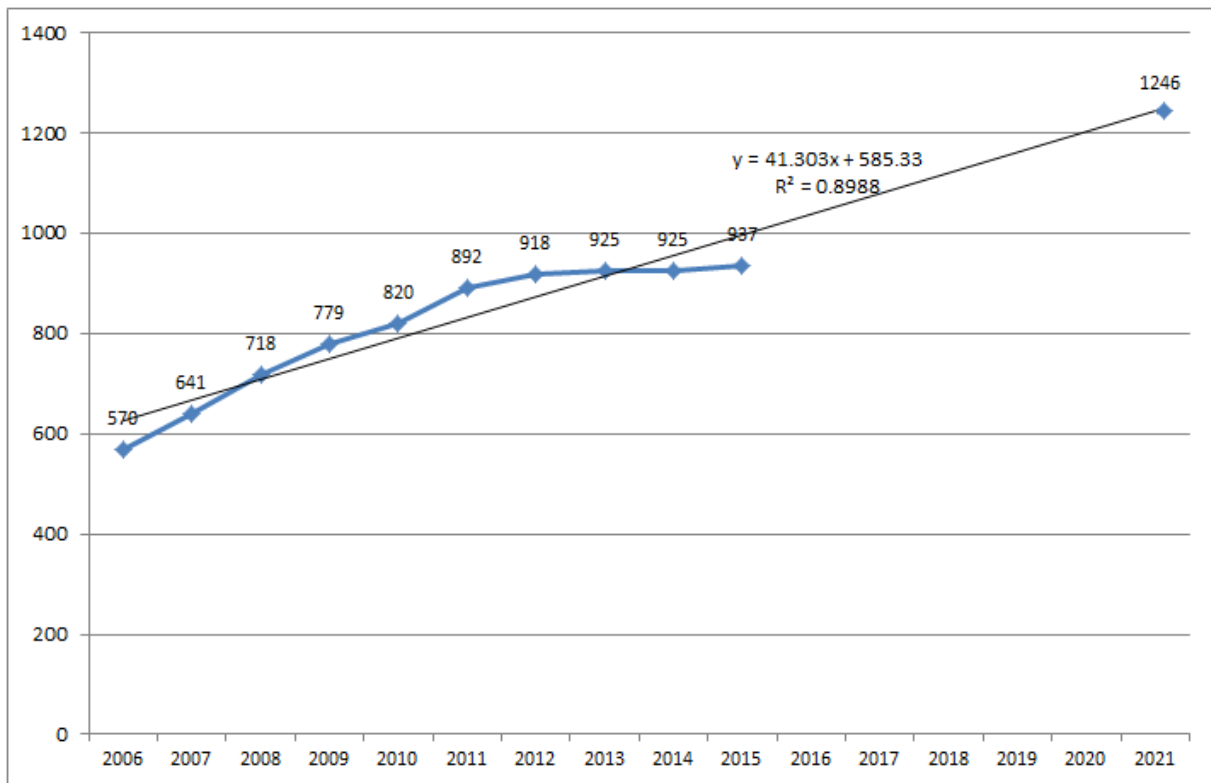


Figure 6. Projection of the average gross wage in the manufacturing industry, National Institute of Statistics and authors' calculations

The inevitability of wage growth is also confirmed by regression statistical analysis. As part of this research we correlated decline in the working age population and the growth of gross wages in the manufacturing industry by using linear regression.

Linear regression was used to determine the influence of the working-age population (independent variable), on the amount of average gross wages in manufacturing (the dependent variable). A negative correlation with a coefficient of determination (R²) of high as 94%, which means that this is strong correlation. Simply put, there is a strong causal relationship of the decline in the working-age population and an increase in the average gross wage in the manufacturing industry (Figure 7).

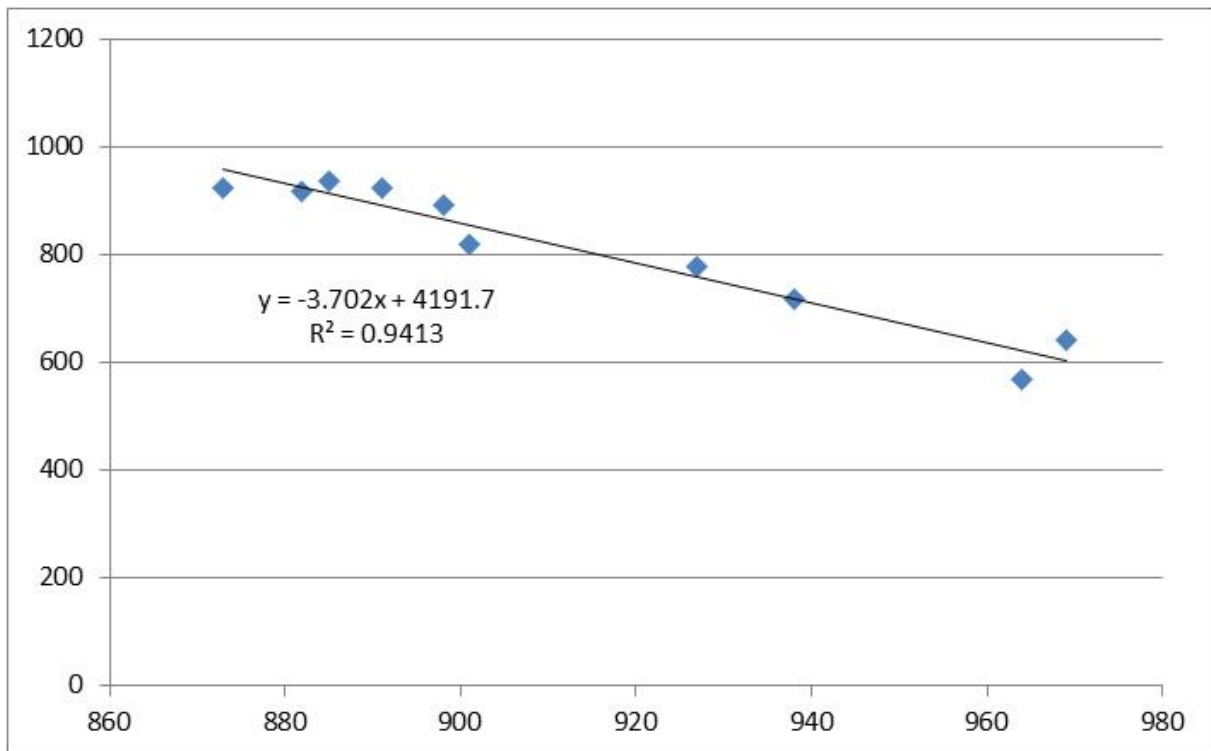


Figure 7. This linear regression of the workforce (independent variable) and the amount of the average gross plate in manufacturing (the dependent variable), National Institute of Statistics and authors' calculations

The regression statistical analysis shows that wage growth will inevitably happen and it's important to start on time with activities that can help the economy to adapt to these trends.

5. CONCLUSION

When we examine the overall situation, it is clear that the RS is in a very difficult economic situation. However, a much larger problem are the demographic changes occurring in the RS in the last ten years. They are an expression of the long-term tendency that is difficult to stop, and even harder to reverse. If we look at the working age population in the last ten years, a pronounced downward trend can be seen, from about 964,000 in 2006 to 867,000 in 2016, a decrease of 97,000 people or 10.1%. According to our projections, in the next 6 years, the number of working-age population will shrink by a further 59,000 people with 867,000 to 808,000.

Out of the total working-age population, ie the active population. labor force (the sum of employed and unemployed) is will not change greatly, while the level of the inactive population, ie. working-age population not seeking employment drop significantly. According to our projections, the workforce should be, in the period 2017.-2021., Slightly decrease compared to 2016 (some 3.2%), and that the

reduction of the inactive population is as high as 10%. The migration outflow of the population is another important reason for the depopulation of the area of the RS. Due to the migration outflow of the Republic of Serbian lost a significant number of young, working-age populations. What is particularly worrying is that the number of those who migrate from BiH from year to year.

On the other hand, it should be noted that employment in 2016 significantly increased and it is a result of strong growth in the manufacturing industry, especially the export-oriented. Our projections show that, even in terms of the decline in the working-age population, the demand for labor will continue to grow. Also, the International Monetary Fund predicts the continuation of economic growth in B&H, where the entire period predict growth rates of 3-4%.

Unemployment is falling in the RS in the last five years. The rate of formal unemployment in 2012 was 39.3% and in 2016 33.3%, a difference of whole six percentage points. The real unemployment is also reduced, but to a lesser extent (e.g., from 27% in 2013, to 24.8% in 2016).

All this will not be without impact on wage levels. Total average gross wages will rise by 2021 to some, but wage growth in the manufacturing industry will be much more pronounced. Thus, the average gross wage in the manufacturing industry will, in the period 2017-2021st increase by about 300 KM. If manufacturing industry does not increase its productivity, this wage increase will significantly reduce their competitiveness. Therefore, it is essential to increase productivity and added value of companies because it is the only way to compensate for this increase in wages. In this way, these sectors could provide wage increases that are still quite low and achieve the conditions to keep the population in the country. For the types of production involved in European value chains, increasing productivity is the only way to reduce costs.

The problem that that has to be further investigated are large differences between different parts of the Republic of Serbska. Some areas have an unemployment rate over 70%, while the most developed parts have the lowest unemployment. In underdeveloped areas this leads to increased process of depopulation and aging, stagnation and even, deterioration in economic and overall development. In this way, large and strategically important areas can remain depopulated and their resources unutilized. At the same time, in developed centers the is excessive concentrations of the population, which has an adverse impact on economic, social, spatial and ecological sphere.

However, the largest problem is that large part of the unemployed or non-active do not have any qualifications, and cannot be employed without significant training or retraining. Because the qualifications of a large number of the unemployed are not suitable for expansion of manufacturing, training such people requires large expenses by the companies and the big question is how much companies are able to perform such additional training for a larger number of workers. Therefore, it is crucial to support the economy in the training and retraining of workers in order to make it easier to achieve knowledge and skills that are necessary to economy.

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