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Introduction

The Statistical Office of the Republic of Serbia, main producer and disseminator of statistics, publishes a large number of releases, indicators, bulletins, etc. A multitude of publications often gives rise to confusion with users who, on the other hand, use data to assess their performances and adapt them to other economic subjects and trends.

As many users, apart from specialists, are statistically and economically illiterate, they may be confused by the diversity of data, unable to understand and prioritize them correctly, which often results in reluctance towards information.

Knowing that the statistical system is very complex, generalized and designed to meet subsectors specific needs for information, failure to understand statistics in modern society is a frequent phenomenon. Informing users by releasing "dull" statistics is often insufficient because it renders only a partial picture of macro-economy. Actually, it has appeared that the conventional ways of data presentation (tables, releases, etc.) hampers quick understanding of the socio-economic reality and fails to convey the key message, especially when there is a large number of data.

Having in mind all of the above and keeping track of world trends in presenting statistics, as well as the interests of the community of experts, the redesigned "Trends" brings traditionally quarterly and semi-annual data, but through a new concept of presenting major economic signals by means of modern and advanced graphic solutions of presentation and dissemination.

The series are presented through nine major statistical areas – gross domestic product, industrial production, construction, external trade, domestic trade, prices, labour market, salaries and wages, tourism and Household Budget Survey. The eleventh segment presents a set of composite leading indicators which can predict, with high reliability, cyclical trends and be used for short-term forecasts.

Starting from this issue, a new segment will be added to the publication Trends – papers of young researchers. The first paper that we publish is the "Analysis of the Gender Pay Gap and Gap between the Employees in the public sector"[1] written by Aleksandar Grašić.

We intend to publish in each following issue one paper which would, by means of expert analysis and innovation approach, present current statistical themes to the large public and, possibly, initiate discussion and professional public's interest.

For this idea to come into realisation and wishing to encourage youth's research work, we invite experts dealing with macro-economy, mathematics and statistics to send their papers, which will be published (or some parts thereof) according to current trends.

Since 1999, the Statistical Office of the Republic of Serbia has no available data for AP Kosovo and Metohija, therefore they are not included in the data for the Republic of Serbia (total).

[1] Use of Blinder-Oaxaca decomposition

Analysis of gender pay gap, pay gap between employed in state-owned enterprises and employed in private enterprises

Author: Aleksandar Grašić

Regarding economic inequality of income, Serbia is, on a world scale, positioned in the middle of the scale.

Regression analysis confirmed the presence of gender pay gap and influence of gender on salaries and wages creation, in such a way that females earn less than males. According to the data from „Pilot survey on structures of salaries and wages, conducted in 2014“, the conclusion is that undajusted gender pay gap amounts to 8.7%, while, applying Blinder-Oaxaca decomposition, the adjusted gap amounted to 17.15%.

The causes come from several sides - the most important is the fact that there are no *inactive women* (those who are not in employment and do not look for work) in the labor market, usually with lower education, which leads to a blurred picture and suggests that women have better performance characteristics compared to men, as evidenced by double amount of adjusted in relation to unadjusted gap. In addition, unwritten obstacles are also being encountered, limited professional advancement of women because of the impossibility of harmonizing work with family obligations, that is, the effect of a "glass ceiling".

Although in state-owned enterprises, the amount of income is defined by pay grades (and it can be said it is predetermined), as opposed to private-owned companies where it is negotiated, the selection of staff for certain positions can be discriminatory.

At the level of state-owned enterprises, the unadjusted gender gap is 12.03%, indicating that women's salaries and wages were by 12.03% lower than salaries and wages paid to men. By performed correction, the gender gap in salaries in state-owned enterprises is reduced to 7.03%.

In private enterprises, the unadjusted gender gap is 9.19%, while the adjusted one is 16.45%.

During the examination of the gap in salaries and wages of employees according to the prevailing ownership of the business entities in which they operate, it was concluded that unadjusted gap amounted to 18.94%, while the adjustment resulted in a negligible amount of difference, 0.055%. This confirms that if the employees were at the same educational level, with the same years of service, equalized according to the type of contract and all other characteristics included in the independent variables, the amount of salaries and wages of employees in private and state-owned enterprises would be the same.

Gender (in) equality is an indicator of the achieved degree of democratization of a certain society, and therefore of overcoming the prejudices and stereotypes, as well as social and cultural values. Therefore, this paper seeks to model the gender pay gap phenomenon in terms of variations management in both the labour market and in society, with the ultimate goal of reducing the gap and raising the level of gender equality.

The data used in this paper are the result of "Pilot survey on the structure of earnings conducted in 2014" (hereinafter - Pilot survey). Reporting units are active business entities (legal entities and entrepreneurs) with 10 or more employees. The allocated sample contained 1 761 business entities, with about 670 thousand employees. According to the ownership type, the structure of employees is distributed so that 52.7% are privately owned, and 47.3% are state owned; the data are used for the application of decomposition so as to compare the payment gap of employees in state-owned enterprises and employees in private companies.

Methodology

Oaxaca (1973) decomposition, also known as *Blinder–Oaxaca* decomposition will be used for determining adjusted gender gap in salaries and wages. This method consists of two parts, out of which one refers to regression analysis, while the other relates to decomposition of salaries and wages' structure. In the first part, regression analysis is used so as to determine regression equation of salaries and wages, separately for males and separately for females.

Regression equation of salaries and wages of men:

$$\ln y_i^M = \beta_0^M + \sum_{k=1}^{K} x_{ki}^M \beta_k^M + u_i^M$$

Regression equation of salaries and wages of women:

$$\ln y_i^W = \beta_0^W + \sum_{k=1}^{K} x_{ki}^W \beta_k^W + u_i^W$$

Where:

- $\ln y_i$ is natural logarithm of salaries and wages per hour of an employee included in the survey (mark *i*), i.e. dependent variable in the regression model;
- x_{ki}, where k=1,….,11 and presents independent (explanatory) variables in the regression model, i.e. those variables explaining trend of salaries and wages per hour of an employee. Particularly, the model includes variables - education, years of service, section, etc.
- β_0 presents constant, i.e. segment on y-axis, while β_k, κ=1,…,11 presents parameters with explanatory variables. It shows the ratio of each of independent variables with dependent variables, that is, if the independent variable is changed for a single unit, how much the dependent variable will be changed. In case of positive sign – independent and dependent variable are moving in the same direction, and if it is negative, they are moving in opposite directions, u_i - residual.

Table 1. Explanatory (independent) and dependent variable in the model

Dependent variable	
Log salaries and wages per hour of an employee (lnSalaries and wages)	
Explanatory (independent) variables	
Age of employee	Age of employee
Education	1-No education or incomplete primary education 2-Primary education 3-Secondary education 4-High school, First level of faculty, vocational studies 5-Tertiary education or master studies 6-PhD

Table 1. Explanatory (independent) and dependent variable in the model (continued)

Groups of occupations	1-Managers 2-Professionals 3- Technicians and associate professionals 4- Clerical support workers 5- Service and sales workers 6- Skilled agricultural, forestry and fishery workers 7- Craft and related trades workers 8- Plant and machine operators, and assemblers 9- Elementary occupations
Age of employee squared	
The principal form of ownership of a business entity	1-Principally private ownership 2-Principally state ownership
Type of contract	1-Employed for indefinite period of time 2-Employment for definite period of time 3-Temporary and occasional jobs
Length of service in current enterprise	Length of service in current enterprise
Enterprise's size	1-(10–49 employees) 2-(50–249 employees) 3-(250–499 employees) 4-(500–999 employees) 5-(1000 and more employees)

Table 1. Explanatory (independent) and dependent variable in the model (continued)

Sections of activities	1- Mining and quarrying 2- Manufacturing 3- Electricity, gas, steam and air conditioning supply 4- Water supply; sewerage, waste management and remediation activities 5- Construction 6- Wholesale and retail trade; repair of motor vehicles and motorcycles 7- Transportation and storage 8- Accommodation and food service activities 9- Information and communication 10- Financial and insurance activities 11- Real estate activities 12- Professional, scientific and technical activities 13- Administrative and support service activities 14- Education 15- Human health and social work activities 16- Arts, entertainment and recreation 17- Other service activities
Length of service in current enterprise squared	
Does the employee hold a managing or supervising function over at least one employee?	1-Yes 2-No

The model was formed, with certain corrections, following Mincer's (1974) equation of salaries and wages that sets into relation the logarithm of salaries and wages per hour with years of education and the square function of years of service. The data are divided by gender and the following tables show the results obtained by using the statistical package SPSS.

The following two tables show the list of dependent and independent variables included in the model.

Table 2. Variables included in/ excluded from the model[a,b]

Model	Model variables	Eliminated variables	Method
1	The principal form of ownership of a business entity, Does the employee hold a managing or supervising function over at least one employee, Type of contract, Enterprise's size, Age of employee, squared, Education, Sections of activities, Length of service, enterprise, squared, Groups of occupations, Length of service in current enterprise, Age [v]	-	Enter

[a.] Dependent variable: lnSalaries and wages

[b.] Models are based on cases where Gender = Men

[v.] All required variables are included in the model.

Table 3. Variables included in/ excluded from the model [a,b]

Model	Model variables	Eliminated variables	Method
1	The principal form of ownership of a business entity, Does the employee hold a managing or supervising function over at least one employee, Type of contract, Enterprise's size, Age of employee, squared, Education, Sections of activities, Length of service, enterprise, squared, Groups of occupations, Length of service in current enterprise, Age [v]	-	Enter

[a.] Dependent variable: lnSalaries and wages

[b.] Models are based on cases where Gender = Women

[v.] All required variables are included in the model.

Moreover, the table "Model characteristics" indicates the determination coefficient, as well as adjusted determination coefficient. Since this is a multiple regression, the result of adjusted determination coefficient will be observed, even though results match in this case. Adjusted determination coefficient in regression equation for male employees amounts to 0.406, i.e. 40.6%. The result shows that 40.6% of the variation of log value of hourly salaries and wages of males is explained by 11 independent variables included in the model.

Table 4. Model characteristics

Model	Correlation coefficient	Coefficient of determination	Adjusted coefficient of determination	Standard deviation of forecast error
	Gender = Men			
1	0.638[a]	0.406	0.406	0.39805

[a.] Forecast variables: (constant), The principal form of ownership of a business entity, Does the employee hold a managing or supervising function over at least one employee, Type of contract, Enterprise's size, Age of employee, squared, Education, Sections of activities, Length of service, enterprise, squared, Groups of occupations, Length of service in current enterprise, Age

Regarding women, adjusted determination coefficient amounts to 0.511, also indicating the explained part of variation of log value of hourly salaries and wages of females. Lower value of adjusted coefficient of determination indicates the importance of other, non-economic and institutional factors on salaries and wages creation.

Table 5. Model characteristics

Model	Correlation coefficient	Coefficient of determination	Adjusted coefficient of determination	Standard deviation of forecast error
	Gender = Women			
1	0.715[a]	0.511	0.511	0.33421

[a.] Forecast variables: (constant), The principal form of ownership of a business entity, Does the employee hold a managing or supervising function over at least one employee, Type of contract, Enterprise's size, Age of employee, squared, Education, Sections of activities, Length of service, enterprise, squared, Groups of occupations, Length of service in current enterprise, Age

The Table "Coefficients" shows the results of estimations of multiple regression model and its coefficients, while the table "ANOVA" shows the results of testing the importance of the whole regression equation.

Estimated values of regression coefficients and their standard errors are shown in the table "Coefficients" in the first and second column. The coefficients in the first column are non-standardized, i.e. dependent on the unit of measure. In the third column are standardized regression coefficients. The greater absolute value, the greater is the impact of the corresponding independent variable on the dependent one. The table "Coefficients" in the fourth and fifth column shows the t-values and p-values on the basis of which the significance of the variables is tested.

The first step involves testing the significance of the model in explaining the dependent variable. This result can be seen from the table "ANOVA". If the model is not significant, there is no point in continuing with the regression analysis. Tested are the zero hypotheses that the coefficient of multiple determinations equals zero, i.e.

$$H_0: R^2 = 0$$

$$H_1: R^2 \neq 0$$

This is equivalent to the next zero and alternative hypothesis:

$$H_0: \beta_1 = \beta_2 = \cdots \beta_{11} = 0$$

$$H_1: are\ not\ all\ \beta_j (j = 1,2, \ldots ,11)\ equal\ to\ zero.$$

The table "ANOVA" in the last column shows the p-value that tests this zero hypothesis. This value is 0.000 (which is less than 0.05), so we conclude that we have enough evidence to reject the zero hypothesis. This means that independent variables (together) show systematic connection with the dependent variable.

Table 6. ANOVA[a,b]

Model		Sum of squares	Number of degrees of freedom	Squared mean value	F test	Significance
1	Regression	68 549.230	11	6 231.748	39 331.014	0.000[v]
	Residual	100 085.075	631 676	0.158		
	Total	168 634.305	631 687			

[a.] Dependent variable: lnSalaries and wages

[b.] Models are based on cases where Gender = Men

[v.] Forecast variables: (constant), The principal form of ownership of a business entity, Does the employee hold a managing or supervising function over at least one employee, Type of contract, Enterprise's size, Age of employee, squared, Education, Sections of activities, Length of service, enterprise, squared, Groups of occupations, Length of service in current enterprise, Age

Table 7. ANOVA[a,b]

Model		Sum of squares	Number of degrees of freedom	Squared mean value	F test	Significance
1	Regression	65 133.905	11	5 921.264	53 010.588	0.000[v]
	Residual	62 283.732	557 600	0.112		
	Total	127 417.637	557 611			

[a.] Dependent variable: lnSalaries and wages

[b.] Models are based on cases where Gender = Women

[v.] Forecast variables: (constant), The principal form of ownership of a business entity, Does the employee hold a managing or supervising function over at least one employee, Type of contract, Enterprise's size, Age of employee, squared, Education, Sections of activities, Length of service, enterprise, squared, Groups of occupations, Length of service in current enterprise, Age

After concluding that the model is significant, the next step is testing the significance of each individual independent variable in the model, i.e., checking whether the dependent variable is statistically significantly influenced. First, it is tested whether the constant (β_0)is statistically significantly different from zero, that is, the following hypothesis:

$$H_0: \beta_0 = 0$$

$$H_1: \beta_0 \neq 0$$

The table "Coefficients" shows that the corresponding p-value ("significance") is 0.000 (which is less than 0.05), and therefore we reject the zero hypothesis. The conclusion is that the regression constant is statistically significantly different from zero.

Afterwards, it is tested whether the estimated non-standardized regression coefficients (β_1, β_2, β_3, ..., β_{11}) with independent variables are statistically significantly different from zero. This statistical significance is checked by the following hypothesis:

$$H_0: \beta_j = 0$$

$$H_1: \beta_j \neq 0 \text{ where j=1,2,3,...11}$$

The decision is made on the basis of p-value shown in the tables "Coefficients" in the last column. For all regression coefficients, p-value is 0.000, which is less than 0.05 so that it can be concluded that all independent (explanatory) variables statistically significantly affect salaries and wages per employee's hour.

Table 8. Coefficients [a,b]

Model		Non-standardized coefficients		Standardized coefficients	t Test	Significance
		Coefficients	Standard error	Beta coefficients		
1	(Constant)	4.805	0.010		480.518	0.000
	Number of years	0.019	0.000	0.411	49.045	0.000
	Number of years squared	0.000	0.000	-0.374	-44.835	0.000
	Education	0.177	0.001	0.331	256.244	0.000
	Groups of occupations	-0.032	0.000	-0.159	-115.376	0.000
	Type of contract	-0.033	0.001	-0.027	-22.654	0.000
	Enterprise's size	-0.100	0.000	0.292	272.938	0.000
	Sections of activities	-0.014	0.000	-0.123	-109.573	0.000
	Length of service in enterprise	0.054	0.002	0.188	34.029	0.000
	Years of service in enterprise squared	-0.004	0.000	-0.100	-18.968	0.000
	Does the employee hold a managing or supervising function over at least one employee	-0.166	0.002	-0.110	-102.304	0.000
	Principal form of ownership of business entity	0.102	0.001	0.097	84.151	0.000

[a.] Dependent variable: lnSalaries and wages

[b.] Models are based on cases where **Gender = Men**

Table 9. Coefficients [a,b]

Model		Non-standardized coefficients		Standardized coefficients	t Test	Significance
		Coefficients	Standard error	Beta coefficients		
1	(Constant)	4.943	0.010		488.298	0.000
	Number of years	0.011	0.000	0.226	26.364	0.000
	Number of years squared	-7.072E-005	0.000	-0.138	-16.116	0.000
	Education	0.184	0.001	0.410	313.275	0.000
	Groups of occupations	-0.052	0.000	-0.262	-191.251	0.000
	Type of contract	-0.083	0.001	-0.068	-60.081	0.000
	Enterprise's size	0.075	0.000	0.231	234.872	0.000
	Sections of activities	-0.003	0.000	-0.034	-26.609	0.000
	Length of service in enterprise	0.037	0.001	0.134	25.310	0.000
	Years of service in enterprise squared	-0.003	0.000	-0.088	-17.223	0.000
	Does the employee hold a managing or supervising function over at least one employee	-0.118	0.002	-0.077	-78.432	0.000
	Principal form of ownership of business entity	0.046	0.001	0.048	35.666	0.000

[a.] Dependent variable: lnSalaries and wages

[b.] Models are based on cases where **Gender = Women**

After adjustment of regressions for men and women, obtained are the estimated equations:

– Estimated equation of hourly salaries and wages of men:

$$\widehat{\ln y_i^M} = \widehat{\beta_0^M} + \sum_{k=1}^{K} x_{ki}^M \hat{\beta}_k^M$$

– Estimated equation of hourly salaries and wages of women:

$$\widehat{\ln y_i^W} = \widehat{\beta_0^W} + \sum_{k=1}^{K} x_{ki}^W \hat{\beta}_k^W$$

Such formed regression equations provide insight into the structure of men's and women's salaries and wages looking into the ratio between hourly salaries and wages raised to log expression and explanatory variables. Thereby the estimated coefficients β_0 и β_k к=1,...,11 measure the contribution of each independent variable to explaining the variables (hourly salaries and wages raised to log expression).

The second step in implementing the methodology is the decomposition analysis of the difference between the mean of hourly salaries and wages for men and that for women (table Descriptive statistics):

$$\Delta = \overline{\ln y^M} - \overline{\ln y^W}$$

When each of the members is decomposed by sex, the following regression equations are obtained:

$$\overline{\ln y^M} = \widehat{\beta_0^M} + \sum_{k=1}^{K} \overline{x}_{ki}^M \hat{\beta}_k^M$$

$$\overline{\ln y^W} = \widehat{\beta_0^W} + \sum_{k=1}^{K} \overline{x}_{ki}^W \hat{\beta}_k^W$$

Table 10. Descriptive statistics[a]

	Mean	Standard deviation	Number of observations
lnSalaries and wages	5.7877	0.51668	631 688
Number of years	45.8669	11.16053	631 688
Number of years squared	2228.3261	1040.37198	631 688
Education	3.28	0.964	631 688
Groups of occupations	5.49	2.577	631 688
Type of contract	1.19	0.424	631 688
Enterprise's size	2.89	1.514	631 688
Sections of activities	6.57	4.703	631 688
Length of service in enterprise	3.21	1.810	631 688
Years of service in enterprise squared	13.5684	14.21037	631 688
Does the employee hold a managing or supervising function over at least one employee	1.86	0.343	631 688
Principal form of ownership of business entity	1.42	0.493	631 688

[a] Models are based on cases where Sex = Men

Table 11. Descriptive statistics[a]

	Mean	Standard deviation	Number of observations
lnSalaries and wages	5.7228	0.47802	557 612
Number of years	45.6539	10.12904	557 612
Number of years squared	2186.880	933.13171	557 612
Education	3.55	1.067	557 612
Group of occupations	4.33	2.424	557 612
Type of contract	1.16	0.389	557 612
Enterprise's size	2.88	1.472	557 612
Sections of activities	9.24	5.231	557 612
Length of service in enterprise	3.25	1.721	557 612
Years of service in enterprise squared	13.5487	13.38391	557 612
Does the employee hold a managing or supervising function over at least one employee	1.89	0.312	557 612
Principal form of ownership of business entity	1.53	0.499	557 612

[a] Models are based on cases where Sex = Women

As the objective is to reach a conclusion about hourly salaries and wages in case indepenent variables (education, years of service, age, etc.) were at the same level both in men and women, the constant and all coefficients before the independent variables in the estimated equation for men are treated as non-discriminatory by comparison. Consequently, it is necessary to form a new regression equation of hourly salaries and wages for women, containing now the constant and coefficients from the regression equation for men:

$$\overline{\ln y^{W*}} = \widehat{\boldsymbol{\beta}}_{\boldsymbol{0}}^{\boldsymbol{M}} + \sum_{k=1}^{K} \overline{x}_{ki}^{W} \widehat{\boldsymbol{\beta}}_{\boldsymbol{k}}^{\boldsymbol{M}}$$

Table 12. Variables and coefficients of the newly formed regression equation for women

Women		Means	Women *	lnWages & salaries	
lnSalaries and wages		5.7228		Constant	4.805
Number of years	X1	45.6539	Number of years	β_1	0.019
Number of years squared	X2	2186.8800	Number of years squared	β_2	0.000
Education	X3	3.55	Education	β_3	0.177
Groups of occupations	X4	4.33	Groups of occupations	β_4	-0.032
Type of contract	X5	1.16	Type of contract	β_5	-0.033
Enterprise's size	X6	2.88	Enterprise's size	β_6	-0.100
Sections of activities	X7	9.24	Sections of activities	β_7	-0.014
Years of service in enterprise	X8	3.25	Years of service in enterprise	β_8	0.054
Years of service in enterprise squared	X9	13.5487	Years of service in enterprise squared	β_9	-0.004
Managing position	X10	1.89	Managing position	β_{10}	-0.166
Principal form of ownership	X11	1.53	Principal form of ownership	β_{11}	0.102

The regression equation of hourly salaries and wages for women with the coefficients from the regression equation of hourly salaries and wages for men is interpreted as salaries and wages which average employed women would obtain if they had the same characteristics (education, years of service, age, etc.) just as employed men. In this way, using *Blinder-Oaxaca* decomposition, it is possible to see if there is gender discrimination in the field of salaries and wages.

By making the difference between men's and women's hourly salaries and wages raised to logs, the following decomposition is achieved:

$$\Delta = U + E$$

$$U = \overline{\ln y^{W*}} - \overline{\ln y^{W}}$$

$$E = \overline{\ln y^{M}} - \overline{\ln y^{W*}}$$

The first part of the equation, marked with U (unexplained part of variability in hourly salaries and wages of employed men and women), is the difference between the newly formed equation of women's hourly salaries and wages $\overline{\ln y^{W*}}$ and the original regression equation $\ln y^{W}$. The obtained result indicate what would be the amount of a woman's hourly salaries and wages raised to log if she was treated as a typical male employee.

Further decomposition leads to the following result:

$$U = \overline{\ln y^{W*}} - \overline{\ln y^{W}}$$

$$U = (\widehat{\boldsymbol{\beta}_{\mathbf{0}}^{\boldsymbol{M}}} + \sum_{k=1}^{K} \overline{x}_{ki}^{W} \widehat{\boldsymbol{\beta}_{\boldsymbol{k}}^{\boldsymbol{M}}}) - (\widehat{\beta_{0}^{W}} + \sum_{k=1}^{K} \overline{x}_{ki}^{W} \hat{\beta}_{k}^{W})$$

$$U = (\widehat{\boldsymbol{\beta}_{\mathbf{0}}^{\boldsymbol{M}}} - \widehat{\beta_{0}^{W}}) + \sum_{k=1}^{K} \overline{x}_{ki}^{W} (\widehat{\boldsymbol{\beta}_{\boldsymbol{k}}^{\boldsymbol{M}}} - \hat{\beta}_{k}^{W})$$

This unexplained part may be a better approximation of a potential discrimination than the explained part because the labour market does not remunerate equally men and women for the same job so that the independent variables in the model do not show the real influence on formed salaries and wages. In any case, the results should be interpreted with caution because of the variables included in the model. It is assumed that these are variables that best describe employee's hourly salaries and wages, based on pilot survey data. If this assumption is not proven to be exact, this means that other factors, which are not explained by this model, influence the formation of hourly salaries and wages.

The second part of the equation, marked with E (variability part explained by the model), is the difference between the regression equation of hourly salaries and wages for men $\overline{\ln y^{M}}$ and the newly formed equation of hourly salaries and wages for women $\overline{\ln y^{W*}}$. When decomposed, the following is obtained:

$$E = \overline{\ln y^{M}} - \overline{\ln y^{W*}}$$

$$E = (\widehat{\beta_{0}^{M}} + \sum_{k=1}^{K} \overline{x}_{ki}^{M} \hat{\beta}_{k}^{M}) - (\widehat{\boldsymbol{\beta}_{\mathbf{0}}^{\boldsymbol{M}}} + \sum_{k=1}^{K} \overline{x}_{ki}^{W} \widehat{\boldsymbol{\beta}_{\boldsymbol{k}}^{\boldsymbol{M}}})$$

$$E = \sum_{k=1}^{K} \hat{\beta}_{k}^{M} (\overline{x}_{ki}^{M} - \overline{x}_{ki}^{W})$$

Part E, as a contribution to the difference Δ, measures the difference in average men's and women's characteristics weighted by men's coefficients and represents the explained part of the variability of employee's hourly salaries and wages raised to logs.

$$\Delta = U + E = \overline{\ln y^{W*}} - \overline{\ln y^{W}} + \overline{\ln y^{M}} - \overline{\ln y^{W*}} = \overline{\ln y^{M}} - \overline{\ln y^{W}}$$

$$= \left(\widehat{\boldsymbol{\beta}_0^{M}} - \widehat{\beta_0^{W}}\right) + \sum_{k=1}^{K} \overline{x}_{ki}^{W} \left(\widehat{\boldsymbol{\beta}_k^{M}} - \hat{\beta}_k^{W}\right) + \sum_{k=1}^{K} \hat{\beta}_k^{M} \left(\overline{x}_{ki}^{M} - \overline{x}_{ki}^{W}\right)$$

Unexplained variability — Explained variability

Unadjusted gender gap coefficient (UGGC), obtained in the pilot survey, is the share of the difference between the average hourly salaries and wages of employed men and women in the average hourly salaries and wages of men and amounts to 8.7%. This indicates that women were less remunerated than men by 8.7%, i.e. that the average women's hourly salaries and wages amounted to 91.3% of the average men's hourly salaries and wages.

$$\left[\left[\text{Average hourly salaries and wages of men} - \text{Average hourly salaries and wages of women}\right] \div \text{Average hourly salaries and wages of men}\right] \times 100 = \text{Pay gap between women and men}$$

According to Eurostat data, the largest gender pay gap in the European Union was 16.7%. The largest gender pay gap was in Estonia, where women's remunerations were on average by 28.1% lower than men's. The smallest gender pay gap was registered in Romania, amounting to 4.5%. Other countries of the region have similar rates as Serbia – in Croatia it was 10.4%, Slovenia 7% and Macedonia 9.1%.

The divergences in hourly salaries and wages between genders may occur as a consequence of a different structure of employed men and women by sector, form of ownership, occupation, education, age and other characteristics.

This is exactly why the adjusted gender gap coefficient (AGGC) equalises the educational level, age, years of service and other employees' characteristics, and in accordance with this assumption analyzes the pay gap. Thereofore, the adjusted gender gap indicator indicates the percent difference between men's and women's salaries and wages in the case that gender is the sole factor that distinguishes them.

Adjusted gender pay gap coefficient (AGPGC) in salaries and wages is calculated as follows:

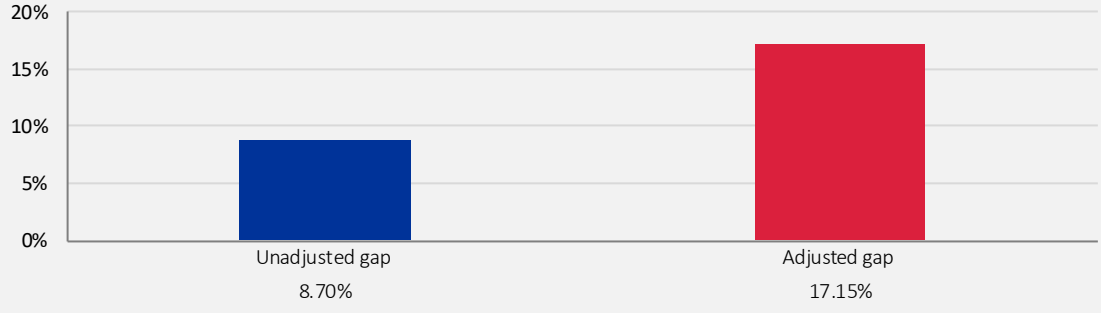
$$\text{AGPGC} = \text{UGPGC} * \left(1 - \frac{E}{\Delta}\right) = 0.0872 \cdot \left(1 - \frac{-0.062848559}{0.064988872}\right) = 0.171528 \ (17.15\%)$$

Or:

$$\text{AGPGC} = \text{UGPGC} * \frac{U}{\Delta} = 0.0872 \cdot \left(\frac{0.127837431}{0.064988872}\right) = 0.171528$$

Unadjusted gender pay gap coefficient (UGPGC) obtained from the pilot survey amounts to 8.7%. Following correction (implying the analysis of employment and educational characteristics of men and women), gender pay gap usually becomes smaller, but this is not the case in our country. Once the adjustment done and differences between genders by all explanatory variables eliminated, it appears that the gender pay gap is 17.15%.

Graph 1. Gender pay gap



Usually the real gender gap of 8.7% is attributed to influences of a discriminatory behaviour on the labour market. Econometric decomposition of this gap has indicated the fact that the corrected gender pay gap in Serbia is not a consequence of discrimination, meaning that women's remunerations are not lower because of the chosen workstation or years of education.

The cause is in the unobserved men's and women's characteristics that are not included in the analysis, but concern various gender behaviours on the labour market. Actually, through various behavioural patterns employers value differently and therefore „recompense" and „penalize" men's and women's characteristics, even though they perform the same occupation in the same economic activity.

Gender pay gap points to the fact that women are „penalized" and perceived very often by employers as less flexible as to hours of work, readiness for training, promotion and supplementary engagement for professional development. The reason for such assumptions is that women are subordinated to family duties which they prioritize over business challenges.

The fact resulting from the analysis – that women on the Serbian labour market have better working characteristics, when compared to men – is also called into question. We come to that because women with lower employment qualifications have generally the status of inactive persons and do not enter in the labour market, which reflects on the increase of average salaries and wage of employed women. The result is a smaller difference between women's and men's salaries and wages. If women being inactive on the labour market got employment, their average salaries and wages would go down and women's and men's employment characteristics would be equalised. However, in that case, the gender pay gap would be significantly broader. The result of the assumed situation where employed women, on average, would have the same labour market characteristics as employed men is a gap of 17.15%, i.e. remunerations of employed women would be by 17.15% lower than those of men.

The analysis of the regression model that describes women's salaries and wages and ranking of explanatory variables by standardized coefficient show that the largest contribution to women's hourly salaries and wages is realised in the following order: education, enterprise's size, number of years, length of service in enterprise, principal form of ownership of business entity, sections of activities, type of contract, whether the employee holds a managing or supervising position over at least one employee, years of service squared, number of years squared and groups of occupations.

A detailed survey shows that men did not mention child care and family duties as a reason of taking leave.[2] Consequently, it is clear that women are mostly involved in household chores so that they cannot be expected to fullfil employer's requests in terms of more working hours, additional engagement, minimum leave and other activities that men accept for higher pay.

The Law on Gender Equality in Serbia defines equal earnings for work of equal value. In practice, this rule is breached and the causes thereof are to be found also in insufficiently clear procedures and in rules not being implemented strictly to ensure respect of the principle of equal earnings.

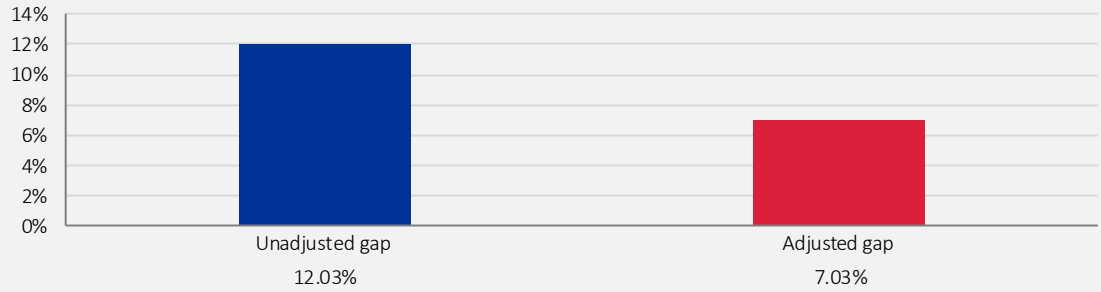
Gap in State-owned enterprises and private enterprises by sex

If the data obtained from the pilot survey are broken down by the principal form of ownership of business entities, it is possible to perform an analysis of gender gap in state-owned[3] and private enteprises. According to this assumption, the newly formed regression model contains ten explanatory variables. The obtained results are presented graphically and show that the unadjusted gender pay gap in state-owned enterprises is 12.03%. Pay scales that define the salaries and wages in state-owned enterprises restrain discrimination, but the functions which employees will hold involve also the possibility of subjective factors in decision-making. By applying decomposition the pay gap amounts to 7.03%.

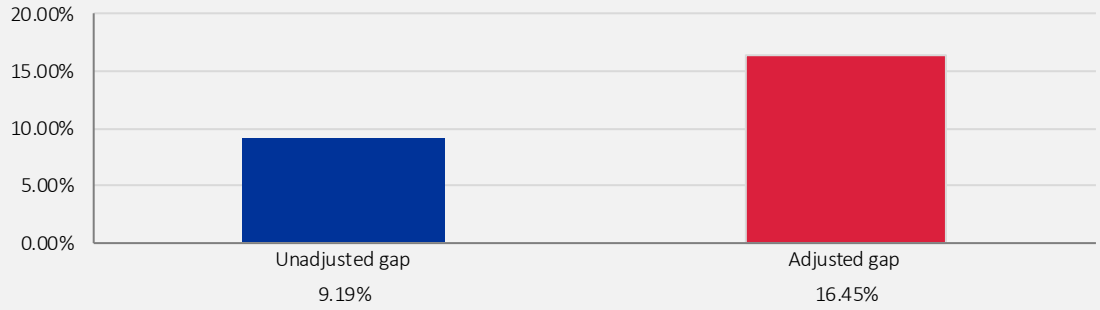
[2] Dakić, S. (2015.), *Development and Application of the Model of Genger Gap Variations on the Labour Market*

[3] Data referring to state-owned enterprises do not include enterprises of government administration.

Graph 2. Gender pay gap in state-owned enterprises



Graph 3. Gender pay gap in private enterprises



On the other hand, in private enterprises the result follow the situation on governmental level so that the unadjusted gap is 9.19%, while the adjused pay gap is 16.45%. Contrary to state-owned enterprises where there are pay scales, while in private enterprises negotiations play a key role in fixing the level of remunerations. Consequently, there is more room for women discrimination.

In such situations evident are the effect of „glass ceiling“, i.e. obstacles put before women with the aim of limiting their professional promotion. Employers' discriminatory behaviour and/or colleagues' or even women's refusal of duties – because they cannot reconcile their work with their family – are the most frequent cause of gender gap.

Pay gap in state-owned and private enterprises

Blinder-Oaxaca decomposition has been also applied in the anlysis of pay gap among the employees in state-owned and private enterprises. The methodology that has led to this conclusion implies the formation of two equations. The first has been used for modelling employees' hourly salaries and wages in state-owned enterprises raised (converted) to logs, and the second for modelling employees' hourly salaries and wages raised (converted) to logs in private enterprises.

Regression equation of employees' salaries and wages in private enterprises:

$$\ln y_i^{PE} = \beta_0^{PE} + \sum_{k=1}^{K} x_{ki}^{PE}\,\beta_k^{PE} + u_i^{PE}$$

Regression equation of employees' salaries and wages in State-owned enterprises:

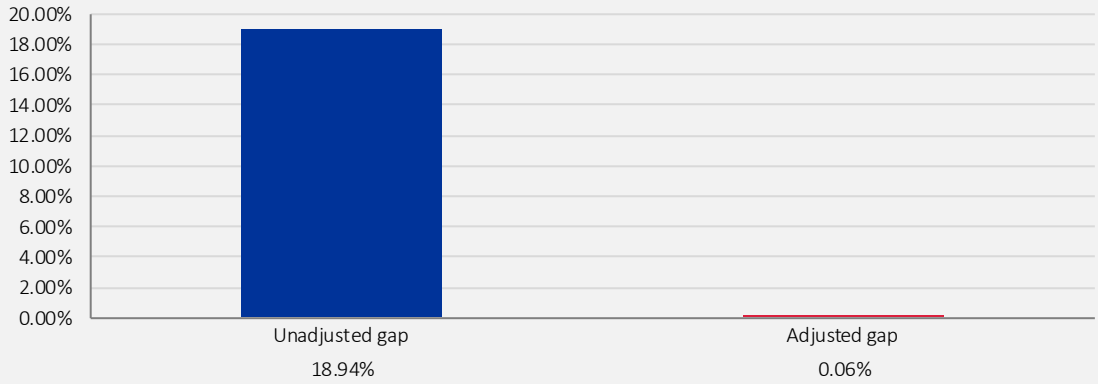
$$\ln y_i^{SE} = \beta_0^{SE} + \sum_{k=1}^{K} x_{ki}^{SE}\,\beta_k^{SE} + u_i^{SE}$$

The regression model contains the same explanatory variables with the adjustment of change of order of the variable „sex“, which was a separator in the previous analysis, and now is included in the model as an independent variable.

In the pilot survey hourly average salaries and wages in dinars in private ownership amount to 334.48 dinars, while in State ownership they total 397.82 dinars. Based on these data, the unadjusted pay gap coefficient of 18.94% in favour of state-owned enterprises has been calculated.

[[Employees' average hourly salaries and wages in private enterprises − Employees' average hourly salaries and wages in State-owned enterprises] ÷ Employees' average hourly salaries and wages in private enterprises] × 100 = Pay gap of employees in private and State-owned enterprises

Graph 4. Main gap between private and state-owned enterprises



By applying the already worked out decomposition by which regression coefficients from the regresssion equation for private enterprises are used in the regression equation for state-owned enterprises (to eliminate the differences according to explanatory variables) we have come to the conclusion that the adjusted pay gap coefficient amounts to 0.055%.

Adjusted pay gap coefficient (APGC) is calculated with the following formula:

$$\text{APGC} = \text{UPGC} * (1 - \frac{E}{\Delta}) = -0.18937 \cdot \left(1 - \frac{-0.26104496}{-0.26181161}\right) = -0.00055 \ (0.055\%)$$

The obtained result shows that if employees were to be on the same level by the parameters of education, years of service, age and other characteristics described by independent variables in table 1 – employees in State-owned enterprises and those in private enterprises would be paid the same amount.

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Leading indicators

For better diagnostics, selection and evaluation of macroeconomic indicators that best depict the national economy, a macro-econometric system of composite leading indicators of the economic activity of Serbia have been built. Those are indicators that can predict with high reliability cyclical movements and be used for quarterly and annual short-term forecasts. The text below describes the family of leading indicators by section and appropriate forecast.

The developed system of composite leading indicators of the economic activity of Serbia is a result of an original analytical and research work of the Statistical Office of the Republic of Serbia (SORS).

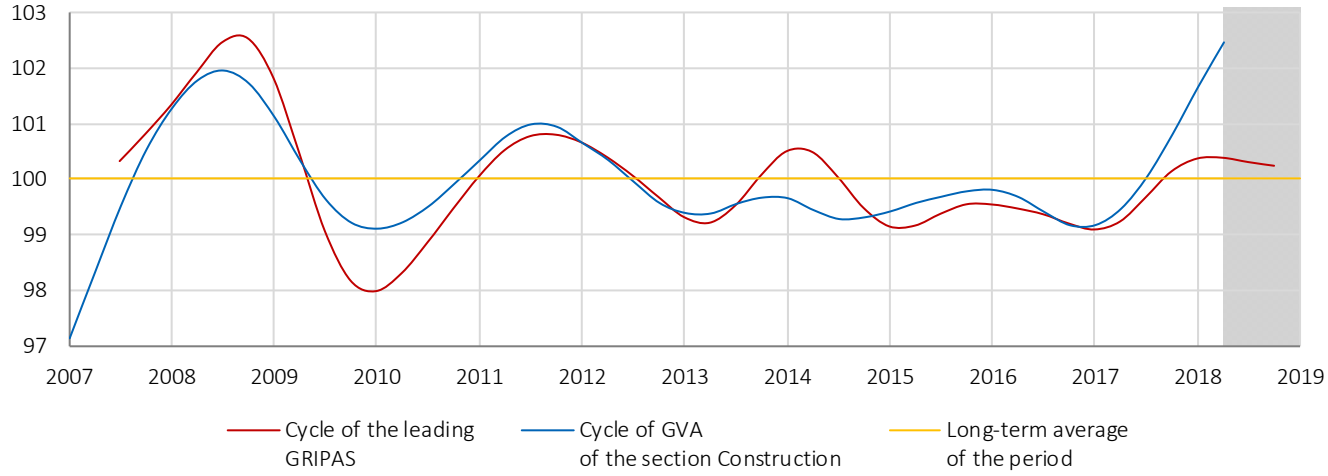
Construction indicator of the economic activity of Serbia – GRIPAS

The composite indicator GRIPAS precedes the gross value added (GVA) of construction, on average, for about two quarters, and its main task is to detect GVA cyclical trends in construction in the forthcoming period. As it is highly correlated with the movement of the total number of approved building permits, the total number of hours of work on building sites and the number of workers on building sites, GRIPAS indicator includes all relevant influences on construction activity.

Based on the movement of this indicator, slower annual increase of construction GVA is also expected in the third and fourth quarter of 2018.

As significant adjustments of the realized values in the third quarter onwards have been performed, the forecast for the entire 2018 has been considerably revised in the model inputs and construction GVA. Combined use of GRIPAS and the development of a model of quantitative evaluation of the influence of the total number of approved building permits, hours of work on building sites and the number of workers on building sites have generated a projection based on which it is expected that construction GVA will contribute annually in the total GVA growth rate for 2018 by about 0.7 percentage points.

Graph 1. GRIPAS and construction GVA cycles (Q1 2007 – Q4 2018), standardized data



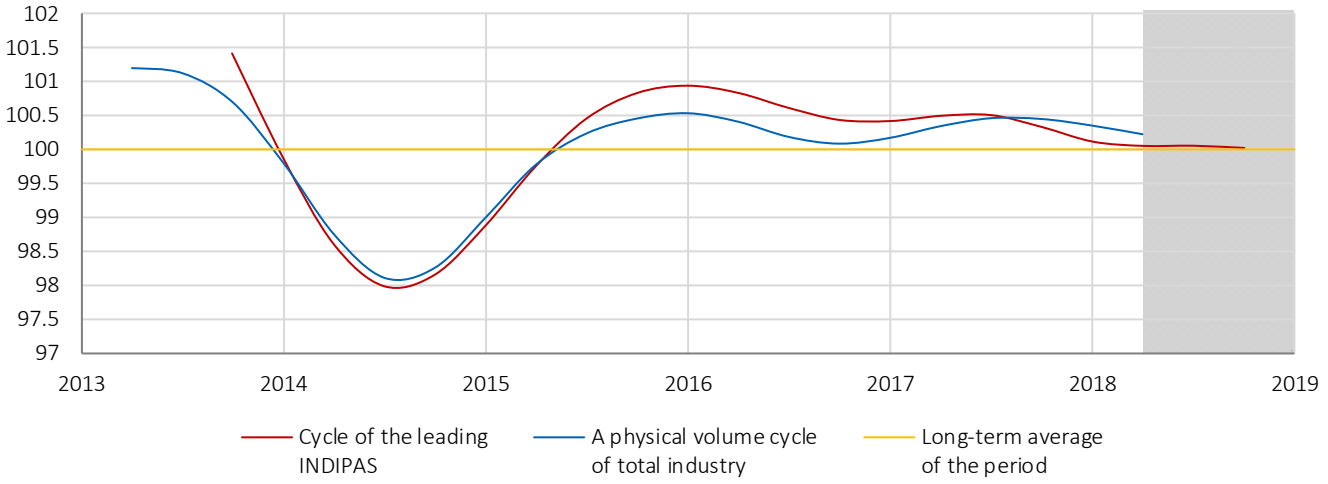
Industry indicator of the economic activity of Serbia – INDIPAS

The leading indicator of industrial production – INDIPAS has its final objective, the forecast of the total industry GVA for the whole year, and enables anticipating quantitatively and cyclically industry trends on average for about two next quarters.

Based on the movement of this indicator, it is estimated that slower increase of the physical volume of the total industry is to be expected in the third and fourth quarter of 2018, resulting in an average annual growth rate of about 3.0% for the whole 2018.

By continuing to apply the model, after the first two quarters a forecast of the total industry GVA of about 3.3% for 2018 has also been obtained, accounting for approximately 0.7 percentage points of the total GDP growth rate.

Graph 2. Comparison of the leading INDIPAS cycle and total industry physical volume, standardized data (Q2 2013 – Q4 2018)



Trade indicator of the economic activity of Serbia – TIPAS

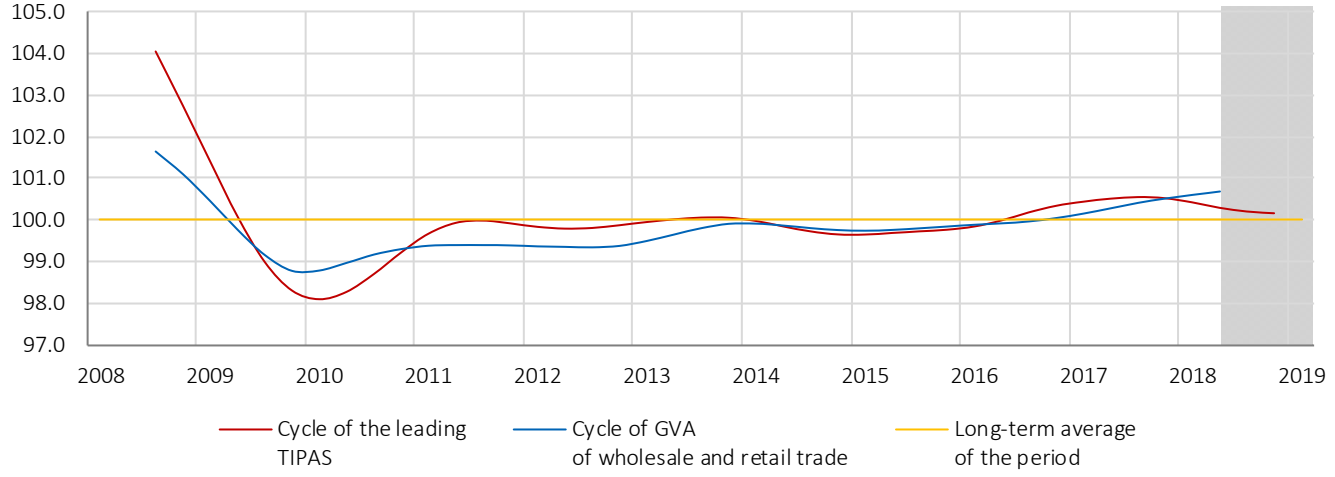
The composite leading indicator of trade activity – TIPAS, precedes the movement of wholesale and retail trade GVA on average for about two quarters and sends signals that the wholesale and retail trade activity will continue to slow down in the third and fourth quarters of 2018, relative to the dynamics of the first six months.

Based on the movement of this indicator, after the first two quarters, an inter-annual GVA growth in wholesale and retail trade has been forecast, amounting to approximately 4% for 2018. The annual GVA growth rate in wholesale and retail trade in the third and fourth quarters will be slightly lower than that in the first two quarters attaining, on average, the level of about 3.3%.

Based on the obtained forecast of wholesale and retail trade GVA, a model of total services trends has been developed, which indicates that a GVA growth of about 2.5% is to be expected in the section of total services, till the end of 2008. According to the model, the annual GVA growth rate in total services is expected to be on a slightly lower level of about 2.1% in the third and fourth quarters of 2018, compared to the first six months.

Therefore, on the level of the whole year, after the first two quarters, the expected GVA growth in wholesale and retail trade would contribute by about 0.6 percentage points to the GDP growth rate (and to the growth of total services GVA by about 1.3 percentage points), while, on the other hand, total services GVA would contribute to GDP growth rate by approximately 1.2 percentage points.

Graph 3. Comparison of the leading TIPAS cycle and wholesale and retail trade GVA, standardized data (Q3 2008 – Q4 2018)



Forecast of the movements of the agricultural production – AGRIPAS system

The forecast of agricultural production trends, according to AGRIPAS system, is based on two mutually integrated main models: plant production model and livestock production model, which principal task is to forecast the total agricultural production GVA and its influence on GDP.

Plant production model covers separate modelling of the production of wheat and maize, taking into account the factor of rainfalls over March-April and June-August, as well as those during wheat sowing period (October-November), the estimation of harvesting areas, the variables of drought years for wheat and maize, etc. The results of the estimations of agriculture trends, based on the plant production model, will be provided in May, then at the beginning of July and beginning of September, when it is generally possible to derive the final agriculture result and its quantitative influence on GDP in the current year.

Livestock model is based on the structural livestock increase model and primary livestock product model (dependent mostly on the results of the milk production model).

The forecast of agricultural trends, initially published, has been produced in May of the current year. In the meantime, the values of the set of variables, which have been estimated for the purpose of producing a structural model, have been up-dated in line with the realised movements, and the estimated GVA values of plant and livestock production have been revised.

Therefore, AGRIPAS forecasts were initially based on the **estimated** values of inputs, and in this issue on the **realized** values of inputs of the structural models of plant and livestock production. This is altogether the last AGRIPAS forecasts of agriculture GVA for the current year, while the statistics of national accounts and agriculture will publish timely the final results[4].

Observed globally, the realized values of inputs of the model of plant production indicate that plant protection GVA will contribute to the agricultural production GVA by about 17.6 p.p. (initially by 13.5 p.p.).

On the other hand, once of the values of the inputs of the livestock model realized the contribution to the GVA rate of the total agricultural production of about -1.1 p.p. has been derived, which was initially estimated at -0.6 p.p. This way the annual GVA growth rate of agricultural production for 2018 was approximately 16.5% (initially 12.8%). Actually, the GVA growth rate of agricultural rate in 2018 will range from 12.8% to 16.5%. The discrepancy between the forecast based on the realized inputs of the model and the forecast based on the estimated inputs of the model was 3.3%.

The contribution of the agricultural production GVA to the GDP growth would consequently total about 0.9 p.p. (initially forecast at 0.8 p.p.).

[4] The concept of projections estimated in May and realised inputs in September of AGRIPAS allow forming reliability intervals of the forecast of agricultural production GVA and is an important tool for preliminary calculations of the influence of agricultural production GVA on the total GDP. It is worth mentioning that the initially published forecasts (based on the estimated model inputs) are the referent point in the whole annual cycle of forecasting and monitoring the agricultural production GVA so to finally determine the discrepancy between the final realized values and forecast ones, by defining this way the level of likelihood of the AGRIPAS system for the following season, i.e. by a new forecast cycle of the agricultural production.

Table 1. Annual GVA forecasts for 2018 of selected sections and their estimated contributions to GDP after the first two quarters

2018	Agriculture, forestry and fishery	Total manufacturing	Construction	Total services
Forecast contributions to the annual GVA growth rate after the first two quarters of the current year, p.p.	0.9	0.7	0.7	1.2
Forecast contributions of the annual GVA growth rate after the first quarter (initial forecast *), p.p.	0.8	0.8	0.4	1.2
Absolute difference between the contribution and initially forecast contributions, p.p.	0.1	-0.1	0.3	0.0

Note: Initially published forecasts will be provided in "Trends" after the first quarter of each year and will be the essential base for monitoring the projections throughout the year, i.e. forecasts that will be published after the rest of the quarters and that will be compared with the initial one for the purpose of measuring the likelihood of initial forecasts.

What are the leading indicators?

The concept of leading composite indicators is an analytical tool to predict cyclical trends of economic activity. It implies the detection of turning cyclical points, minima and maxima so to anticipate the phase of the business cycle of the national economy in a future period. Each of the composite indicators developed in the SORS by section is composed of a large number of weighted indicators for each section. When detecting the variables that have been incorporated in the presented composite indicators, all macro-economic areas and the survey on business expectations in the Serbian economy, conducted by EUROSTAT methodology, have been analysed. The system of composite leading indicators developed in the SORS precedes the cycles of economic activity, on average, for about six months and, combined with econometric models, enables to make a short-term quantitative assessment of the dynamics of the annual growth rate of economic activity, on quarterly and annual levels.

1. Gross domestic product

1.1. GDP trend

In the first half of 2018, GDP increase of 4.5% was recorded relative to the same period 2017. Positive effects of investment cycle from the previous period were reflected in strong economic activity in construction. Additionally, increase in majority of service activities, as well as extremely high yields in agriculture mostly contributed to the mentioned high GDP increase rate.

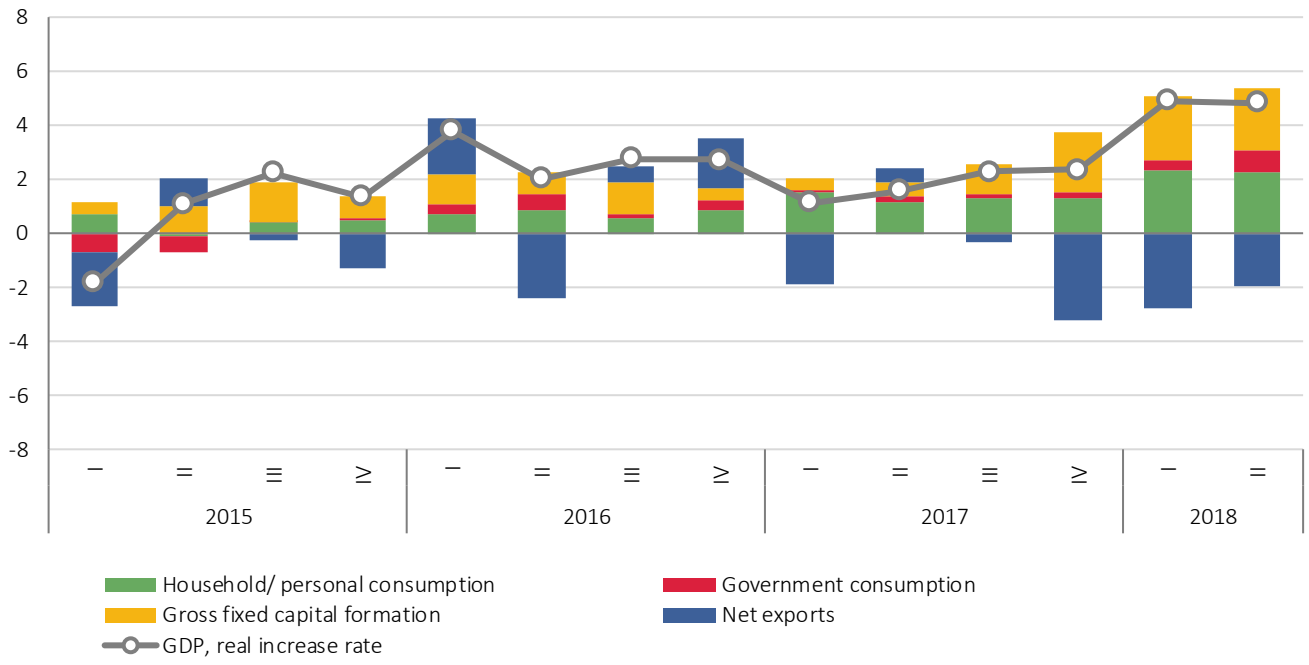
Structure of realized GDP increase, observed by **expenditure aggregates**, in the last two quarters of the observed period is more favourable than in the previous period. After the slow increase of only 2.5% in the first half of 2017, the investments significantly accelerated increase in the second half of the year. This acceleration was continued in the first two quarters of 2018, reaching to 15.1%, i.e. 12.1%, respectively (table 1.1).

Table 1.1. GDP – expenditure aggregates, real inter-annual growth rates, 2015 – Q2 2018 (%)
(quarter relative to the same quarter of the previous year)

	2015	2016	2017				2018	
			Q1	Q2	Q3	Q4	Q1	Q2
GDP	**0.8**	**2.8**	**1.1**	**1.6**	**2.3**	**2.4**	**4.9**	**4.8**
Household consumption	0.5	1.0	2.1	1.6	1.8	1.8	3.1	3.1
Government consumption	-1.5	2.2	0.4	1.6	1.0	1.1	2.3	5.3
Gross fixed capital formation	5.6	5.1	2.4	2.6	6.2	12.5	15.1	12.1
Exports	10.2	12.0	9.1	11.2	11.6	7.5	9.5	7.1
Imports	9.3	9.0	11.3	8.9	10.7	12.1	12.8	9.2

Unlike investments that recorded positive trends at the end of 2017, net exports at the end of 2017 noted more significant slowing growth, due to imports increase (table 1.1). Somewhat better situation is noticed in the first two quarters of 2018, when negative contribution of net exports decreased relative to the previous quarter, amounting to -2.8 p.p. in Q1 and -1.9 p.p. in Q2 2018.

Graph 1.1. Contributions to inter-annual GDP growth rate – expenditure aggregates



Observed from the **production side**, the greatest positive contribution to quarterly GDP increase in Q2 (1.3 p.p.) resulted from increased activity in service sections (excluding trade), which, observed as aggregate, recorded growth of 3,3% (Table 1.2).

Table 1.2. GDP – production side, real inter-annual growth rates in 2015 – Q2 2018 (%)

	2015	2016	2017				2018	
			Q1	Q2	Q3	Q4	Q1	Q2
GDP	**0.8**	**2.8**	**1.1**	**1.6**	**2.3**	**2.4**	**4.9**	**4.8**
Agriculture	-7.7	8.1	-6.3	-9.1	-11.9	-9.5	10.8	14.8
Industry and water supply	3.2	2.6	1.3	3.5	6.4	2.8	5.4	2.6
Construction	2.7	3.2	-3.7	-2.1	6.0	17.9	28.2	22.9
Trade	2.1	3.0	4.2	4.1	6.2	5.4	4.8	5.4
Services, excl. trade	0.5	2.7	0.9	1.6	1.8	1.8	2.9	3.3
Net taxes	0.9	1.0	2.1	1.8	2.4	2.1	3.1	3.5

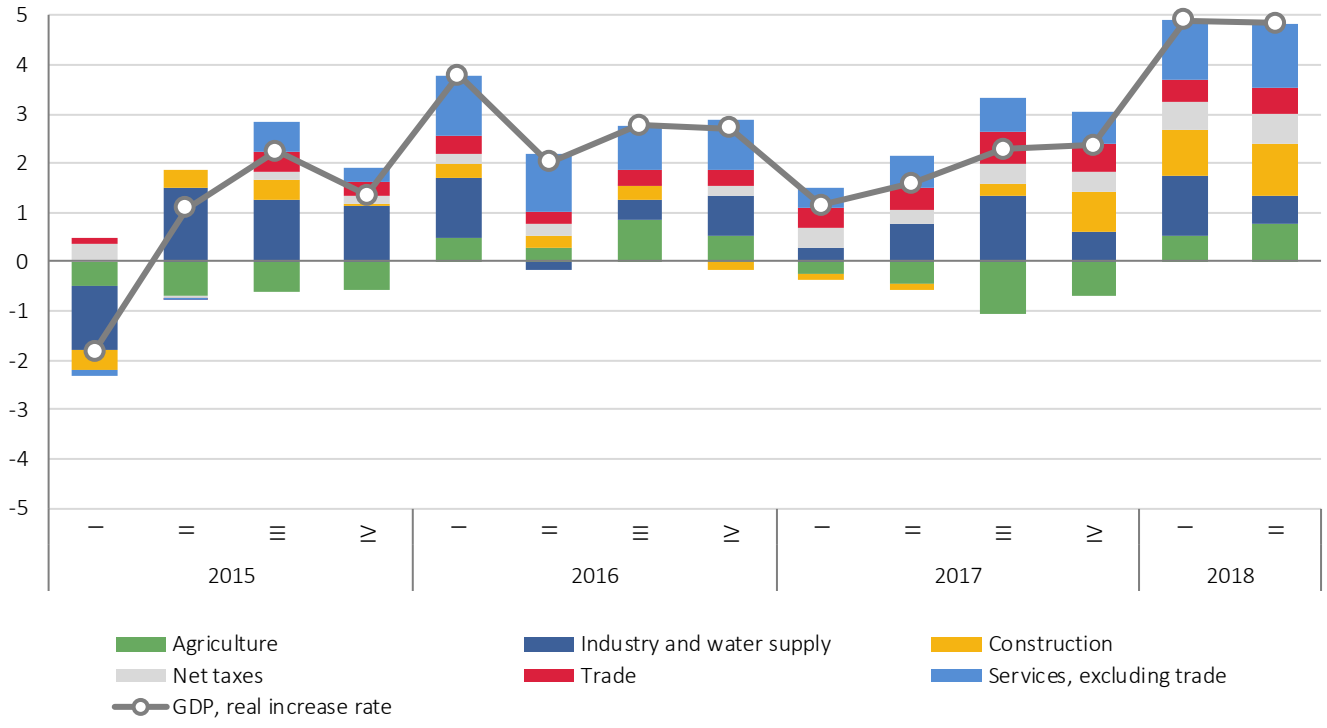
Positive contribution to GDP increase in Q2 was continuously provided by industry and construction.

In the first two quarters, recorded was great increase of construction, presenting continuation of favourable trends from the second half of 2017, also strongly supported by continued intensive realization of infrastructure projects. Namely, on inter-annual level, construction accelerated growth to 28.2% in the first quarter and 22.9% in the second quarter 2018, and positively contributed to GDP growth with 1.0 p.p. in Q2 2018.

Positive contribution to GDP was also provided by agriculture (0.8 p.p.), which mostly resulted from favourable weather conditions, particularly in summer months.

Favourable trends in industry (including water supply) positively contributed to GDP increase with 0.6 p.p.

Graph 1.2. Contributions to inter – annual GDP growth rate – production side

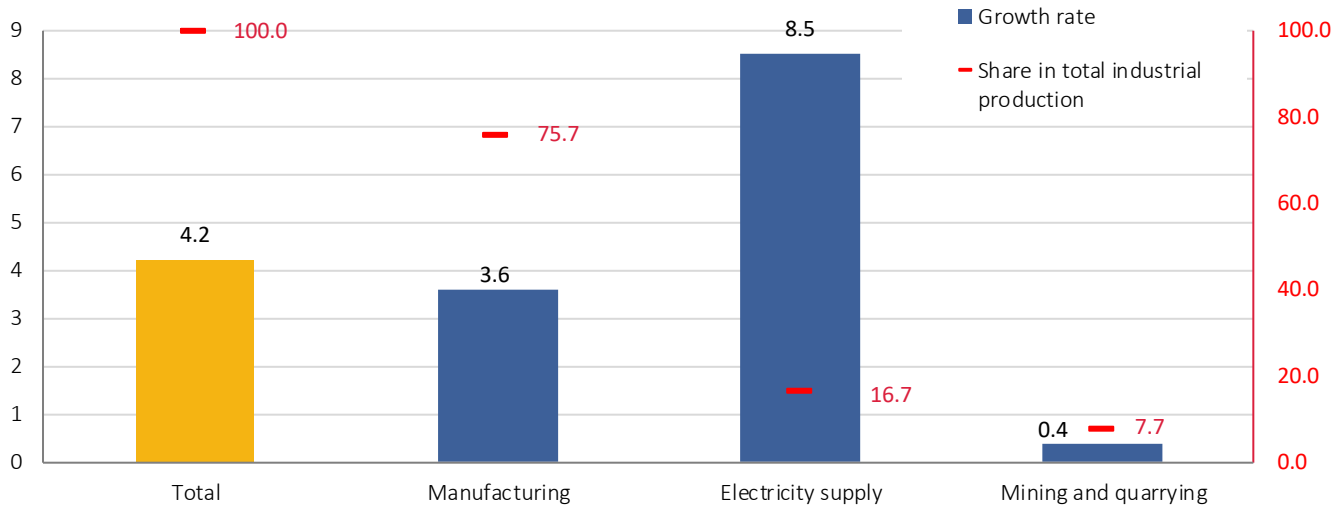


2. Industrial production

2.1. Total industrial production

Total industrial production in Serbia, in the first two quarters 2018 increased by 4.2% relative to the same period 2017. All sections noted cumulative increase in the first six months – Manufacturing – 3.6%, Electricity, gas, steam and air conditioning supply – 8.5% and Mining and quarrying – 0.4%.

Graph 2.1. Cumulative trends of total industry and its sections (%)
(Q1 + Q2 2018 relative to the same period of the previous year)



Manufacturing, with the increase of 3.6% mostly contributed to total industrial production growth, even 2.7 p.p.

The section of Electricity, gas, steam and air conditioning supply contributed to total industrial production increase with 1.4 p.p. and Mining and quarrying with 0.1 p.p.

Slightly slower increase trend is expected for the third quarter, i.e. somewhat lower contributions, which will, according to prognoses, result in average growth of total industrial production in the first nine months of the current year (January – September) of about 3.5% and about 3%, increase of manufacturing.

Table 2.1. Industrial production, quarterly indices (%)
(comparison with the same period of the previous year)

	2016				2017				2018		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q1+Q2+Q3[1)]
Industrial production – total	108.0	103.6	104.9	104.6	101.1	103.1	106.9	104.1	106.0	102.5	**3.5**
Manufacturing	106.1	106.5	105.0	106.5	106.0	105.0	108.7	105.7	105.0	102.3	**3.0**
Electricity, gas, steam and air conditioning supply	112.2	92.8	106.6	99.2	85.8	93.8	100.5	97.3	110.9	105.7	...
Mining and quarrying	113.6	99.2	102.9	98.4	94.2	105.4	105.1	104.3	102.9	97.9	...

[1)] Prognoses

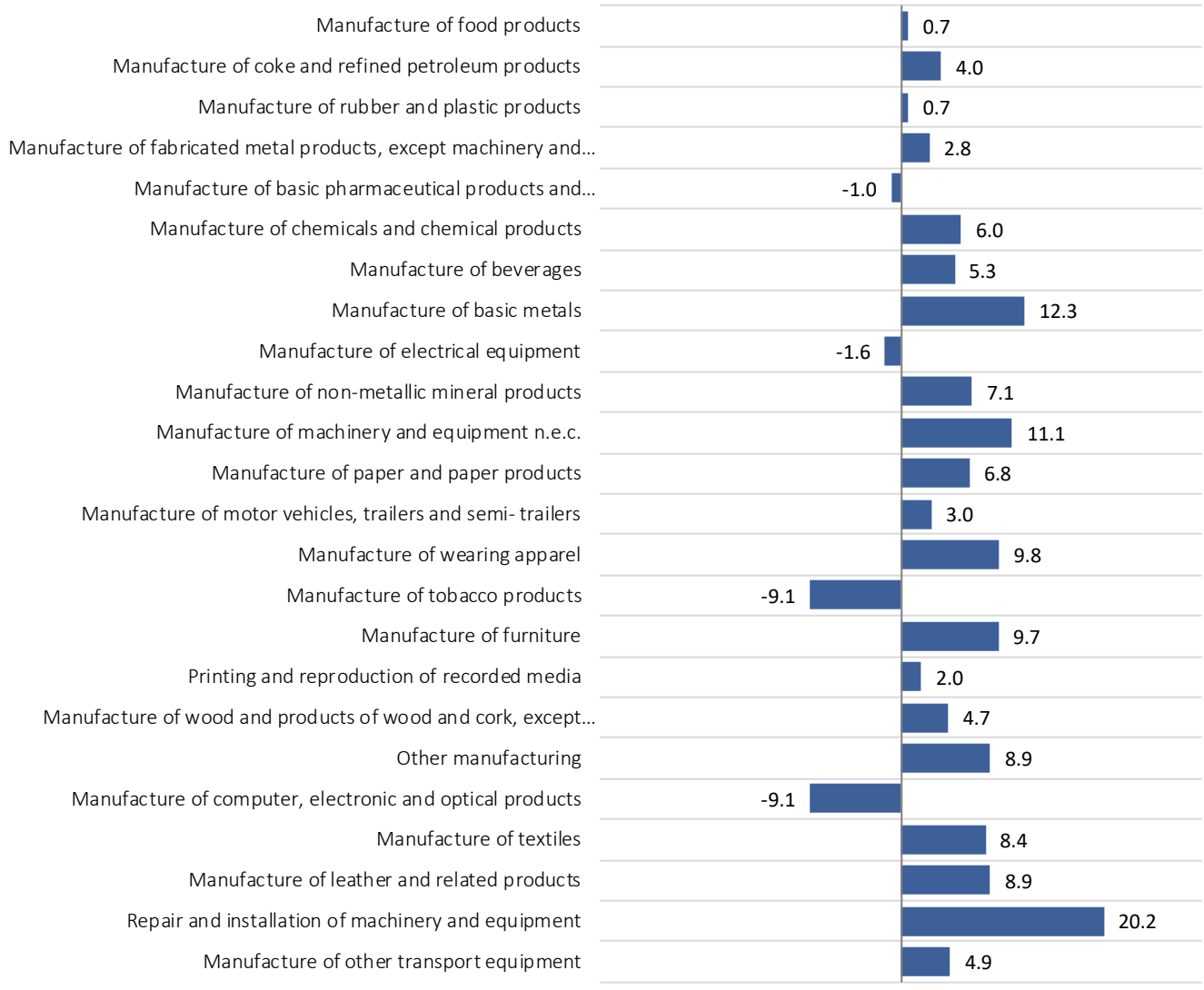
2.2. Manufacturing (C)

(share of 75.7% in total Industrial production index)

In the first two quarters 2018, observed by divisions, manufacturing increased in 20 out of 24 divisions, in cumulative comparison. Decrease was recorded in four divisions, out of which two do not have significant share in total industrial production index (Manufacture of computers, with the share of 0.8% and Manufacture of tobacco, with the share of 1.9%). Divisions with high weights (participating together with 7.2%) in total industry and cumulative decrease in the first six months are the following: Manufacture of basic pharmaceutical products and pharmaceutical preparations (fall of 1%) and Manufacture of electrical equipment (fall of 1.6%).

Graph 2.2. Manufacturing by divisions, cumulative growth rates (%)

(Q1 + Q2 2018 relative to the same period of the previous year,
Divisions are listed by descending share in total industrial production)

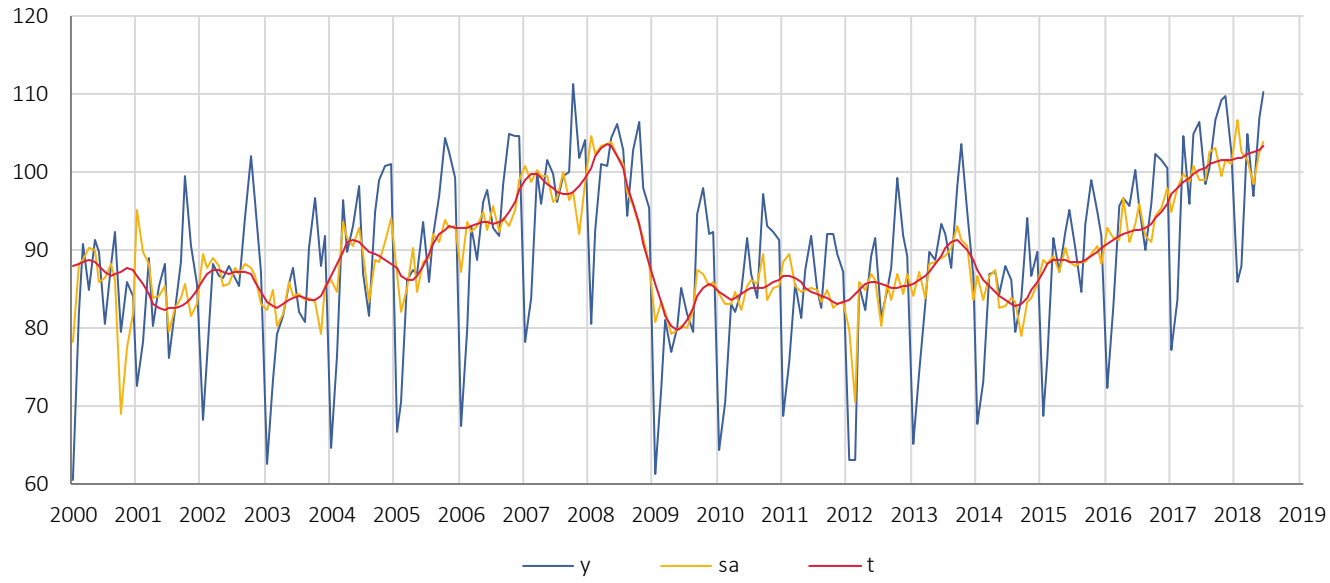


Apart from ordinary seasonal fluctuations characteristic for this section, from the third quarter 2014, trend series of Manufacturing report firm growing trend. Such trend will be continued, but probably with lower growth rates.

2. Industrial production

Graph 2.3. Components of Manufacturing time series

(u – original series, sa – series with excluded seasonal component, t – trend cycle component, average 2017 = 100)

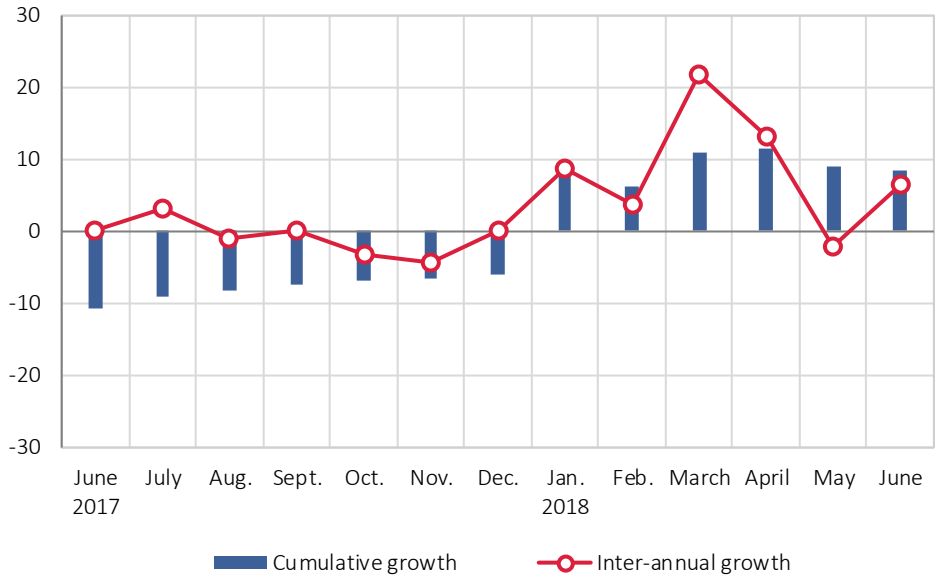


2.3. Electricity, gas, steam and air conditioning supply (D)

(share of 16.7% in total Industrial production index)

Graph 2.4. Cumulative and inter – annual growth rates in energy section (%)

(cumulative – January–June 2018, relative to the same period 2017;
Inter - annual – June 2018, relative to June 2017)



In the first six months 2018, energy section recorded cumulative growth of 8.5%.

In April and in June, inter – annual growth rates were recorded (13% and 6.3%, respectively), while in May, fall of 2% was noted.

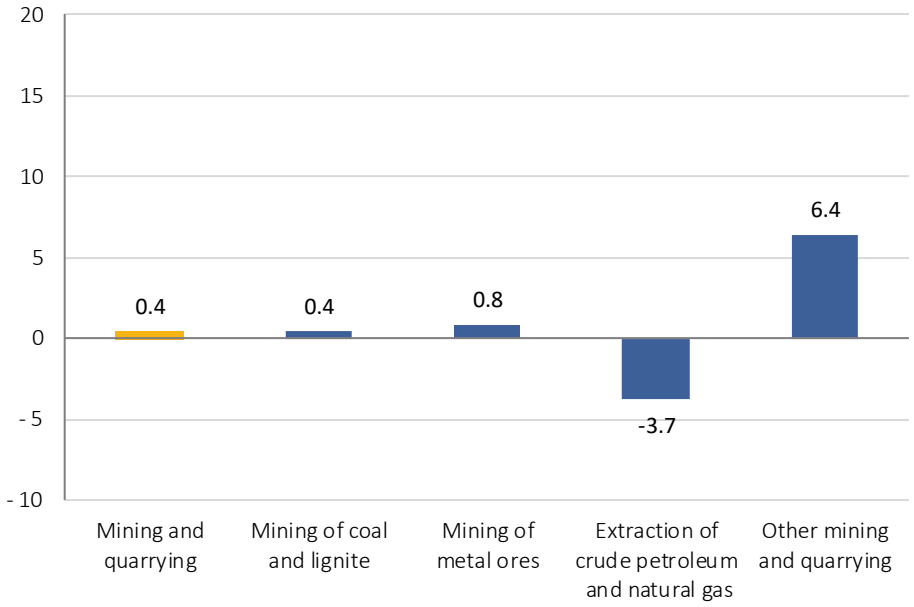
The whole section records growing trend, but markedly unstable.

2.4. Mining and quarrying (B)

(share of 7.7% in total Industrial production index)

Graph 2.5. Cumulative growth rates in the section of Mining and quarrying (%)

(Q1 + Q2 2018 relative to the same period of the previous year)



Production in the section of Mining and quarrying in the first six months 2018 noted cumulative growth of 0.4%. In April and in June, inter-annual growth was recorded (1.7% and 2.9%, respectively), while in May, fall of 10% was noticed.

Turbulences in production of coal (inter-annual fall of 21% in May) mostly contributed to fluctuating trend of this section.

How to interpret the time series?

Seasonal effects can provoke distortions in time series trend, and in such way camouflaging its "real" nature and significant characteristics necessary for precise and detail analysis of the phenomena. When selecting the indicators that will be used for analysis (original, seasonally adjusted or trend), the nature of the observed series and point of the performed analysis should be taken into account. Three separate components (obtained by series' disaggregation), together with the original series, describe various aspects of a single phenomenon and are used for versatile analytic purposes – depending on the researcher's interest. Seasonally adjusted values are used for comparison of the consecutive periods and for estimation of potential value of a series when calendar effects and season effects would not exist, as is the case with industrial production.

3. Construction

3.1. Construction activity

After a short delay of construction activity in the first half of 2017, value indices of the performed works on the territory of the Republic of Serbia in the last three quarters have recorded growth. The stagnation of construction activity in the first half of 2017 was largely due to the decline in the value of performed works in transport infrastructure (roads and railways).

In the first six months of 2018, construction activity on the territory of the Republic of Serbia increased by 26.9% at constant prices, relative to the same period of the previous year.

In Q1, realized was growth of 29.9%, and in Q2, growth of 24.8% relative to the same period of the previous year.

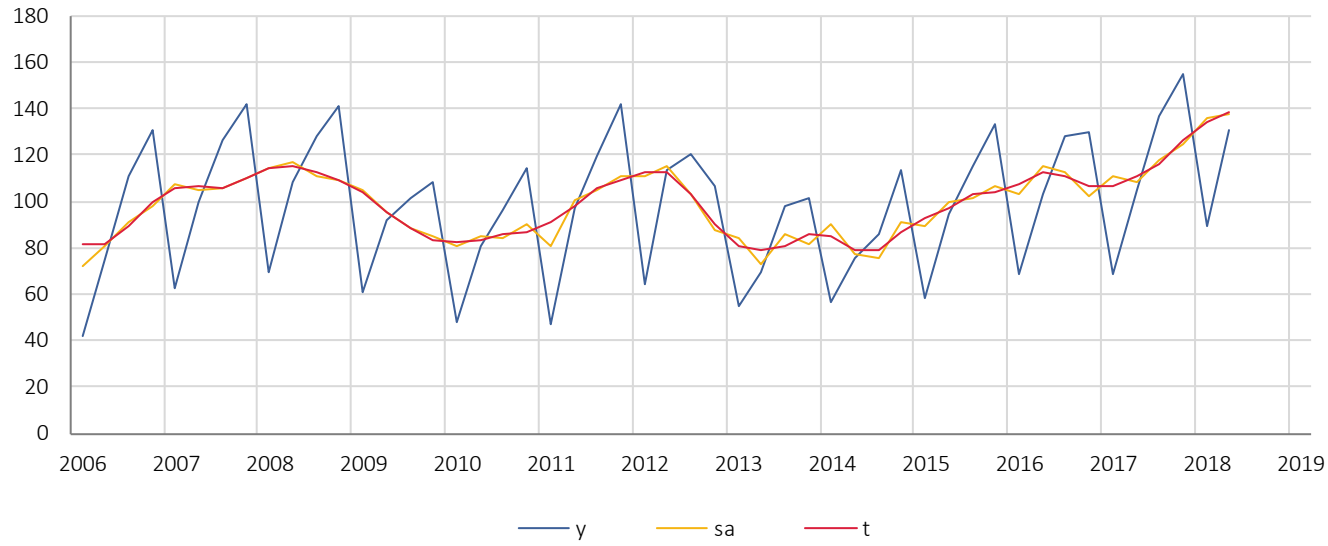
3.1.1. Trend in the first six months

In the first six months of 2018, construction activity in the Republic of Serbia increased by 26.9% at constant prices, relative to the same period 2017.

Observed by types of construction, value of performed works on buildings increased by 15.5%, while increase related to civil engineering amounted to 33.0%.

Graph 3.1. Components of time series of Indices of performed construction works on the territory of the Republic of Serbia, at constant process

(u – original series, sa – series with excluded seasonal component, t – trend cycle component average 2017 = 100)



Regional indicators show that value of performed works in Beogradski region has been constantly increasing in whole 2017, and in the first two quarters of 2018.

Region Vojvodine and Region Juzna i Istocna Srbija in the first two quarters of 2017 recorded decrease of construction activity relative to the same period of the previous year, but since the third quarter 2017, value of performed construction works started increasing. Particular increase was recorded in the first two quarters of 2018.

In Region Sumadije i Zapadne Srbije, since the first quarter 2017, construction activity has been showing the decreasing trend, particularly obvious in the first two quarters of 2018. Decreased value in this region was most apparent regarding construction of transport infrastructure (roads and railways).

3.1.2. Trend in the second quarter 2018

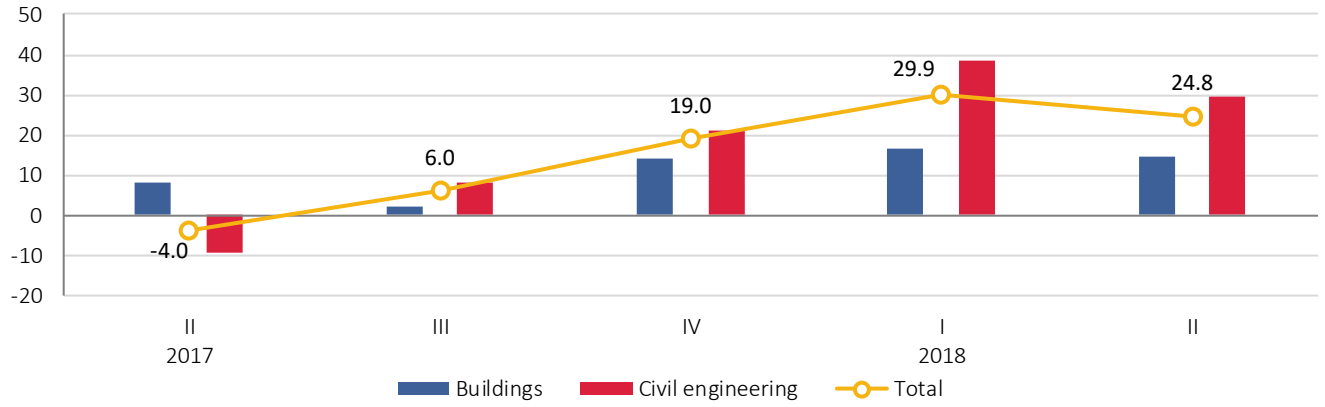
Table 3.1. Value of performed construction works, quarterly indices (%)
(comparison with the same period of the previous year)

	2016				2017				2018		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q1+Q2+Q3[1)]
Current prices	116.0	109.0	112.1	99.8	101.3	102.2	108.9	121.1	130.2	126.3	**120.8**
Constant prices	118.6	106.3	106.5	96.3	95.1	96.0	106.0	119.0	129.9	124.8	**118.8**

[1)] Prognosis

In Q2 2018, construction activity increased by 26.3% at current prices, while at constant prices, the increase was 24.8% (relative to Q2 2017). Observed by type of construction, value of performed works on buildings increased by 14.5%, and regarding civil engineering (transport, pipeline, complex industrial constructions), the increase amounted to 29.8% at constant prices.

Graph 3.2. Value of performed construction works at constant prices, quarterly growth (%)
(quarter relative to the same quarter of the previous year)



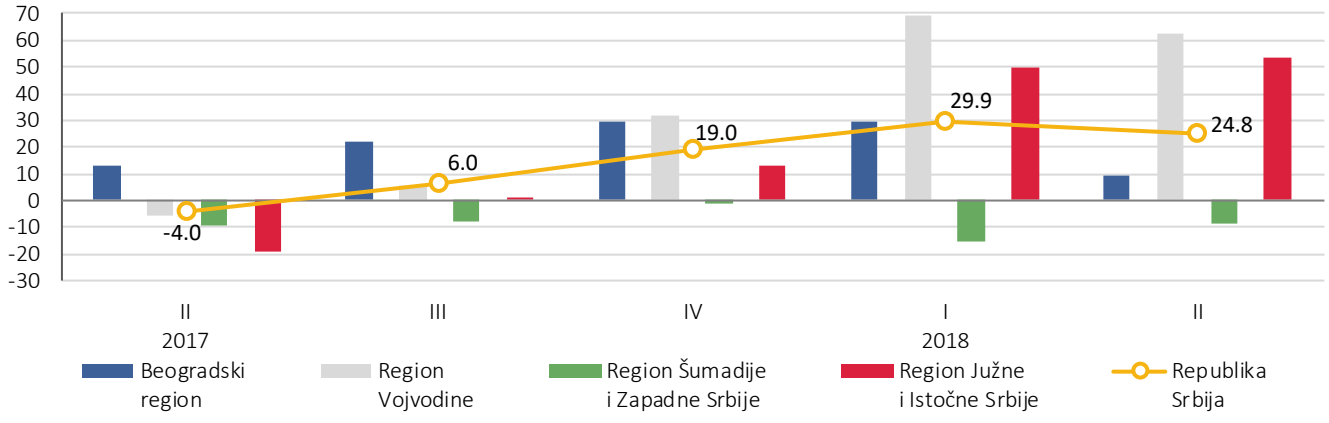
Increase of construction activity in the second quarter was the most noted in Region Vojvodine (62.3%) at constant prices.

In Region Južne i Istočne Srbije the activity was increased by 53,8%, and in Beogradski region by 9,7% at constant prices.

Significant increase of value in Beogradski region related to residential buildings, in scope of housing- business complexes and to non-residential buildings.

As was recorded in the first quarter, construction activity decreased only in Region Sumadije I Zapadne Srbije, by 9% at constant prices. Decrease of values in this quarter was recorded regarding transport infrastructure constructions and non-residential buildings constructions.

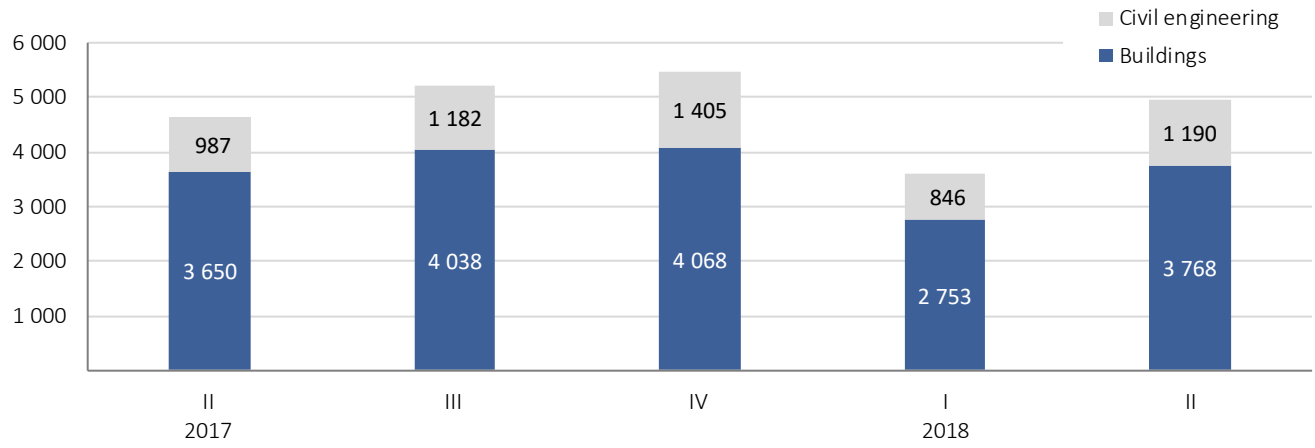
Graph 3.3. Value of performed construction works by regions, at constant prices, quarterly growth (%)
(quarter relative to the same quarter of the previous year)



3. Construction

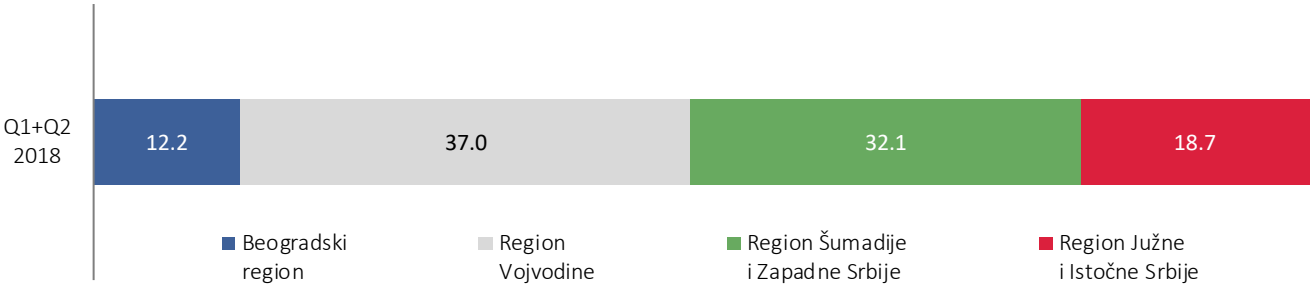
In **the second quarter 2018,** 4 958 building permits were issued. The greatest part of permits (3 768) related to construction works on buildings, while the rest related to transport infrastructure works, pipelines, complex industrial structures, etc. Out of total number of issued permits in the second quarter, 50.3% related to new construction, while other permits were issued for adaptation, recovery, reconstruction and maintenance works.

Graph 3.4. Number of issued building permits for buildings and civil engineering in Q2 2018



Observed by regions, in the first two quarters 2018, the greatest number of permits was issued in Region Vojvodine (3 164), followed by Region Šumadije i Zapadne Srbije (2 744), Region Južne i Istočne Srbije (1 604), while the smallest number of issued permits was recorded in Beogradski Region (1 045).

Graph 3.5. Share of issued permits by regions in the first two quarters 2018 (%)



Glossary

Value of performed construction works – the most significant indicator of construction activity trend in Serbia. It presents the value of performed works on construction that the reporting unit performed with workers directly engaged for execution of works.

Value of performed works includes: value of work, value of built in material and finished products for incorporating, consumed energy commodities and other expenditures related to performing works on construction. Value of performed works excludes: value of subcontractors' works, expenditures of land purchase, design, supervision and VAT.

According to Classification of Types of Constructions, applied since 2004, which is completely harmonized with the same Classification of Eurostat, all constructions can be classified into: buildings and civil engineering.

Value on buildings includes value of performed works, both on residential and non-residential buildings.

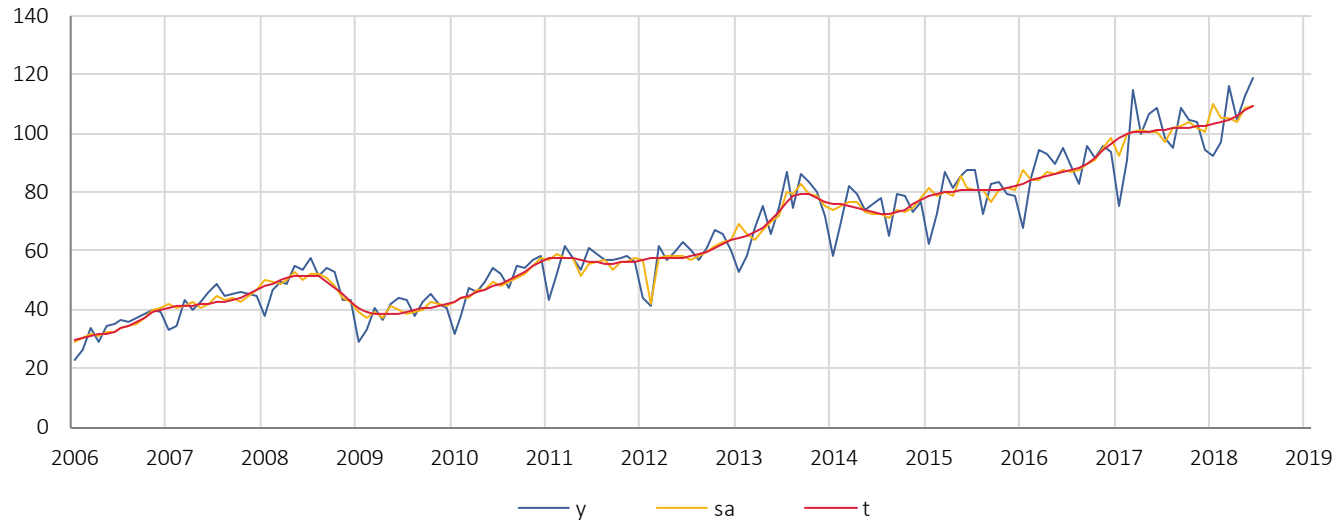
Civil engineering, besides transport infrastructure (roads, railways, bridges, etc.) involves also works carried out on pipelines, complex industrial structures and other civil engineering n.e.c. (e.g. sport constructions).

4.1. Total value of goods export[5]

Total value of goods export from Serbia increased by 7.6% in the period January – June 2018, relative to the same period 2017. Observed by time series' components, slightly increasing trend, recorded during the previous years, shows the trend of continuation in the following quarter.

Graph 4.1. Components of export's time series

(u – original series, sa – series with excluded seasonal component, t – trend cycle component, average 2017 = 100)



Total export results were mostly influenced by manufacturing[6] increase of 10.7%, as it presents 92.7% of total export and decrease of 25.8% in the section of agriculture production, hunting and service activities, which encompassed 5.1% of total export in the first half 2018.

Table 4.1. Export of goods by CA (2010) sections, quarterly indices (%)

(comparison with the same period of the previous year)

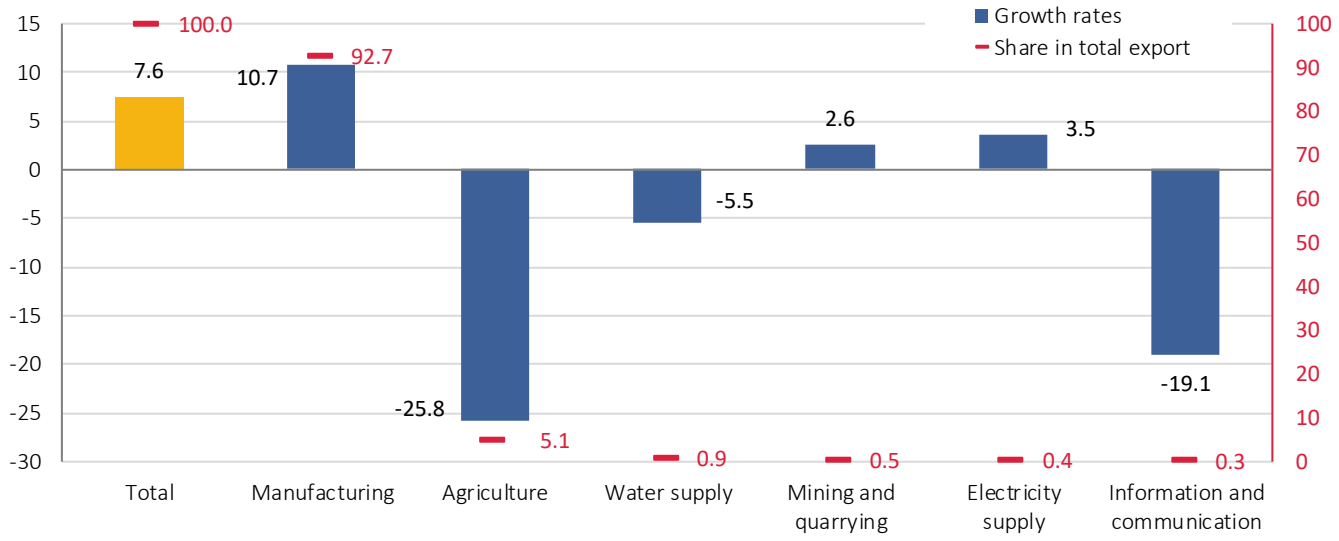
	2016				2017				2018		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q1+Q2+ Q3[1)]
Export – total	111.5	108.8	110.2	115.9	113.6	113.7	112.9	108.2	108.9	106.5	**108.0**
Manufacturing	112.2	110.6	110.3	113.3	113.6	112.7	114.3	113.7	112.4	109.2	...
Agriculture, forestry and fishing	93.7	98.8	113.9	153.6	123.4	125.9	90.5	43.4	70.0	77.9	...
Mining and quarrying	121.4	121.9	115.7	126.4	137.1	137.7	137.1	133.5	120.9	89.0	...

[1)] Prognosis

[5] Current exchange rate, EUR

[6] CA 2010

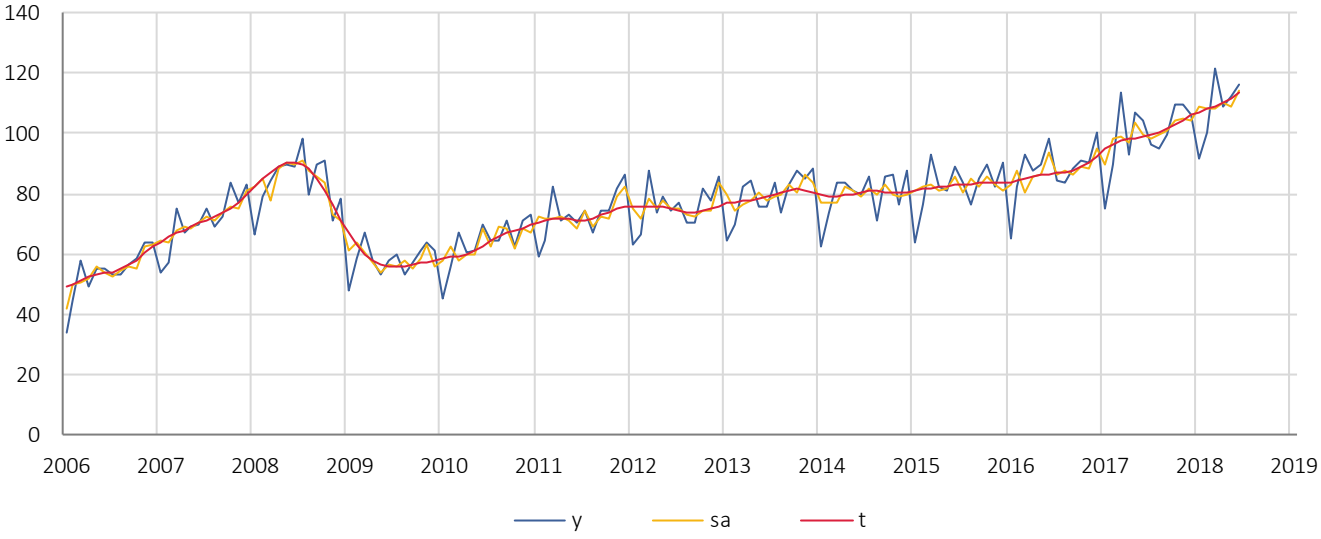
Graph 4.2. Cumulative growth rates of export by CA (2010) sections and sections' share in export (%)
(Q1 + Q2 2018 relative to the same period of the previous year)



4.2. Total value of goods import[7]

Total value of goods import in Serbia in the period January – June 2018 increased by 11.7% relative to the same period 2017.

Graph 4.3. Components of import's time series
(u – original series, sa – series with excluded seasonal component, t – trend cycle component, average 2017 = 100)



Total import results were mostly influenced by manufacturing increase of 13.8%, as it presents 75.9% of total import, 10% in import of unclassified goods, which encompassed 11.3% of total import and 8.8% in the section of mining and quarrying which presents 9% of total import in the first half of 2018.

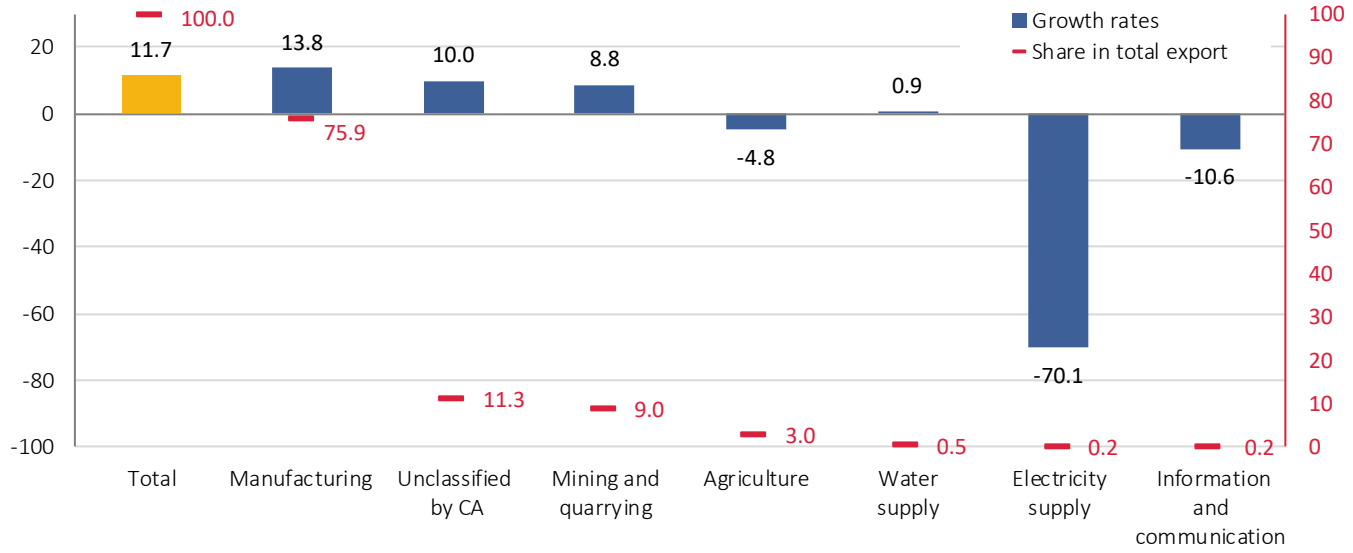
[7] Current exchange rate, EUR

Table 4.2. Import of goods by CA (2010) sections, quarterly indices (%)
(comparison with the same quarter of the previous year)

	2016				2017				2018		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q1+Q2+Q3[1)]
Import – total	103.0	109.0	104.7	107.3	115.8	110.4	113.6	115.5	112.5	111.0	**111.5**
Manufacturing	103.1	106.8	104.3	107.1	110.1	108.5	111.2	114.8	118.5	109.8	...
Agriculture, forestry and fishing	110.1	104.6	100.9	93.4	108.6	121.4	125.7	126.1	99.7	90.9	...
Mining and quarrying	77.3	97.7	82.9	90.1	154.6	123.0	133.5	127.8	100.9	118.3	...

[1)] Prognosis

Graph 4.4. Cumulative growth rates of import by CA (2010) sections and sections' share in import (%)
(Q1 + Q2 2018 relative to the same period of the previous year)



4.3. The most significant external trade partners

The most significant external trade partners in the first half 2018 were the countries with which Serbia has signed agreements on free trade. European Union member countries account for 64.7% of total external trade and the second major partner refers to the CEFTA countries. The major external trade partners are separately presented in table 4.3.

Table 4.3. The major external trade partners

Export	EUR mill
Italy	1 109.4
Germany	980.5
Bosnia and Herzegovina	629.6
Russian Federation	451.3
Romania	424.2

Import	EUR mill
Germany	1 434.4
Italy	1 039.7
China	846.3
Russian Federation	810.8
Hungary	539.9

4.4. Manufacturing (C)

(share of 92.7% in total export and 75.9% in total import)

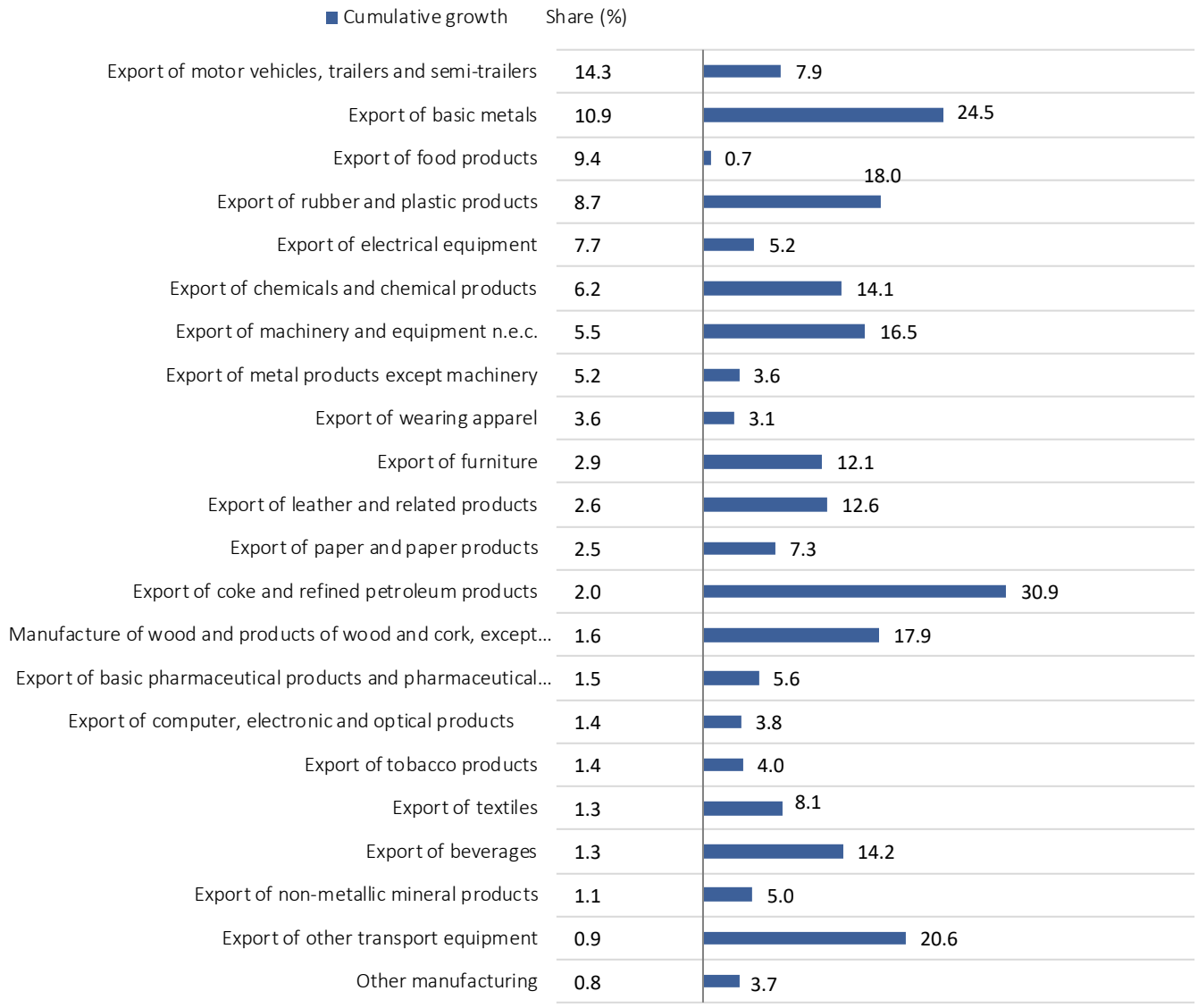
Export of manufacturing recorded growth of 10.7% if compared with the first half 2017, presenting the increase in all divisions of the Classification of activities.

Export of motor vehicles and trailers and semi-trailers noted increase of 7.9%, relative to the period January – June 2017, presenting the highest separate value in export of EUR 1.1 billion. Apart from this division, particularly good results were noticed in export of basic metals (increase of 24.5%), rubber and plastic products (increase of 18%), electrical equipment (increase of 5.2%) and chemicals and chemical products (increase of 14.1%).

Export of food products, after bad results in the first four months of 2018, started the increasing, recovery trend. Relative to the first half of the previous year, the increase of 0.7% was recorded. Somewhat worse results are mostly the consequence of decreased export of sugar and oils and fats (cumulative fall of sugar export of 59.3% and fall of 22.3% regarding export of oils and fats). Somewhat smaller fall of export of mill products and meat processing and preserving products (7% and 9%, respectively) was also recorded. Export results in all these classes are improving from month to month, but the dynamics of recovery is slow.

Graph 4.5. Export of manufacturing by divisions, cumulative growth (%)

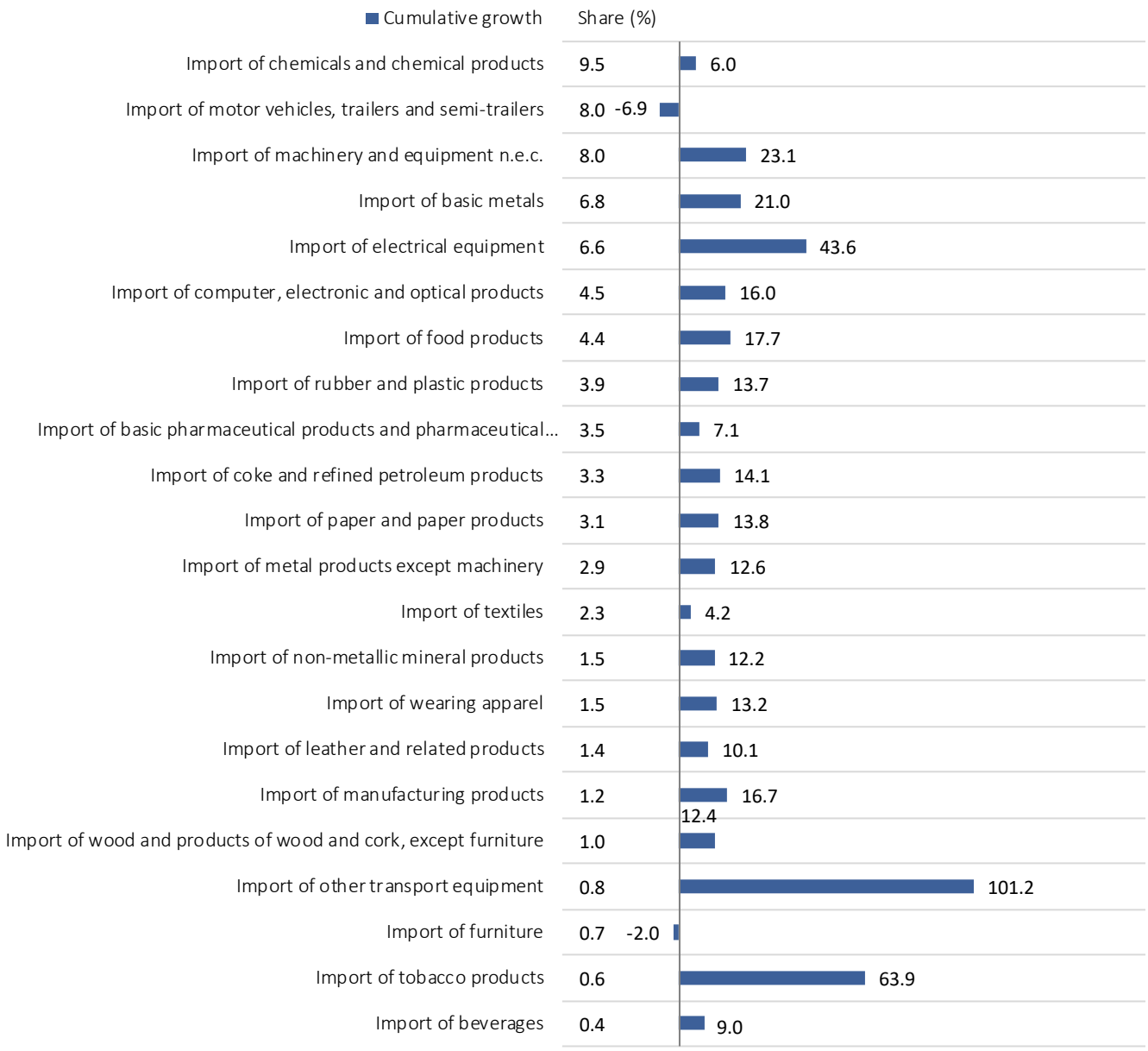
(Q1 + Q2 2018 relative to the same period of the previous year, by descending share in total export)



Import of manufacturing recorded increase of 13.8% relative to the first half 2017. Such result was mostly influenced by increased import of chemicals and chemical products (6%), machinery and equipment, n.e.c. (23.1%), basic metals (21%) and electrical equipment (43.6%). On the other hand, import of motor vehicles and trailers recorded decrease of 6.9% and the share in total import decreased from 9.6% in the same period 2017 to 8%.

Graph 4.6. Import of manufacturing by divisions, cumulative growth (%)

(Q1 + Q2 2018 relative to the same period of the previous year, by descending share in total import)



4.5. Agriculture, forestry and fishing (A)

(share of 5.1% in total export and 3% in total import)

Agricultural production recorded huge decrease in 2017, influencing export results in 2018. Export in this section realized decreased value of 25.8%, as well as decreased share in export from 7.4% to 5.1% relative to the period January – June 2017. The most significant division of this section, Agricultural production, hunting and service activities, participating with the share of 96.9% in total export of the whole section, noted the decrease of 27%. The greatest decrease in export, relative to the first six months 2017 was recorded in export of cereals (except rice), leguminous crops and oil seeds (cumulative decrease of 33.8%) and in export of pome and stone fruit (cumulative decrease of 22.6%), that is, the two CA classes which make 73.4% of total export of the whole section.

On the other hand, import recorded decrease of 4.8%. Registered was significant increase of cereals import (except rice), leguminous crops and oil seeds of 23.9% and citrus fruits of 20%, and also decreased import of tobacco (26.3%) and beverage plants (25.4%). As these classes of CA make about 48.8% of total import of the whole section, it can be said that structure of import in this section has been significantly changed relative to the same period last year.

4.6. Mining and quarrying (B)

(share of 0.5% in total export and 9% in total import)

The section of Mining and quarrying noticed cumulative import increase of 2.6% relative to the period January – June 2017. Trend values are in slight continuous decrease in the previous seven-month period.

Import in this section recorded growth of 8.8%, mostly caused by increased import (16.7%) of crude oil and natural gas.

Glossary

Unclassified goods by CA (2010), involves storage goods, goods in free zone, as well as goods for which customs tariff is not entered/ filled.

5.1. Retail trade turnover

(Division 47 of the Classification of Activities)

Retail trade turnover in the period January – June 2018, relative to the same period 2017, increased by 5.3% at current and by 3.4% at constant prices.

Table 5.1. Retail trade turnover, quarterly indices (%)

(comparison with the same period of the previous year)

	2016				2017				2018		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q1+Q2+Q3[1)]
Current process	109.7	105.6	106.8	108.6	108.8	109.8	107.6	106.6	104.7	105.8	**105.0**
Constant prices[2)]	109.9	107.2	106.9	106.9	104.0	104.7	104.0	103.0	103.3	103.4	**103.0**

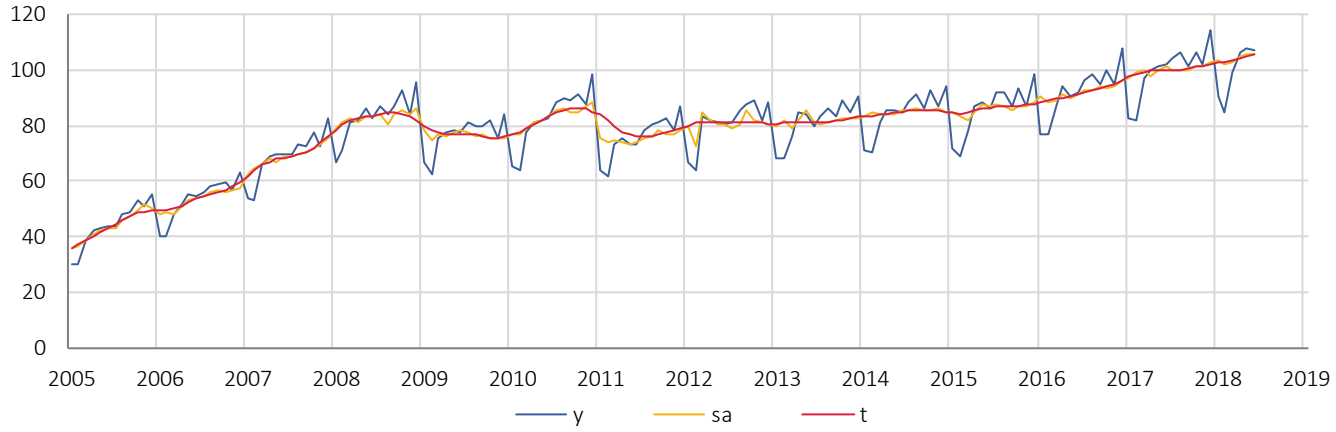
[1)] Prognosis

[2)] Indices are recalculated through monthly indices at constant prices.

Observed relative to 2017 average, in the first six months of 2018, expected seasonal fluctuations in retail trade were observed, both at current and at constant prices. However, the long-term trend is constant and slightly increasing and during the first half of 2018, it was above the last year's average (on average, 4% at current and 2.1% at constant prices).

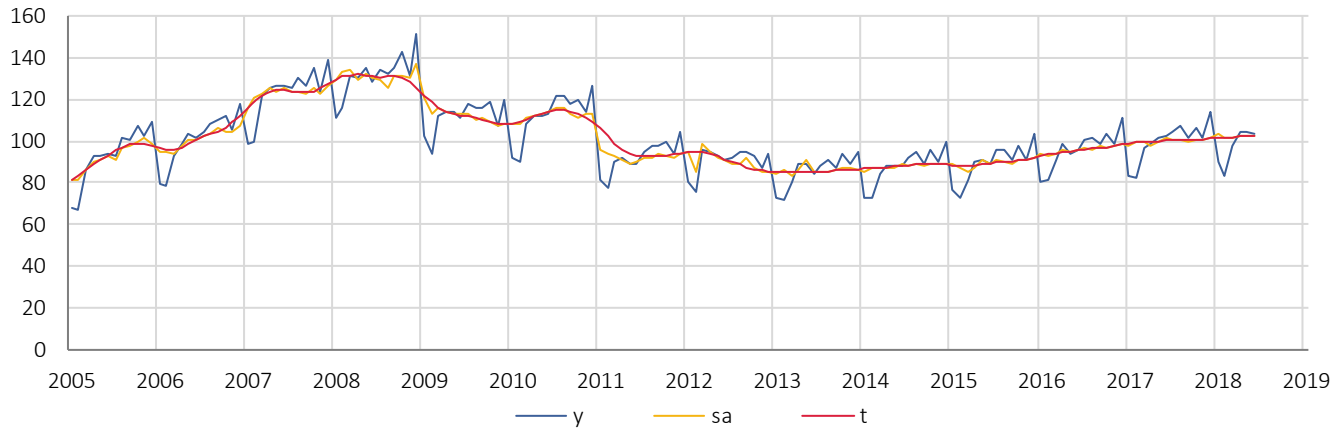
Graph 5.1. Components of time series of retail trade turnover at current prices

(u – original series, sa – series with excluded seasonal component, t – trend cycle component, average 2017 = 100)



Graph 5.2. Components of time series of retail trade turnover at constant prices

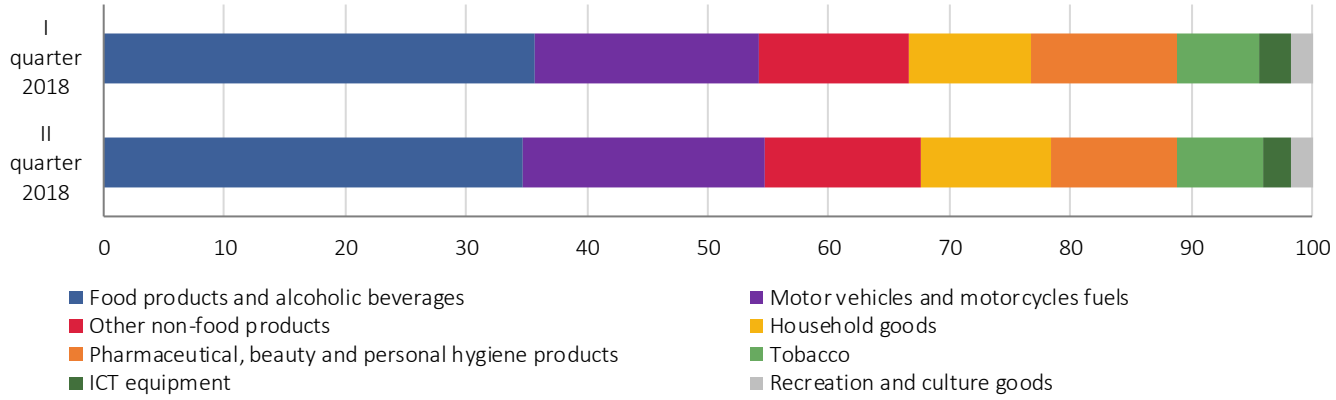
(u – original series, sa – series with excluded seasonal component, t – trend cycle component, average 2017 = 100)



5. Domestic trade

Observed by **trade divisions and commodity groups**, in the second quarter 2018, relative to the first quarter, there were no significant changes in retail trade turnover structure. The most notable were food products and alcoholic beverages (34.7%), followed by motor vehicles and motorcycles fuels (20.1%) and other non-food products (12.9%).

Graph 5.3. Structure of retail trade turnover by trade divisions and commodity groups (%)



5.2. Wholesale trade turnover

(Division 46 of the Classification of Activities)

Wholesale trade turnover in the first half 2018, compared with the same period 2017 noted increase of 7.3% at current prices.

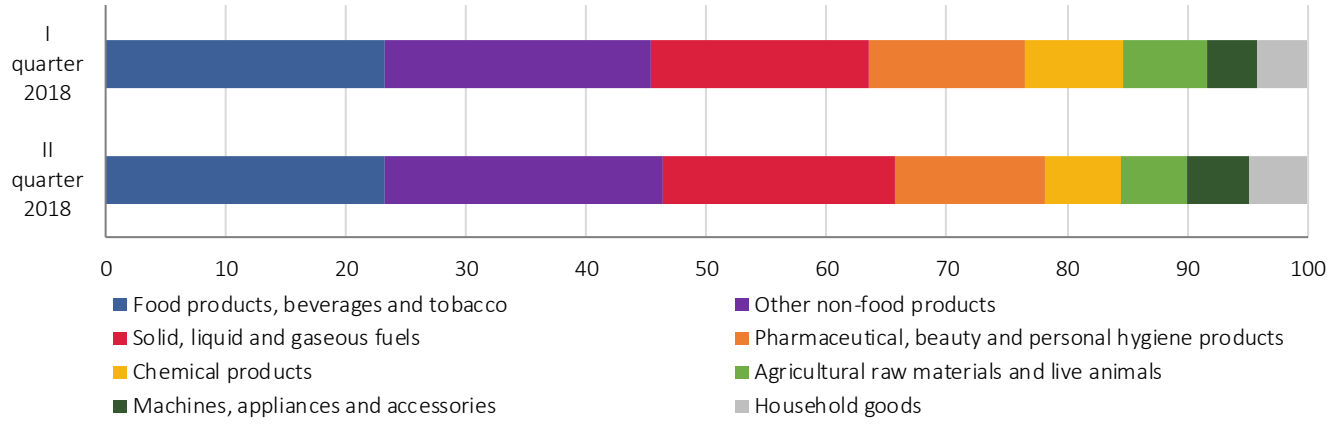
Table 5.2. Wholesale trade turnover, quarterly indices (%)

(comparison with the same period of the previous year)

	2016				2017				2018	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Current prices	102.6	100.9	99.0	100.9	109.7	106.1	108.2	107.7	104.3	110.2

Observed by **trade divisions and commodity groups**, in wholesale trade turnover, similarly with the first quarter 2018, in the second quarter, the most notable were food products, beverages and tobacco (23.3%), followed by other non-food products (23.1%) and solid, liquid and gaseous fuels (19.3%).

Graph 5.4. Structure of wholesale trade turnover by trade divisions and commodity groups (%)



5.3. Turnover in wholesale and retail trade and motor vehicles repair
(Division 45 of the Classification of Activities)

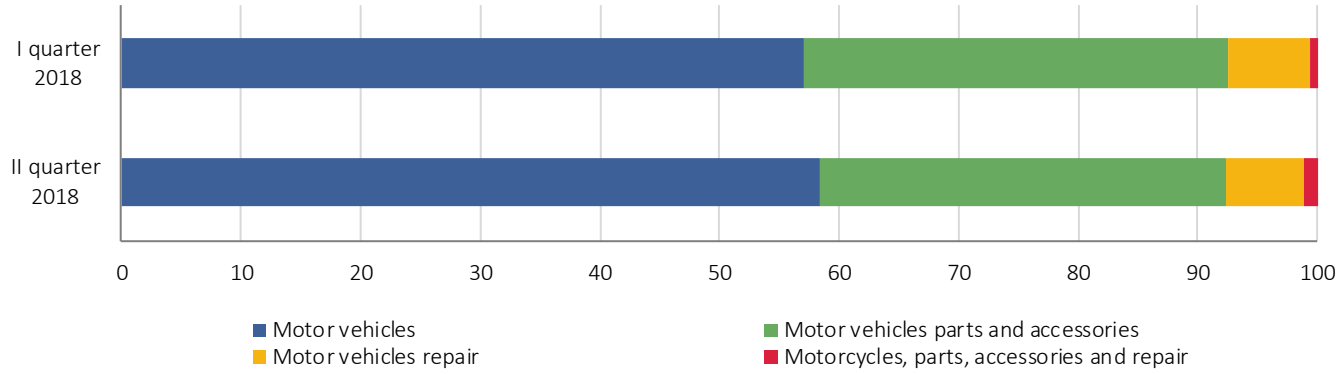
Turnover of goods in wholesale and retail trade and repair of motor vehicles in the first half 2018, relative to the same period 2017 recorded increase of 6.5% at current prices.

Table 5.3. Turnover in wholesale and retail trade and motor vehicles repair, quarterly indices (%)
(comparison with the same period of the previous year)

	2016				2017				2018	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Current prices	124.5	129.4	114.4	115.7	121.3	113.2	114.2	109.5	104.1	108.4

Observed by **trade divisions and commodity groups,** regarding wholesale and retail trade turnover and motor vehicles repair in the second quarter 2018, the most notable were motor vehicles (58.4%), followed by motor vehicles parts and accessories (34%).

Graph 5.5. Structure of wholesale and retail trade turnover and motor vehicles repair by trade divisions and commodity groups (%)



Note:

Goods turnover indices of retail trade at constant prices are obtained by deflating the indices at current prices with appropriate consumer price indices, which exclude: water (from public utilities systems), electricity and motor vehicles, motorcycles and parts thereof.

6. Prices

6.1. Inflation trend

In the **first six months** of 2018, compared with the same period of the previous year, a cumulative inter-annual growth of consumer prices of 1.7% was registered. This result is slightly above the lowest limit of the targeted inflation by the National Bank of Serbia for 2018, being 3.0±1.5%.

In **June** of the current year, consumer prices increased inter-annually by 2.3%, being the highest inter-annual growth from the beginning of the year.

According to SORS forecasts, a progressive growth of consumer prices is expected in the forthcoming period as a result of an projected faster increase of domestic demand, favourable trends in labour market and salaries and wages, as well as of weakening effects of the base. In the first three quarters of 2018, price growth is forecast to be 2.0% inter-annually (table 6.1).

Graph 6.1. Inflation rate measured by consumer price indices, June 2017 – June 2018

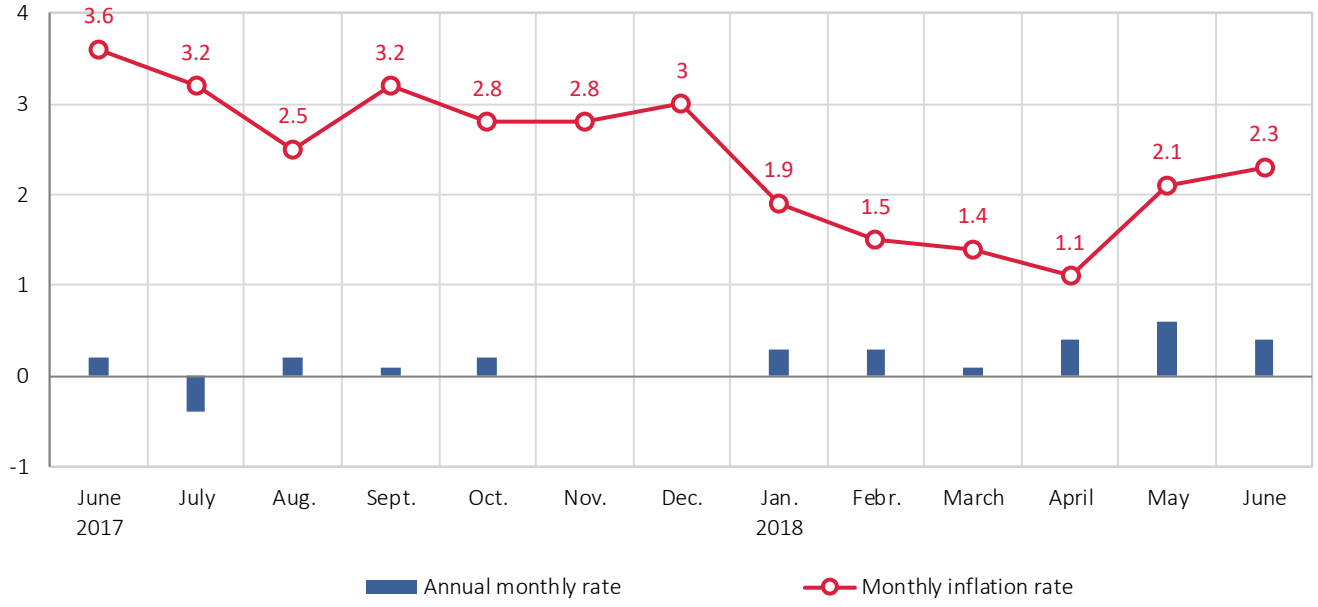


Table 6.1. Inter-annual growth rate, 2016 – Q2 2018. (%)
(quarter to the same quarter of the previous year)

	2016				2017				2018		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q1+Q2+Q3[1)]
Consumer prices (CPI)	1.5	0.5	1.0	1.5	3.1	3.7	3.0	2.9	1.6	1.7	**2.0**

[1)] Forecast

Glossary

Annual inflation rate – price change in the current month, compared with the same month of the previous year, in %.

Monthly inflation rate – price change in the current month, compared with the previous month, in %.

Observed by **main divisions of consumption** in terms of the consumer price index, the cumulative inter-annual growth of 1.7% in the first two quarters of 2018 was mostly due to the contribution of the increase in the following divisions of products:

- Food and non-alcoholic beverages (contribution of 0.6 p.p.)

Having in mind the high share of this division in the total consumption structure (31.7%), it is clear that CPI growth is mostly determined by the increase of its prices. Within this division the largest contribution to the cumulative index was that of the following products: fruit (0.2 p.p.), vegetables (0.2 p.p.), non-alcoholic beverages (0.1 p.p.) and bread and cereals (0.1 p.p.).

The analysis of the seasonal component **fruit and vegetables** (starting from the first quarter 2007) shows that the influence of this division on the growth of total consumer prices after the second quarter, on average, began to go down – in the third quarter it was actually negative, but it was only in the fourth quarter that the increase of food prices was significantly influenced, on average, by vegetable prices.

As far as the influence of the prices of **bread and cereals** is concerned, it is worth mentioning that, despite the favourable agricultural and meteorological situation and expected higher yields in Serbia, a considerably low yield of wheat and cereals is expected in this agricultural season on the European market and in the Black Sea Region. As the prices of cereals on the Serbian market are greatly affected by the prices of these international markets, the prices of cereals have consequently gone up on the Serbian stock exchange, which was a good sign for domestic farmers but not for product consumers. Therefore, the slight increase of the prices of bread and cereals recorded in the second quarter is a result of wheat price expectations on world stock exchanges, while, on the other hand, wheat stocks are low because of the bad previous season in Serbia.

Observed by grouped products, in the structure of the prices of food and non-alcoholic beverages the growth was most affected by **non-processed food** (0.4 p.p.) and less by **non-processed food** (0.2 p.p.).

- Alcoholic beverages and tobacco (contribution 0.4 p.p.)

Within this division, the largest contribution is from the growth of **tobacco** prices (0.4 p.p.). In fact, this is a direct consequence of the harmonized excise policy according to which, respecting the excise calendar 2018-2020, every January and June a specific excise duty on cigarettes rises by 1.5 dinars, including the charged proportional excise duty on cigarettes of 33.0% and the added VAT. These tendencies will bring, in a few years, the price of cigarettes in Serbia to the level that is paid, on average, in EU countries.

It is also worth mentioning that the share of tobacco prices in the total consumer prices over the last few years has been continuously falling due to smaller consumption, i.e. smaller amount of money earmarked by consumers. For this reason, despite the rise of cigarette prices, their contribution in the first two quarters of 2018 also recorded a slight decreasing tendency, when compared with the same periods of the previous years.

- Housing, water, electricity, gas and other fuels (contribution of 0.2 p.p.)

The total cumulative increase in prices of this division of products in the first two quarters of 2018 was due to the growth of the prices of solid fuels and electricity for households.

At the end of the second quarter, because of the increase in the prices of coal and wood on the markets of neighbouring countries and speculative fluctuations on the domestic market, the prices of **solid fuels** rose by 5.1%, thus contributing to the total cumulative growth of consumer prices from the beginning of the year by 0.1 p.p.

The increase in the prices of **electricity for households** was a result of the growth of electricity prices of 2.1%. Its total contribution to the total growth rate of consumer prices at the end the second quarter was 0.1 p.p.

- Recreation and culture (contribution 0.2 p.p.)

With a cumulative growth of 18.6%, the most positive contribution in this division of products was that of the prices of **package holidays**, accounting for 0.1 p.p. of the total consumer price growth. Cultural services contributed to the growth with 0.1 p.p.

- Transport (contribution 0.1 p.p.)

In the structure of this division of products, the six-month increase of 2.4% in the prices of **fuels and lubricants for personal transport equipment** annulled the six-month fall of 3.2% in the prices of personal transport equipment. Actually, since the beginning of the year, great fluctuations on the world market have brought about constant slight increase in oil prices, which has reflected on the increase in fuel prices. Government appropriations, for reason of excise duties increase (consequently of a higher GDP, because of a higher base) in the first two quarters, amounted to 2.63 dinars per litre of petrol and to 3.07 dinars per litre of diesel, at average retail price.

As a result of such tendencies, the total cumulative growth in the prices of fuels and lubricants for passenger cars accounted for 0.1 p.p. of the total inter-annual growth rate of consumer prices.

Graph 6.2. Contributions to the cumulative growth rate of consumer prices by components, p.p.

In Serbia in the second quarter of 2018 there were 2.897 million employed persons and 391.6 thousand unemployed persons aged over 15.[8)]

When compared with same quarter (Q1 2018), the unemployment rate was lower and amounted to 11.9% (after 14.8% in Q1 2018), and the number of unemployed persons decreased by 77.2 thousand.

Although unemployment rate movements had a falling tendency, they contained a seasonal component which, due to the insufficiently long series, cannot be eliminated for the moment being.

Graph 7.1. Unemployment rate movements over Q1 2014 – Q2 2018, quarterly frequency; persons aged 15 and over

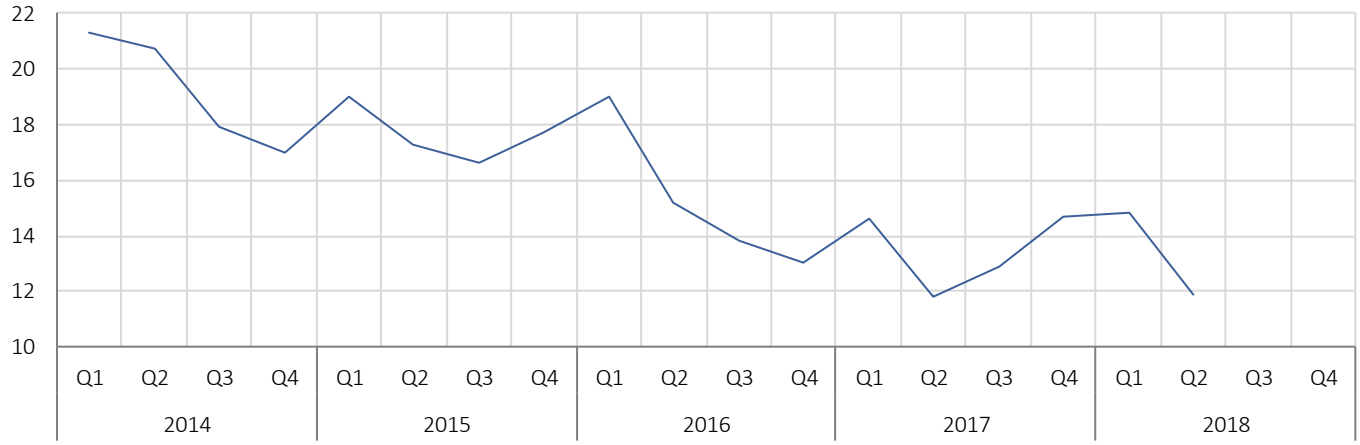


Table 7.1. Labour market, quarterly data, persons aged 15 and over

	Current quarter	Previous quarter		The same quarter of the previous year	
	Q2 2018 (in thousands)	Q1 2018 (in thousands)	change, %	Q2 2017 (in thousands)	change, %
Unemployed	391.6	468.7	-16.5	384.1	2.0
Employed persons	2 896.8	2 688.3	7.8	2 881.0	0.5
	%	%	change, %	%	change, %
Unemployment rate	11.9	14.8	-19.6	11.8	0.8
Employment rate	48.6	45.1	7.8	48.1	1.0

7.1. Comparison with the same quarter of the previous year

When compared with the same quarter of the previous year, the number of unemployed persons increased by 2% (from 384.1 thousand to 391.6 thousand). At the same time, the number of employed persons grew by 0.5% (from 2.881 million in Q2 2017 to 2.897 million in Q2 2018).

The **youth** unemployment rate (persons aged 15-24) in Q2 2018 was 27.5%, being lower than than in Q2 2017 (when it was 28.9%). The highest youth unemployment rate were recorded in the Region Južne i Istočne Srbije (36.6%) and the lowest in Vojvodina (21.3%).

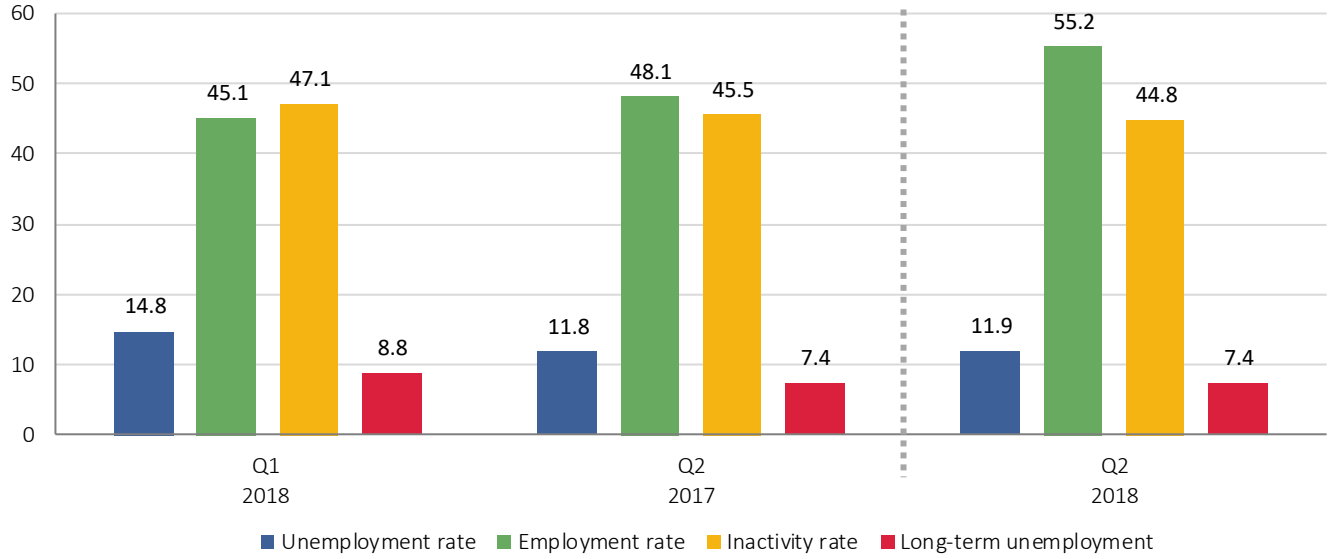
Long-term unemployment (share of persons being unemployed more than a year in the total active population aged 15 and over) is at the same level as in Q2 2017, being 7.4%.

[8)] All the data are retreived from the Labour Force Survey.

7. Labour market

When compared both with Q2 2017 and Q1 2018, the most important contingents of labour market show a growing tendency of employment (and activity) and decrease of inactivity.

Graph 7.2. Labour market – current quarter, previous quarter and the same quarter of the previous year



7.2. Comparison with the previous quarter

When compared with the previous quarter, Q1 2018, the number of the unemployed fell by 77.2 thousand persons, and the number of persons employed grew by 208.5 persons.

The **youth** unemployment rate (persons age from 15 to 24 years) in Q2 2018 amounted to 27.5%, which is by 7.1 p.p. lower than that in the previous quarter, the latter being 34.6%.

Long-term unemployment (share of persons being unemployed more than a year in the total active population aged 15 and over) decreased by 1.4 p.p, amounting to 7.4%, in relation to the previous quarter.

Observed by **sex**, the unemployment rate in Q2 2018 was smaller among men than women: 11.3% of active men and 12.6% of active women were unemployed in this period. When compared with Q1 2018, the unemployment rate among men was lower by 2.7 p.p. and that of women by 3.2 p.p. Men unemployment rates decreased in all the regions, and the most in the Region Južne i Istočne Srbije by 4.8 p.p. (from 18.6% in Q1 to 13.8% in Q2 2018). Women unemployment rates went also down in all the regions, except in the Region Južne i Istočne Srbije, where it saw a slight increase (from 17.8% to 18%). The largest fall in women unemployment rate was registered in the Region Šumadije i Zapadne Srbije (from 18.2% in Q1 to 12.4% in Q2 2018).

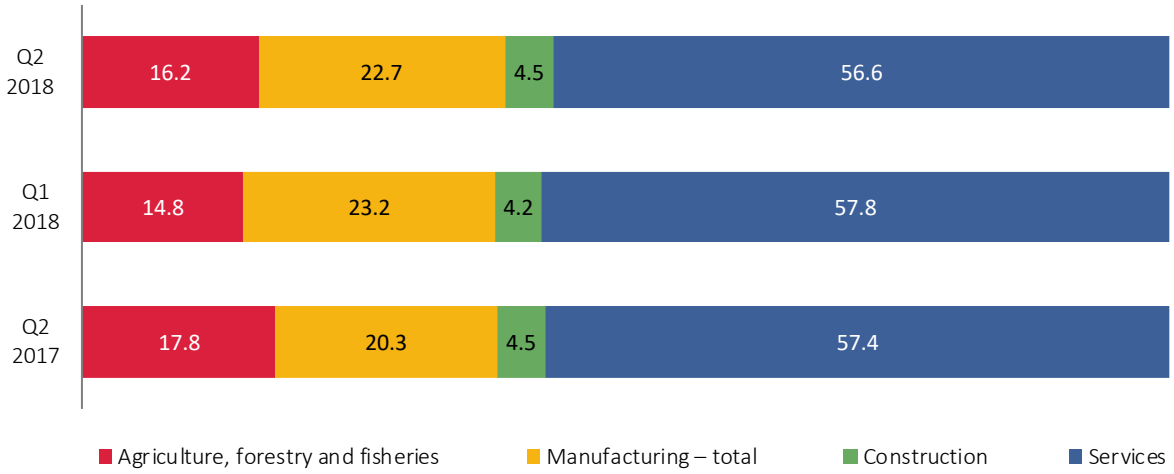
Observed by professional **status**, compared with the previous quarter, a growth was recorded in the number of employed persons in all categories: the highest growth was registered among the contributing family workers: 17.7%.

Table 7.2. Employment by professional status, comparison Q2 2018 – Q1 2018

	Q1 2018 (in thousands)	Q2 2018 (in thousands)	Change, %
Employed persons – total	2 688.3	2 896.9	7.8
Self-employed	590.3	649.6	10.0
Employed persons	1 957.7	2 082.3	6.4
Contributing family workers	140.2	165	17.7

The largest number of employed persons in the second quarter of 2018 was recorded in services (56.6%), then in manufacturing (22.7%), agriculture (16.2%) and in construction (4.5%). These tendencies – increase in the number of employed persons in services and decrease in other sections – exist both in the global economy and in our country, and in conformity with ten-year trends.

Graph 7.3. Share of employed persons by sections (%)



Glossary

Unemployed persons are persons aged 15 and over who did not perform any paid job in the reference week, sought actively a job during four weeks preceding the reference week, and who were ready to start working within two weeks after the reference week.

Employed persons are persons aged 15 and over who performed a paid job in the reference week (in cash or in kind), as well as persons who had an employment but who were absent from work in that week.

Active population (labour force) includes employed and unemployed persons aged 15 and over.

Employment rate is the share of employed persons in the total population aged 15 and over.

Unemployment rate is the share of unemployed persons in the total number of active population aged 15 and over.

Activity rate is the share of active population in the total population aged 15 and over.

8. Salaries and wages

8.1. Average net salaries and wages

Average net salaries and wages calculated in Serbia for the second quarter 2018 amounted to RSD 49 573. Compared with the same period of the previous year, they were nominally up by 6.4%, and in real terms by 4.6%.

Compared with the previous quarter, i.e. Q1 2018, they saw a nominal increase of 1% and real decrease of 0.1%.

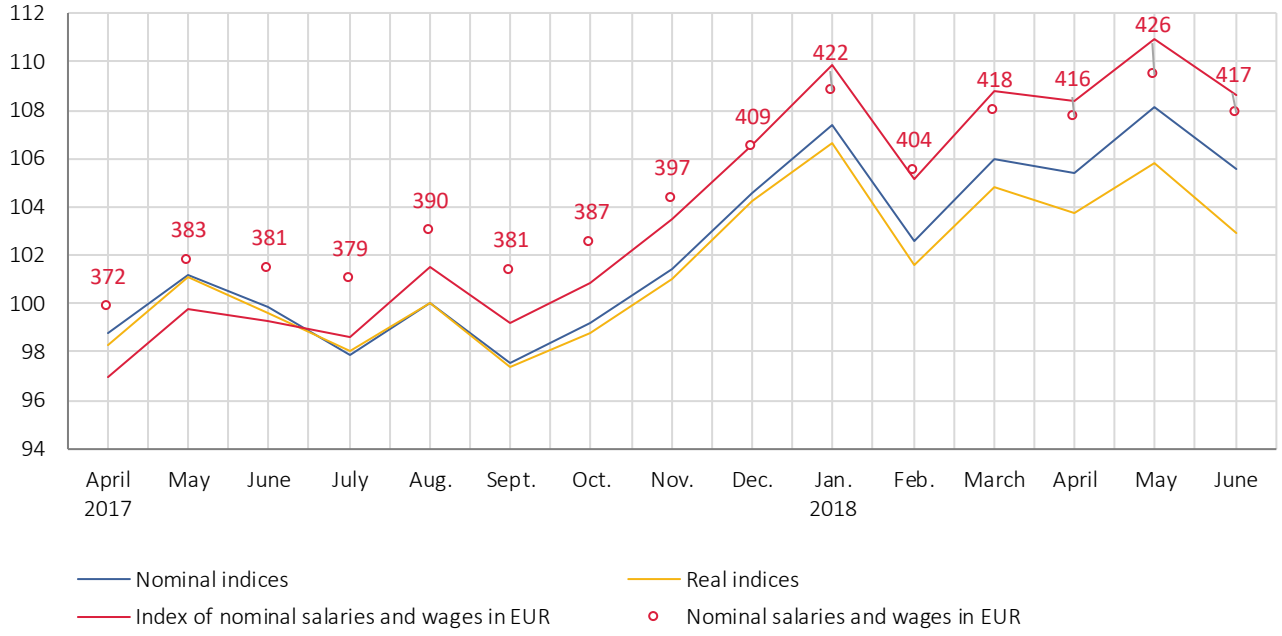
In the **first six months** of 2018, the average net salaries and wages totalled RSD 49 333, and compared to the same period of the previous year they were up nominally by 6% and in real terms by 4.2%.

Table 8.1. Real and nominal indices of net salaries and wages, (quarter to the same quarter of the previous year)

	2016				2017				2018	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Real indices	102.9	103.6	101.9	101.9	101.1	100.8	100.9	100.1	103.8	104.6
Nominal indices	104.5	104.1	103.0	103.4	104.2	104.6	103.9	103.0	105.5	106.4

Graph 8.1. Net salaries and wages, movements of nominal and real indices

(average 2017 = 100)



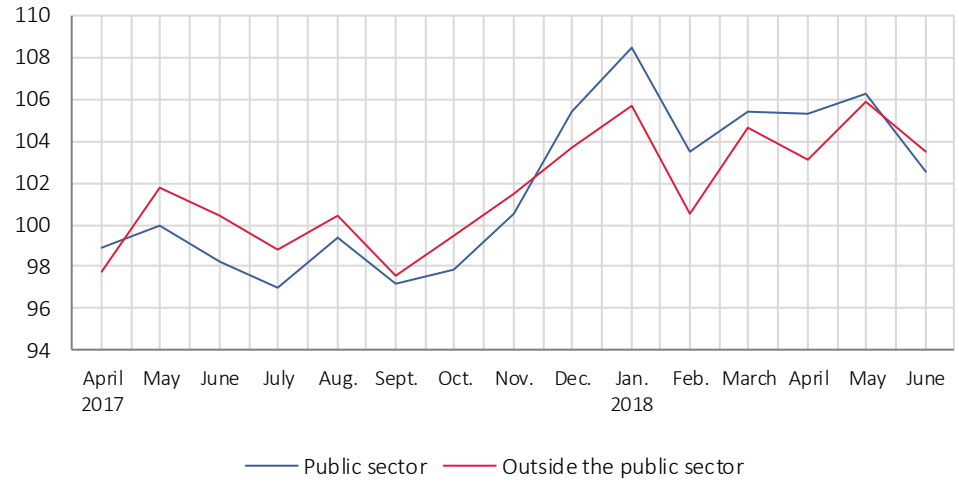
In the observed period, from April 2017 (graph 8.1), the inflation was stable so that nominal and real indices of salaries and wages were almost identical till the end of 2017.

Starting from the beginning of 2018, prices saw an accelerated growth, and so did salaries and wages, the latter increasing faster than the inflation – which led to discrepancies in terms of the movements of nominal and real indices of salaries and wages.

Expressed in euros, the averaged net salaries and wages exceeded EUR 400 in December 2017, and amounted to EUR 417 in June 2018.

Graph 8.2. Net salaries and wages in and outside the public sector, real indices

(average 2017 = 100)



Average net salaries and wages calculated for Q2 2018 amounted toRSD 55 422 in the public sector and RSD 46 650 outside it.
In the first six month of 2018 the calculated average salaries and wages in the public sector amounted to RSD 55 383 and outside it to RSD 46 271.
In contrast to this, the largest portion of 2017 salaries and wages in the public sector were lowest than othose outside it.

Graph 8.3. Average net salaries and wages, per employee, in the public sector, over January-June 2018

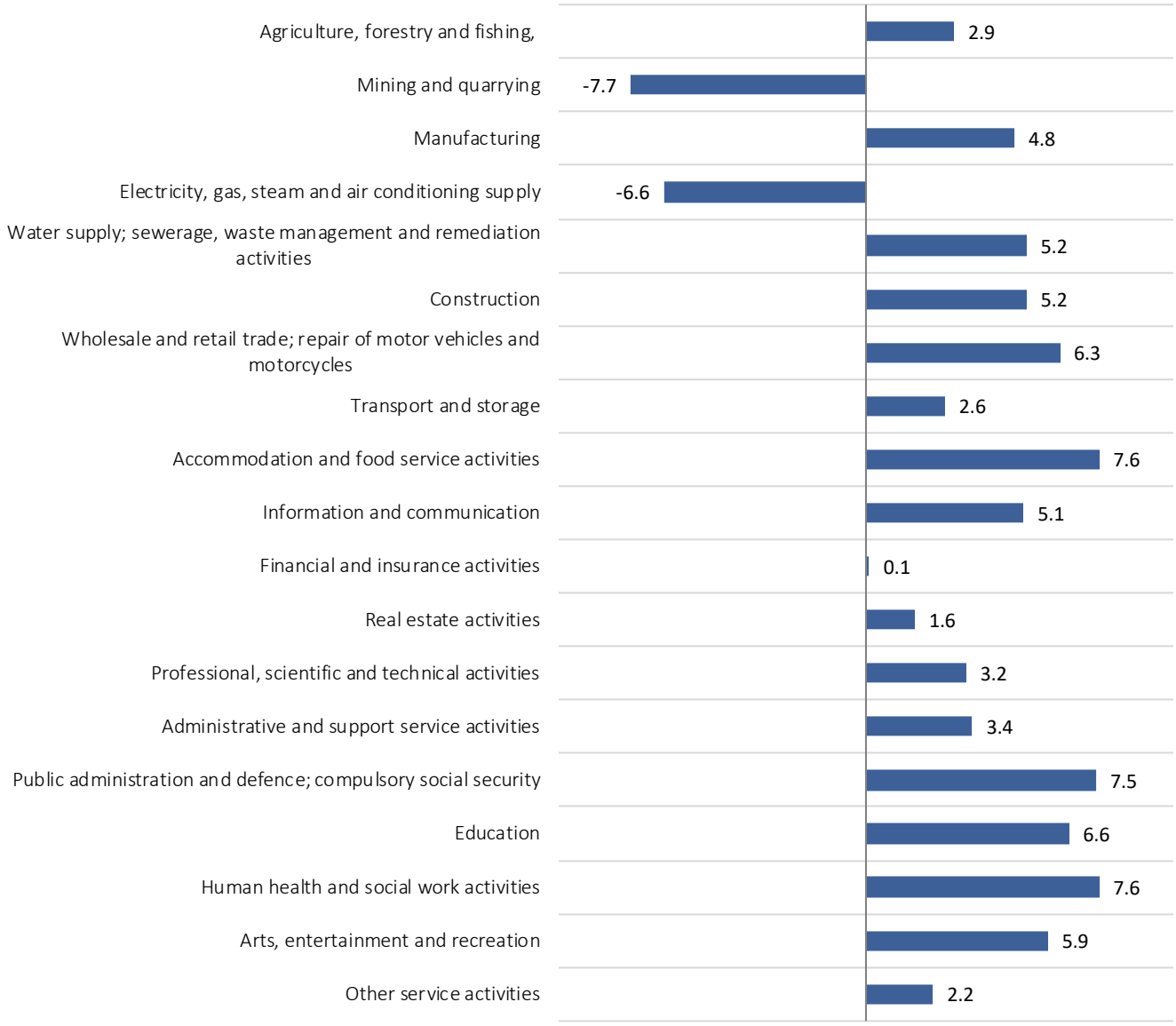
Public setor – total	USD 55 383
Public state-owned enterprises	USD 67 291
Public local enterprises	USD 47 582
Administration – all levels	USD 58 920
Government level	RSD 61 228
Level of the autonomous province	RSD 61 393
Local authorities level	RSD 47 453
Human health and social work activities	RSD 50 315
Education and culture	RSD 52 431

8. Salaries and wages

When comparing net salaries and wages by **sections of activities**, the largest real increase in the first half of 2018, compared with the same period of 2017, is evident in the section Accommodation and food service activities (7.6%), Human health and social work activities (7.6%) and Public administration and defence; compulsory social security (7.5%). A fall was recorded in two sections – Mining and quarrying (-7.7%%) and Electricity, gas, steam and air conditioning (-6.6%).

The highest net salaries and wages in the first half of 2018 was paid in the sections Financial and insurance activities RSD 90 446, Information and communication RSD 82 675, Electricity, gas, steam and air conditioning RSD 79 753, and Mining and quarrying RSD 75 144. In all other sections, salaries ranged from RSD 31 699 (Accommodation and food service activities) to RSD 59 166 (Professional, scientific and technical activities).

Graph 8.4. Movement of real net salaries and wages, sections of the Classification of Activities
(Q1 + Q2 2018 to the same period of 2017)



Observed by **regions**, the highest net salaries and wages in the first two quarters of 2018 were paid in the Beogradski region, amounting to RSD 60 070. In all other regions the salaries and wages were under RSD 50 000 – in Vojvodina they totaled RSD 46 758, in the Region Šumadije i Zapadne Srbije RSD 42 800, and in the Region Južne i Istočne Srbije RSD 44 032.

From mid-2014, the tourist activity in Serbia has been recording growth. This positive movement persisted in the first half of 2018.

9.1. Tourist overnight stays

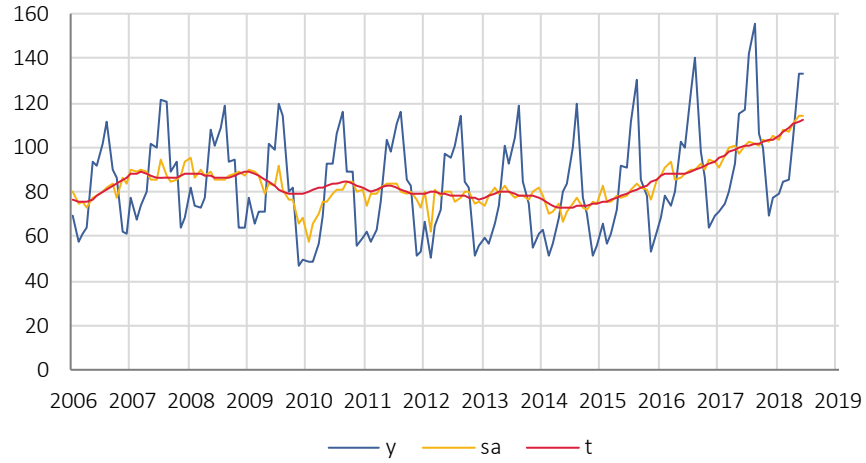
The key indicator of tourism statistics – **total number of overnight stays** – reflects both the number of tourists and the length of their stay at a destination.

Measured by the number of overnight stays, tourism in Serbia first went through the phase of turnover growth over 2005–2008. The year 2009 brought a phase of contraction, which persisted also the in following year, and from 2011 to 2013 there was a period of stagnation, when the average number of tourist overnight stays was about 6.6 million per year. In 2014, due to natural disasters in May, as the number of overnight stays fell by 7.3%, compared with 2013, tourism turnover experienced another strong contraction. However, in spite of bad meteorological conditions at the very beginning of the season, 2014 was the year when an expansive growth of the tourism activity in Serbia started.

The following charts present the components of the times series of tourist overnight stays (total, domestic and foreign tourists). The number of overnight stays is shown as index, 2017 being the base year (average 2017 = 100). The seasonal fluctuations of these series are very marked, reaching the highest values in summer. A growth of activity is also noticeable in January of every year, as a result of New Year and Christmas holidays.

Graph 9.1. Components of time series of total tourist overnight stays

(y – original series, sa – series where seasonal component is excluded, t – trend-cycle component, average 2017=100)

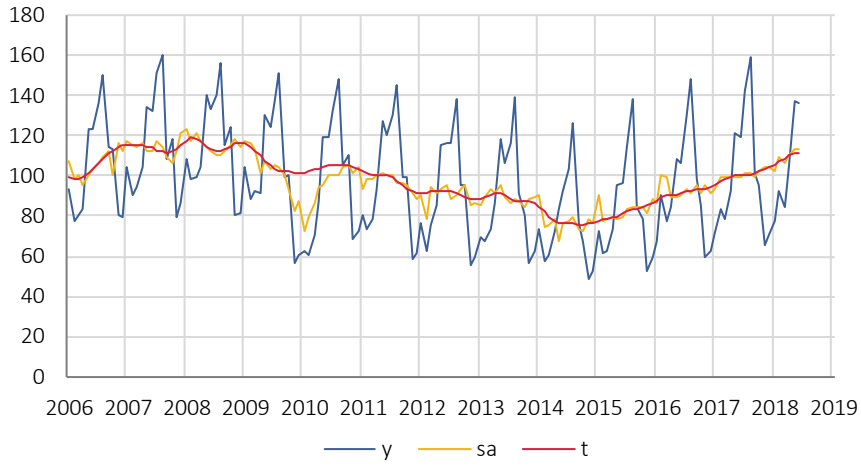


Over January-June 2018, there were 4.3 million overnight stays, which was by 12.6% more than in the same period of 2017.

The growth is stable from mid-2014, so good results are expected also in the following period.

Graph 9.2. Components of time series of tourist overnight stays

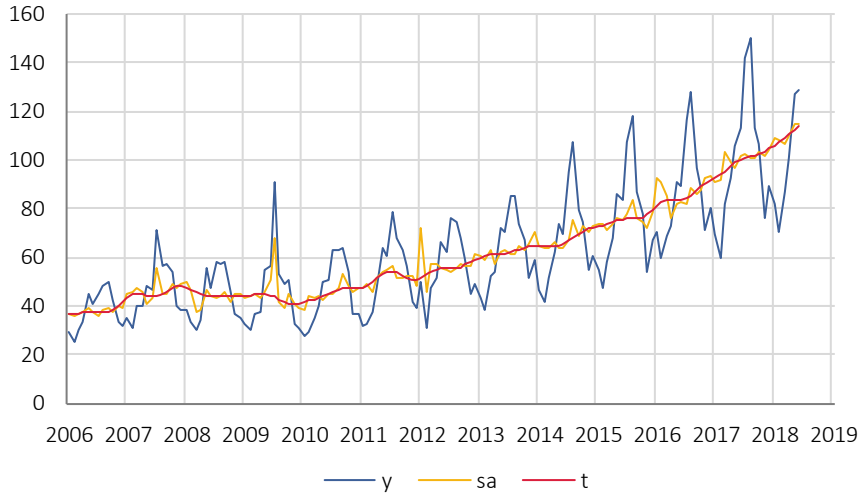
(y – original series, sa – series where seasonal component is excluded, t – trend-cycle component, average 2017=100)



In the first half of 2018 tourists spent 2.7 million nights, by 11.8% more than in the first half of the previous year. This group of tourists still represents the majority of visitors in Serbia, i.e. 63% of the total number of overnights stays.

As domestic tourists had a dominant influence on the whole tourism activity in the past, their movement is similar to the movement of the total number of overnight stays.

Graph 9.3. Component of time series of tourist overnight stays
(y – original series, sa – series where seasonal component is excluded,
t – trend-cycle component, average 2017=100)



On the other hand, the number of foreign tourist overnight stays recorded a stronger growth: 14.1% compared to the first half of 2017, i.e. 1.6 million nights in this period.

Growth trend has been present since 2000 and has been becoming stronger, which is indicative of a greater influence of foreign tourists on the total results on tourism in Serbia.

Table 9.1. Tourist overnight stays, quarterly indices (%)
(comparison with the same period of the previous year)

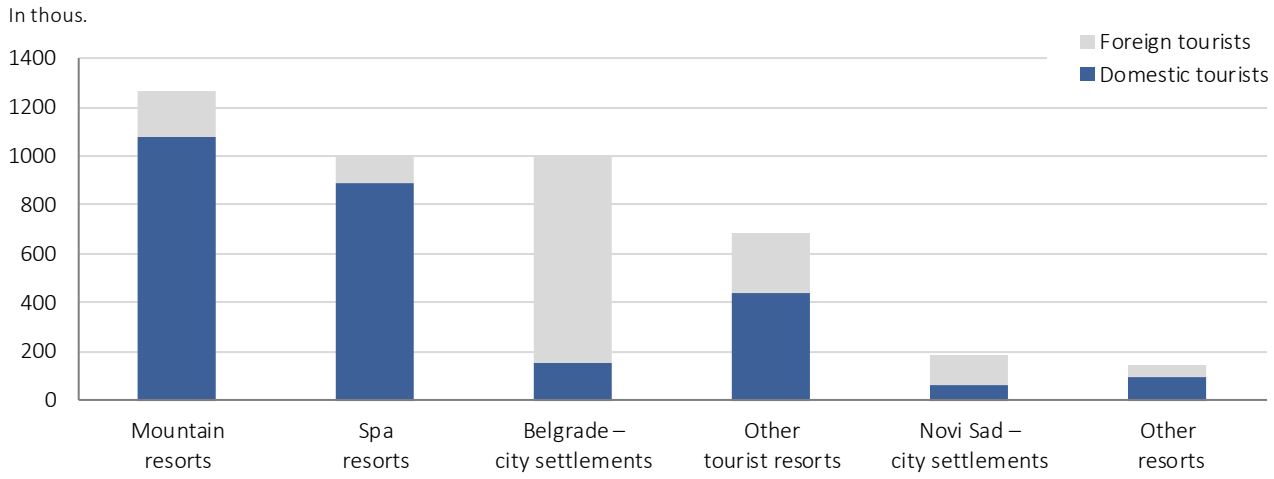
	2016				2017				2018	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Total	120.6	110.7	110.8	113.8	101.6	115.0	111.5	112.0	110.7	113.9
Domestic tourists	118.9	113.0	111.6	109.4	99.4	110.8	107.5	111.3	109.2	113.6
Foreign tourists	124.0	106.6	109.4	120.5	105.8	123.1	118.6	113.0	113.5	114.5

9.2. Major tourist resorts

In terms of the number of tourist overnight stays, the most frequently visited tourist resorts over January – June 2018 were **mountain resorts**, with about 1.3 million thousand nights spent, accounting for 30% of the total of overnight stays in the Republic of Serbia, of which 773 thousand nights were spent in the largest ski tourist centres – Zlatibor and Kopaonik. Visitors of mountains were mostly domestic tourists (85.2% overnight stays).

The following most-visited tourist resorts are **spa resorts** and the **City of Belgrade** with about one million overnight stays. Spa centres accommodated mostly domestic tourists (88% of the total number of overnight stays), while 84.6% nights were spent by foreign tourists. The most-visited spa centres were Vrnjačka Banja (283 thousand overnight stays) and Sokobanja (213 overnight stays).

Graph 9.4. Tourist overnight stays by selected tourist resorts, Q1 + Q2 2018

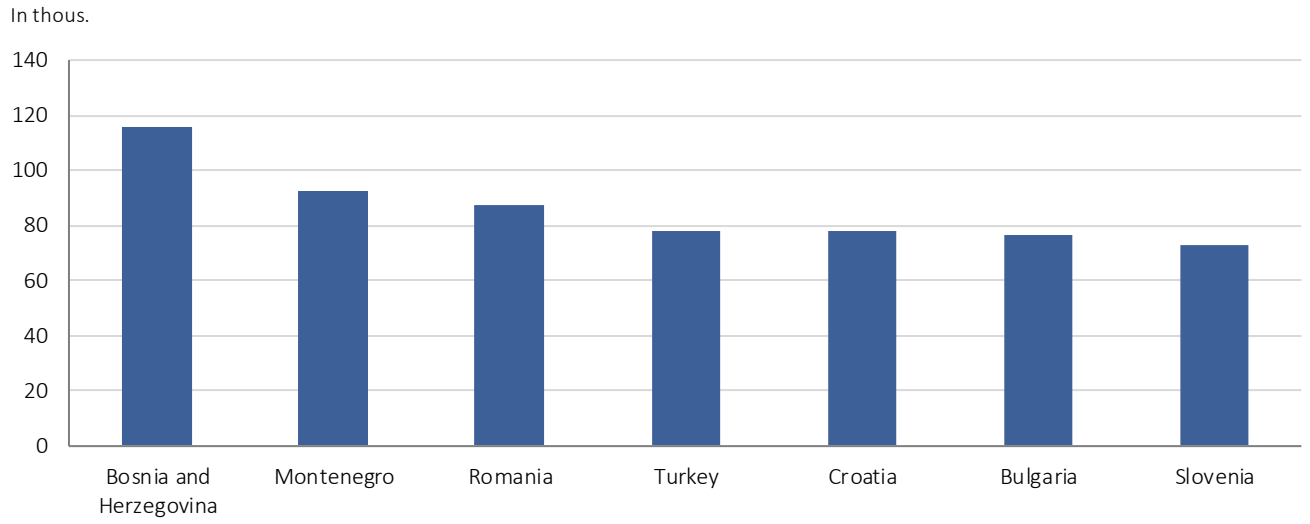


9.3. Countries of origin of foreign tourists

In the first quarter of 2018, foreign tourists from over fifty different countries visited Serbia.

Observed by countries from which they came, most nights were spent by visitors from the neighbouring countries – Bosnia and Herzegovina, Montenegro, Romania, Turkey, Croatia, Bulgaria and Slovenia. The visitors from these countries spent 38% nights, out of the total number of foreign tourist overnight stays in the first six months of 2018.

Graph 9.5. Foreign tourist overnight stays by countries from which they came, Q1 + Q2 2018



10. Household Budget Survey

The total income in cash and in kind in Q2 2018 increased by 4.4%, compared to the same quarter of the previous year, and the total household consumption in the same period grew by 4.2%.

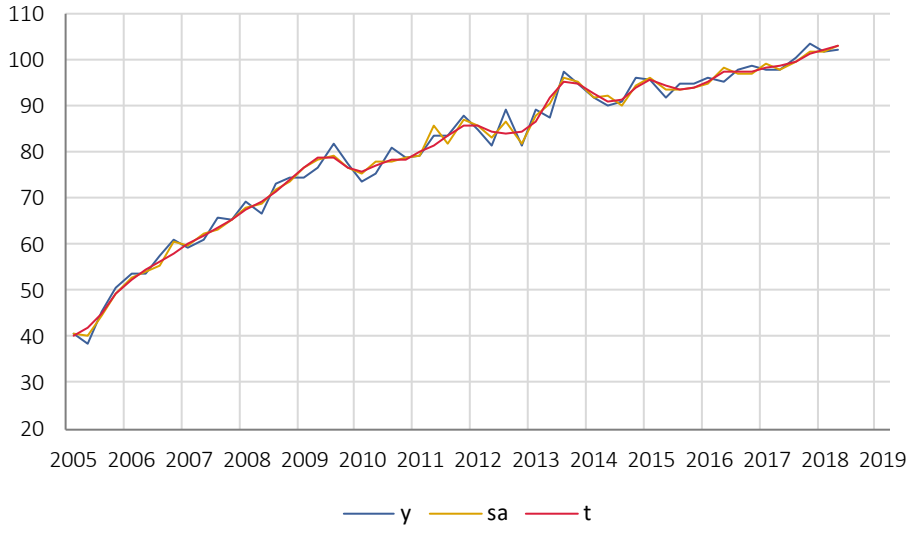
In relation to the previous quarter, Q1 2018, the total income in cash and in kind was up by 0.5%, and the total household consumption by 0.7%.

Table 10.1. Value of income in cash and in kind and individual household consumption, quarterly indices (%)
(comparison with the same period of the previous year)

	2016				2017				2018	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Income in cash and in kind	100.6	104.1	102.9	104.1	101.5	102.6	102.9	105.0	104.0	104.4
Individual household consumption	100.5	104.0	103.3	103.3	101.2	102.2	102.6	104.3	103.7	104.2

10.1. Income in cash and in kind

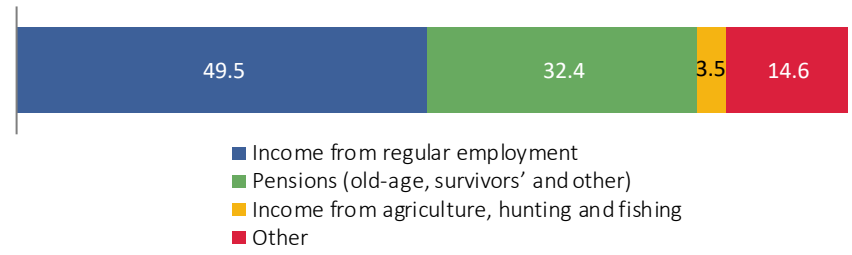
Graph 10.1. Components of time series of Income in Cash and in Kind, indices
(y – original series, sa – series where seasonal component is excluded,
t – trend-cycle component, average 2017 = 100)



Income in cash and in kind shows an increasing tendency – in Q2 2018 the trend component was by about 3% above the average of the previous year. In the short-term, a growth of 1.5% of the seasonally adjusted index is registered, compared with the previous quarter.

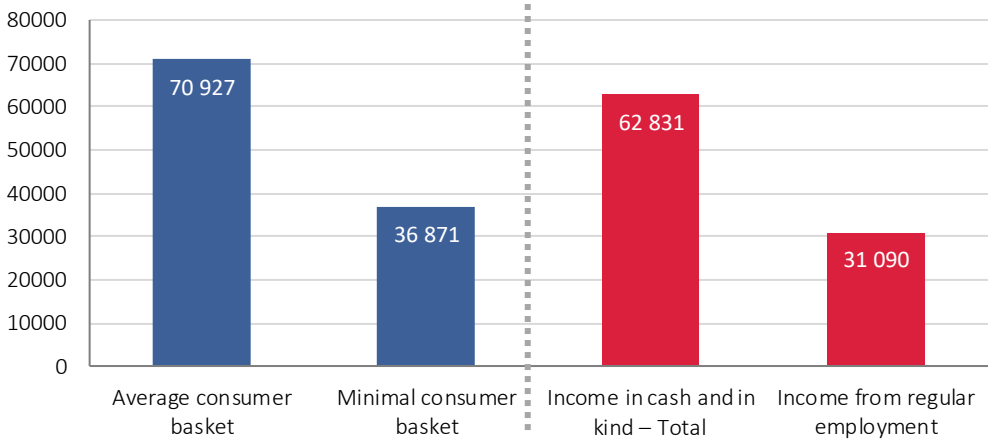
In Q2 2018 average monthly income in cash and in kind per household amounted to RSD 62 831 and, compared with the previous quarter (Q1 2018), it saw a nominal increase of 0.5%, while in relation to the same quarter of the previous year (Q2 2018) the nominal increase was 4.4%.

Graph 10.2. Structure of income of households, Q2 2018. (%)



In the structure of income of households in Q2 2018, income from regular employment registered the highest share (49.5%), followed by income from pensions (32.4%) and income from agriculture (3.5%). Other categories (8) participate altogether with 14.6%.

Graph 10.3. Ratio of the average and minimal consumer basket and the income in cash and in kind, Q2 2018. (RSD)

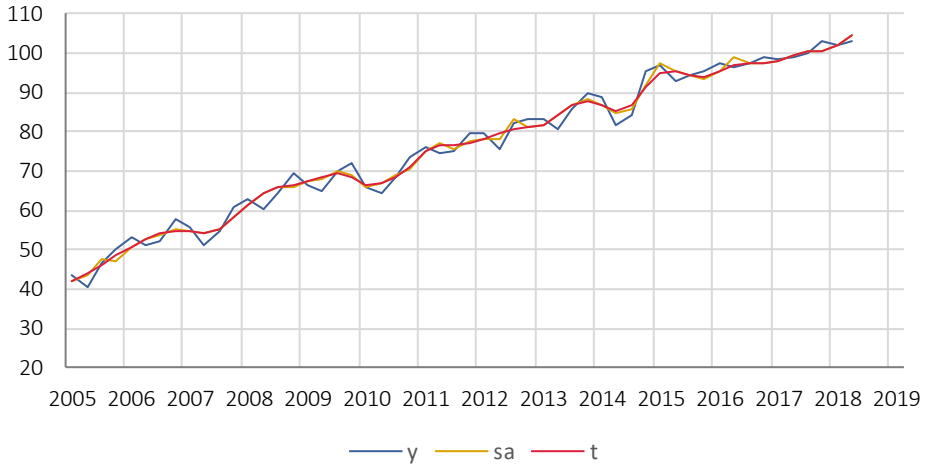


Realised average income in cash and in kind in Q2 2018 (RSD 62 831) cover the minimal consumer basket with 170.4%, and the average consumer basket with 88.6%.

The income from regular employment of households (RSD 31 090) could cover the minimal consumer basket with 84.3%, and the average with 43.8%.

10.2. Individual consumption expenditure of households

Graph 10.4. Components of the time series Household Consumption, indices
(y – original series, sa – series where seasonal component is excluded,
t – trend-cycle component, average 2017 = 100)

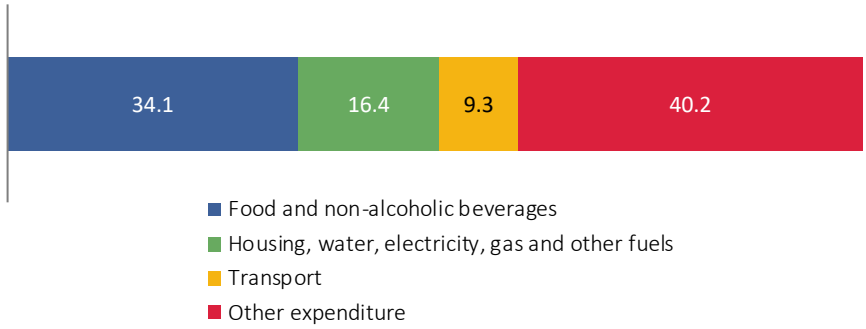


With the increasing tendency of about 4% above the average of the previous year, individual household consumption in Q2 2018 keeps going up. In addition to the increasing long-term trend there is also a short-term growth of the seasonally adjusted index of 2.6%, compared with the previous quarter.

Individual consumption expenditure of households in Q2 2018 amounted to RSD 64 055, compared with the previous quarter (Q1 2018) it saw a nominal increase of 0.7%, and in relation to the same quarter of the previous year (Q2 2018) the nominal increase was 4.2%.

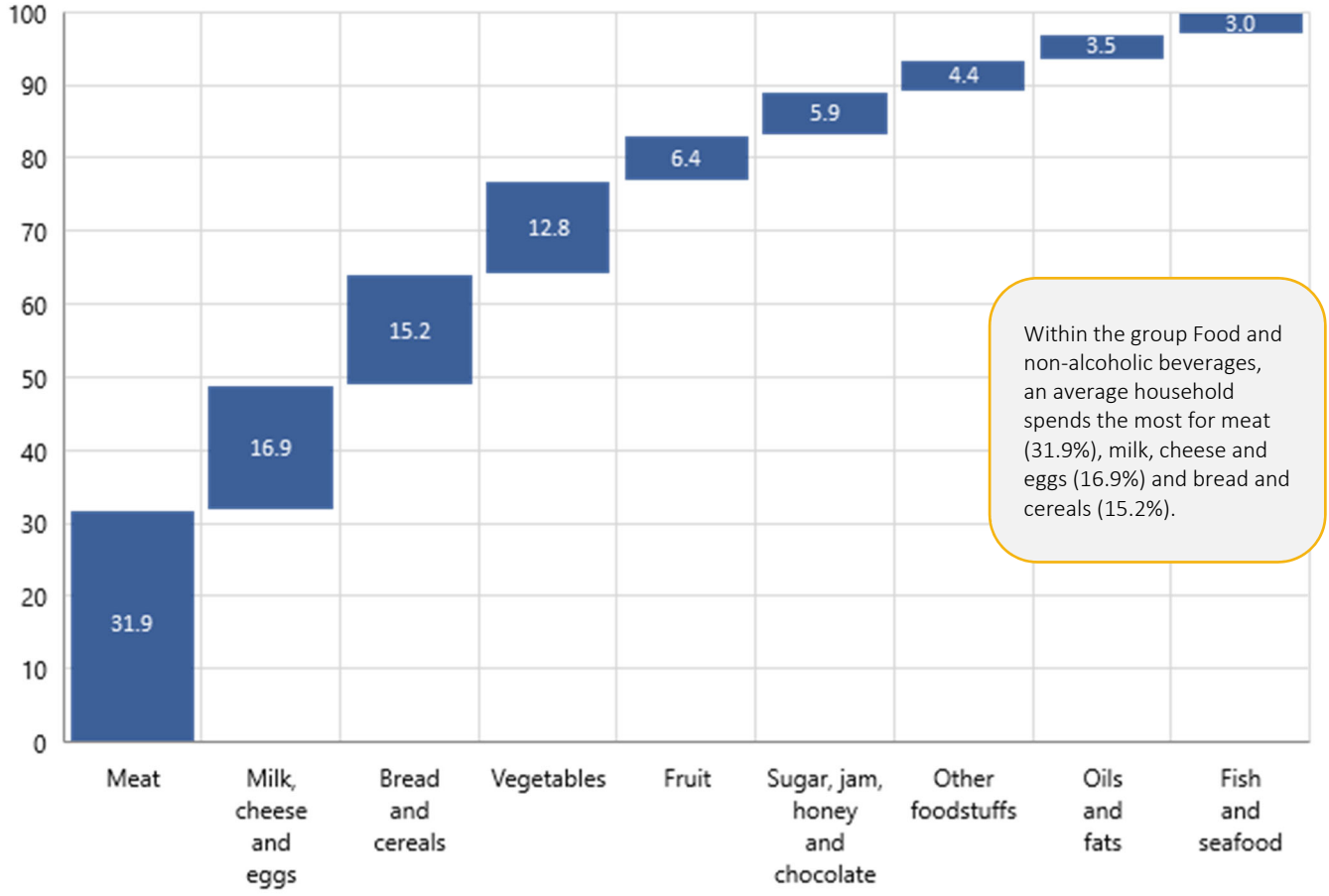
10. Household Budget Survey

Graph 10.5. Structure of individual household consumption (%)



In the structure of individual consumption in Q2 2018 expenditure for food and non-alcoholic beverages was the largest (34.1% of the family budget), followed by housing, water, electricity and other fuels, with a share of 16.4% and the share of transport was 9.3%. Other categories (nine) constitute 40.2% of the consumption and participate each with less than 10% in the total household consumption.

Graph 10.6. Structure of expenditure for food for households (%)



Within the group Food and non-alcoholic beverages, an average household spends the most for meat (31.9%), milk, cheese and eggs (16.9%) and bread and cereals (15.2%).

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