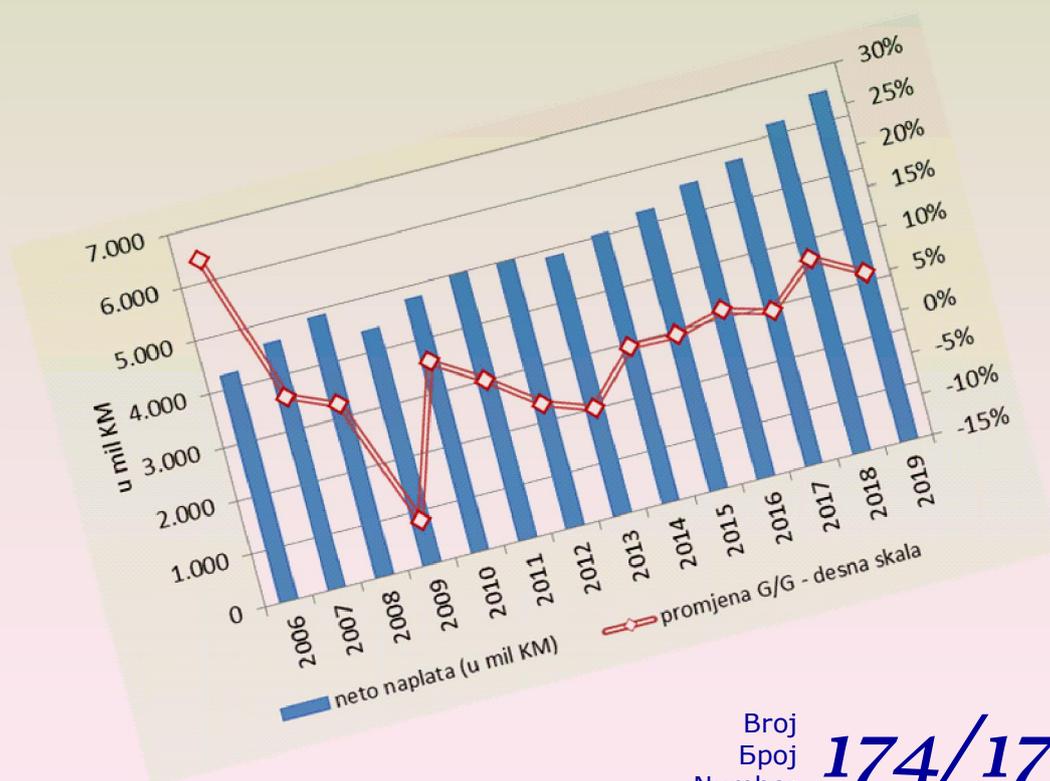




Macroeconomic Unit of the Governing Board of the Indirect Taxation Authority

ОМЈА Билтен



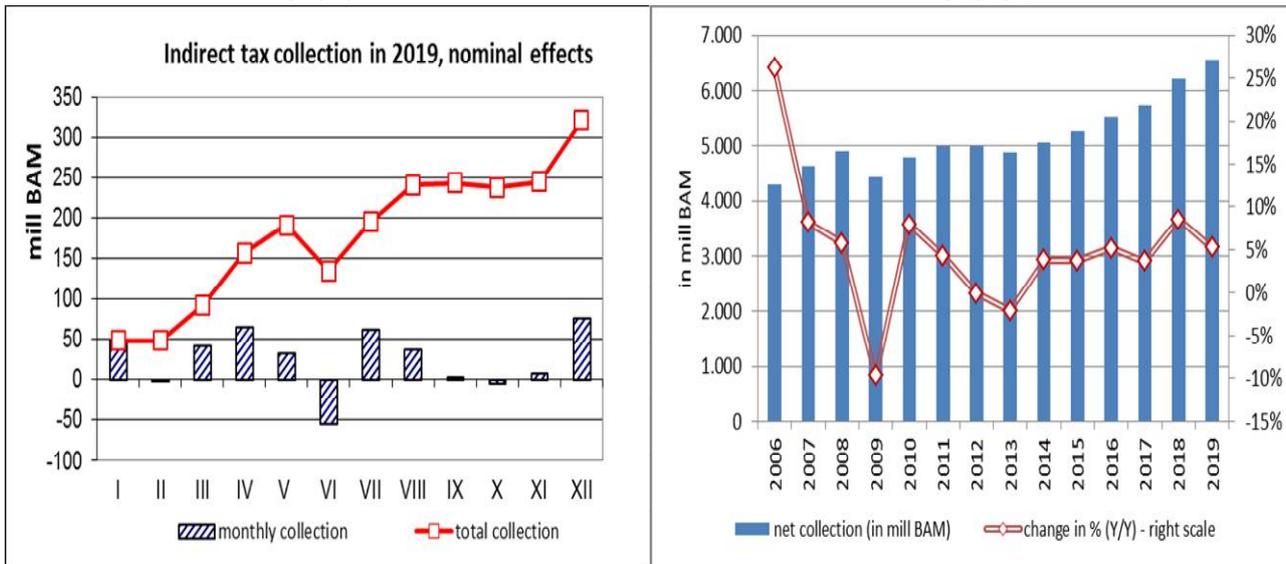
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With this issue

The growing trend in indirect tax revenues has continued in December 2019. According to the preliminary cash flow report, 692,1 million BAM of gross indirect tax revenues was collected into the ITA Single Account in December 2019, which is for 72,2 million BAM more than in December 2018. Payments of refunds decreased by 4,2 million BAM in comparison with the same month of 2018, so the net effect of revenue collection amounted 76,4 million BAM (Chart 1, "monthly collection"). At the level of 2019, it was collected 390,1 million BAM of gross revenues more than in 2018, while the payment of refunds increased by 69 million BAM compared to 2018. Finally, the net collection was higher by 321,1 million BAM than in 2018 (Chart 1, "total collection").

Chart 1

Chart 2



An overview of the annual nominal collection (Chart 2, left scale) shows that in 2019 a highest amount of indirect tax revenues was nominally collected since the establishment of the ITA. The growth rate of net revenues from indirect taxes of 5,2% in 2019 corresponds to the levels of the achieved rates in 2014-2017 (Chart 2, right scale), while the high growth rate in 2018 was an exception due to the change of excise policy in B&H in that year.

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Head of Unit

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Monthly fluctuations in indirect tax revenues

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This article is a continuation of the analysis of monthly dynamics of collection on the ITA Single Account presented in Bulletin no. 92 in March 2013. The main purpose of the continuation of the analysis is to draw conclusions about the extent to which the changes in the structure of indirect taxes that occurred in the meantime affected the monthly dynamics of their collection, taking into account the differences in the prescribed deadlines for payment of certain types of liabilities.

Introduction

Monthly dynamics of indirect tax revenue collection is of great importance for the dynamics of budget revenue inflows of the government levels in B&H, since the dynamics of distribution of revenues from the ITA Single Account (SA) depends on it, especially given the high share of indirect taxes in financing budget users. According to data of the International Monetary Fund (IMF), 43% of consolidated revenues of all levels of government in B&H in 2016 came from indirect taxes, while the share of indirect taxes in tax revenues was as high as 83%.¹ Although dynamics of monthly revenue inflows of the budget of Institutions of B&H is an exception, as it does not depend on the dynamics of monthly inflows of the ITA,² it should be noted that the total amount of tax revenues of the budget of Institutions of B&H comes from indirect taxes.

We will see below that monthly fluctuations in indirect taxes primarily depend on seasonal factors. This is not only referred to climate conditions, but to institutional factors as well. Institutional factors include all calendar provisions that affect either the level of consumption in a given period (holidays, vacations, etc.), or the time of payment of taxes (the prescribed deadline for payment of obligations). However, monthly dynamics of indirect taxes sometimes deviate significantly from their seasonal pattern. This can be caused by a number of factors, the most important being: economic flows, administrative factors, business policies of large companies, other calendar factors (except the seasonal ones), and changes in regulations. Economic flows are mostly manifested in long-term trends, but can sometimes affect the deviations of monthly revenues from their seasonal pattern. Administrative factors can also influence deviations from seasonal patterns, and the biggest impacts have had those related to the dynamics of refund payments (e.g. suspension of refund payments to taxpayers who were not predominant exporters in 2006, change in the way of regulating the amount of reserves on the SA of ITA in 2008 etc.). It should be mentioned here the policies of large companies, such as the tobacco and oil industries, whose business decisions may also affect deviations of revenues from their seasonal patterns. Extreme climatic conditions or natural disasters should not be ignored as well. Calendar factors represent calendar effects that are not contained in the seasonal component (e.g., number of working days in a month). Changes in regulations related to changes in tax rates or tax bases are also important. They have had a big impact on changes in the structure of indirect tax revenues over the past period, and will be given a particular attention in the continuation of the article.

¹ IMF Country Report No. 18/39, February 2018. (Table 5a. General Government Statement of Operations, 2013-2018, p. 29).

² The amount allocated to the budget of the Institutions of B&H each working day is calculated as the ratio of the planned indirect taxes in the budget of the Institutions for that year and the number of working days in the year (the Law on Payments into the Single Account and Distribution of Revenues, Official Gazette of B&H 55/04, 34/07, 49/09 and 91/17)

1. Structure of indirect tax revenues

Table 1 shows the structure of net indirect tax revenue by type. There was a strong increase in the share of excise and road tax revenues in the period 2006-2018, together +8,7 p.p. The share of VAT revenues increased by +0,9 p.p. Customs revenues, on the other hand, recorded a drop in the share of as much as -8,8 p.p. The rest of the negative change in the structure relate to other revenues of the SA of the ITA, which include unadjusted revenues in the ITA IT system as well as the other revenues (revenues from terminals, rents, etc.).

Given that we analyze the changes in the **share** of a particular revenue type **in total revenues**, these indicators are influenced by the dynamics of each type of revenue, as well as of all other categories that make up total revenues.

Table 1. Structure of net indirect tax revenues on the SA of the ITA

(in %)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
VAT	60,2	61,6	63,3	63,7	62,4	63,0	63,4	63,5	63,3	61,9	62,1	62,5	61,2
Excises	20,8	19,7	19,0	22,5	24,4	25,2	26,0	25,9	25,8	26,8	26,2	25,6	23,7
Customs	13,4	14,0	13,1	7,7	6,2	5,5	4,5	4,3	4,6	4,6	4,5	4,7	4,6
Road tax	4,3	4,0	3,8	5,6	6,4	5,8	5,7	5,8	5,8	6,1	6,5	6,7	10,1
Other	1,2	0,7	0,7	0,5	0,7	0,5	0,4	0,4	0,5	0,7	0,7	0,5	0,4

Note: Data for 2018 have been corrected for the offset amounts of excise duties on oil derivatives and road tax liabilities by VAT credits during 2018.

Below is a brief overview of the main factors which influenced changes in the share of particular types of revenue. Changes in the structure of individual types of revenue were largely influenced by changes in the regulations of tax burden.

1.1. Factors of the share of VAT revenue in indirect taxes

The share of VAT revenues in the total net revenues from indirect taxes on the SA of ITA ranged from 61,2% (2018) to 63,7% (2009). Considering that single VAT rate has never been changed, the change in the share of VAT in total indirect tax revenues has mostly been influenced by strong changes in the trends of other revenue categories. Besides that, the share was influenced by other factors, which could be perceived on the basis of:

1. the share of VAT revenue in private consumption,
2. comparisons of movements of VAT base with bases for all other types of revenue.

The share of VAT revenues in private consumption in the observed period was relatively stable and ranged between 13,4% (2009) and 14,9% (adjusted amounts, 2018).³ After excluding the associated VAT levied on excises, road taxes and customs (as they are included in the VAT base), the share of net VAT revenues in private consumption would range between 12,1% (2006 and 2009) and 13,3% (adjusted amounts, 2018), which is a rough approximation of the effects of improving VAT administration efficiency.

Comparison of tax bases of individual revenue types is a more complex analysis for which data from tax returns should be taken, which is not the subject of this analysis.

1.2. Factors of the share of customs revenue in indirect taxes

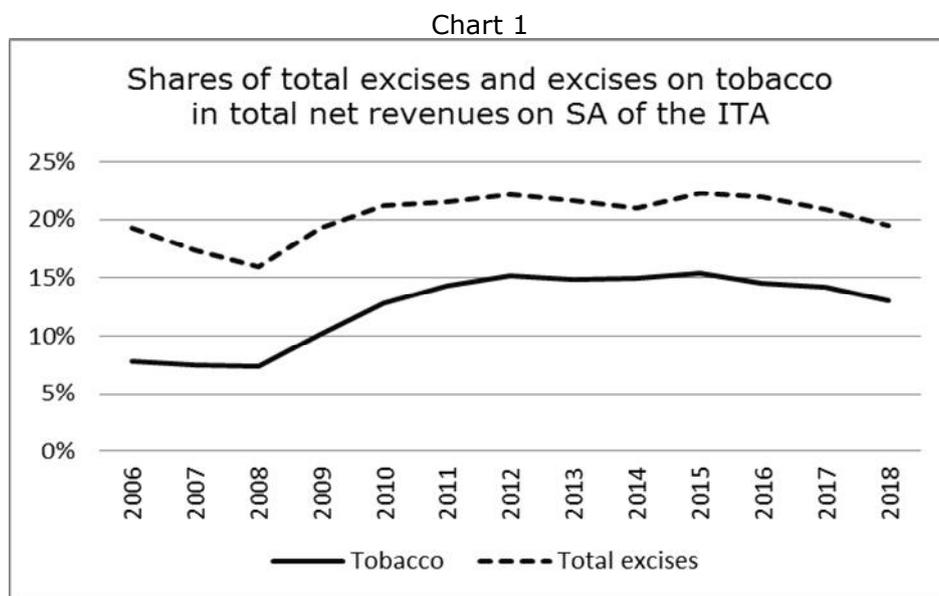
Customs revenues had a high shares in total net revenues from indirect taxes on the SA of ITA in 2006 and 2007 (13,4% and 14,0%, respectively). In middle of 2008, the provisions of the Stabilization and Association Agreement with the EU came into force, which implied the gradual

³ Author's calculation based on data of the ITA, BHAS (September 2018) and DEP projections (September 2018).
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liberalization of imports originating in the EU. In the next year (2009) customs revenues almost halved, and the negative trend of these revenues lasted until 2013, when the last phase of the transitional period of tariff abolition was completed and when the share in total revenues dropped to only 4,3%. After that year, the share in total revenues has been relatively stable, moving around 4,6% (Table 1). In addition to changes in the tax burden, the share of customs revenue has also been influenced by the movement of imports from various trading partners and changes in the collection of other revenue categories.

1.3. Factors of the share of excise revenue in indirect taxes

The share of excise tax revenues in the total net revenues from indirect taxes on the ITA increased in the observed period, from 20,8% in 2006 to 23,7% in 2018. The lowest share of excise taxes was recorded in 2008 (19,0%) and the highest in 2015 (26,8%).



Source: Author's calculation based on the ITA data

Changes in the shares of excise revenues were guided by changes in the shares of excises on tobacco (Chart 1), which have recorded huge fluctuations due to numerous changes in the legislation in the past period. The legal changes will be briefly presented here. The new Law on Excise Taxes, which has brought the rate changes, has been in force since the middle of 2009. The new *ad valorem* rate was reduced from 49 to 42%, but the same has been calculating on the tax base including VAT, and approximately corresponds to the previously applied rate. It was introduced the category of minimum excise tax on cigarettes (application since 1 January 2010), which is related to the most popular price category of cigarettes. In order to harmonize legislation with the EU standards, a specific excise in the amount of 0,15 BAM per cigarette pack was also introduced, which has been increasing each year since 2009 for the same amount, amounting therefore 1,50 BAM per cigarette pack in 2018. In the initial years of the observed period the growth of the fiscal burden on cigarettes led to a strong increase in revenues from excises on tobacco, despite the decline in cigarette consumption. The strong growth rates of the revenues from excises on tobacco in 2009, 2010 and 2011 influenced a huge increase in the share of excises on tobacco in total revenues (Chart 1). In 2011, the share of excises on tobacco in total net revenues from indirect taxes on the ITA SA increased by as much as 6,6 p.p. compared to 2006. In 2012, there was a significantly lower increase in revenues from excises on tobacco than in the previous three years. The growth trend was stopped in 2013 when even a decrease in revenues from excises on tobacco was recorded, as well as a decrease in their share and share of

total excises in total indirect taxes. One of the main reasons for the fall in revenues from excises on tobacco was the substitution of consumption of cigarettes by cut tobacco, due to the growing gap between fiscal burden of cigarettes and cut tobacco, whose rates of taxation haven't been increased since 2009. The new policy of excise on tobacco from 2014⁴ has brought a huge increase in the fiscal burden of cut tobacco. The main policy changes relate to the introduction of a specific excise duty on cut tobacco and its annual adjustment to the increase in the minimum excise duty on cigarettes. This has led to a temporary stabilization in the tobacco market and to increase in revenues from excises on tobacco in 2014 and 2015. Substitution of cigarettes by cut tobacco arose again already in 2016, because of the rise in the price of cigarettes, so the stagnation of excise revenues on tobacco was recorded in 2016, 2017 and 2018, while their share has even registered a downward trend.

1.4. Factors of the share of road tax revenue in indirect taxes

The share of road tax revenues in the total net revenues from indirect taxes on the ITA SA has increased sharply over the observed period, from 4,3% in 2006 to as high as 10,1% in 2018. The main reason was the strong increase in the road tax rate in that period. In the middle of 2009, the road tax rate increased from 0,15 to 0,25 BAM per liter of oil derivatives,⁵ and in February 2018 increased again to 0,40 BAM per liter of derivatives.⁶ In addition to changes in the tax rate, the share of road tax revenue was also influenced by the movement of their tax base, in response to changes in the tax burden, but also by other factors (the price of derivatives, etc.), and, again, by changes in collection of other revenue categories (given that it is a share in total revenues).

2. Components of time series data

An article on the seasonal adjustment of data series was published in OMA Bulletin no. 126-127. It was mentioned there that time series of data can be broken down into the following components: trend-cycle component (T_t), seasonal component (S_t), calendar component (C_t) and irregular component (I_t).⁷

Trend-cyclical component is the basic component of a time series. The cyclical component refers to the fluctuations that are repeated at intervals of several years. It shows whether the economy is in expansion or recession, and to what extent. The analysis of cyclical component is purposeful only with a long-term series of data.

The seasonal component refers to recurrent fluctuations within a year, which have more or less the same intensity and the period of fluctuation. Seasonal component applies not only to the effects of usual weather conditions and changes in season. It includes the effects of other recurring factors on the time series such as the administrative organization, the tradition, but also of the calendar factors which are stable over a longer period of time (e.g. number of days in the month, holidays which fall on the fixed date).

The effects of the calendar can be seasonal and non-seasonal. Seasonal (holidays with a fixed date, the number of days in a month, etc.) are included in the seasonal component. The calendar component contains the following effects: a different number of working days in the month / quarter, the effects of moving holidays and the effects of a leap year.

Irregular component consists of all the effects that are not contained in the other components. It is caused by many factors that are not predictable and are random variations in data series. It also includes the effects of legislative changes. Among other factors, there are the outliers who

⁴ Official Gazette of B&H No. 49/14

⁵ Official Gazette of B&H No. 49/09

⁶ Official Gazette of B&H No. 91/17

⁷ IMF, Update of the Quarterly National Accounts Manual, Chapter 7. Seasonal Adjustment, <http://www.imf.org/external/pubs/ft/qna/pdf/chapter7.pdf>, DRAFT VERSION (Draft posted for comments in October 2014, Closing date for comments 15 December 2014)

relate to a single period (additive outliers), those who permanently alter the level of the series (level shift outliers) and those whose effects are reduced with the passage of time (transitory change).

3. Seasonal component of indirect tax revenues

There are three main sub-components of the seasonal component of time series. Those are: climatic, institutional and calendar.⁸ Climate component includes changes in economic activity due to the usual changes in weather conditions. The institutional component includes the effects of institutional factors on a given phenomenon, for example legislation, the usual interruptions of activities in a certain periods and the like. Calendar component relates to the calendar pattern (number of days in the month, public holidays, etc.)

Here we will deal with the seasonal component of individual categories of indirect taxes and demonstrate its importance for overall fluctuations in indirect tax revenues. In the absence of complex methods of official correction procedures, we will present a simple procedure for extraction the seasonal component by using the methods of seasonal indices. The method is based on the calculation of the seasonal indices using the corrected median of the ratios of the original data and centered moving averages.⁹ Although more complex than this procedure, the official correction procedures are generally based on the moving averages. It is necessary for index calculation that data series are sufficiently long, because the seasonal pattern cannot be filtered out from the short time series. Also, time series should not be too long, because, in that case, it is more difficult to model the seasonal pattern, which is more likely to be variable. In our example, we observed the period from 2010 to 2017, in order to avoid the significant effects of changes in tax rates that did not coincide with the beginning of the fiscal year (2008/customs; 2009/road tax; 2018/road tax). After calculating seasonal indices, regression models were estimated and the coefficients of determination¹⁰ of seasonal indices and actual shares of monthly amounts of individual types of revenue in the corresponding period were calculated, in order to show how well the seasonal indices "fit" into the real shares in the observed period. The results of the calculation are shown in Chart 2.

Relationship is considered to be negligible for the value of the coefficient of determination of 0-25%. Values between 25% and 50% are considered to have a relationship to be reckoned with. For the values between 50% and 75%, the strength of the relationship is considered to be significant, while for the values above this interval the relationship is considered to be very high, obtaining the form of the functional relationship at 100%.¹¹

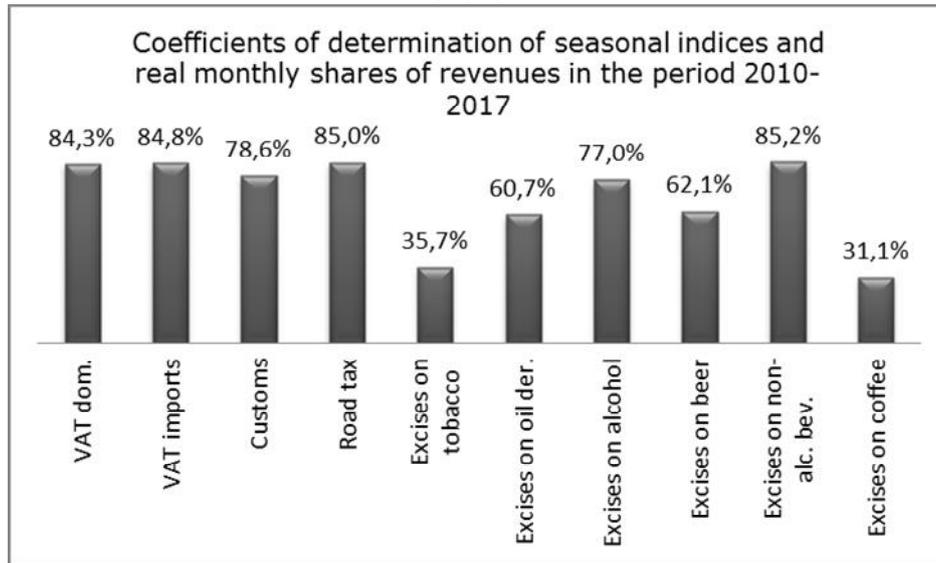
⁸ Wyman D., "Seasonal adjustment and identifying economic trends", Statistics Canada (2010)

⁹ Newbold, P. et al. „Statistika za poslovanje i ekonomiju“, Mate, Zagreb (2010), p. 732; Original name: „Statistics for Business and Economics“

¹⁰ The coefficient of determination R^2 shows the percentage of variance in the dependent variable that can be explained by the independent variable.

¹¹ Blažić M. and Dragović V., „Opšta statistika“ (General statistics), Belgrade 1991.

Chart 2

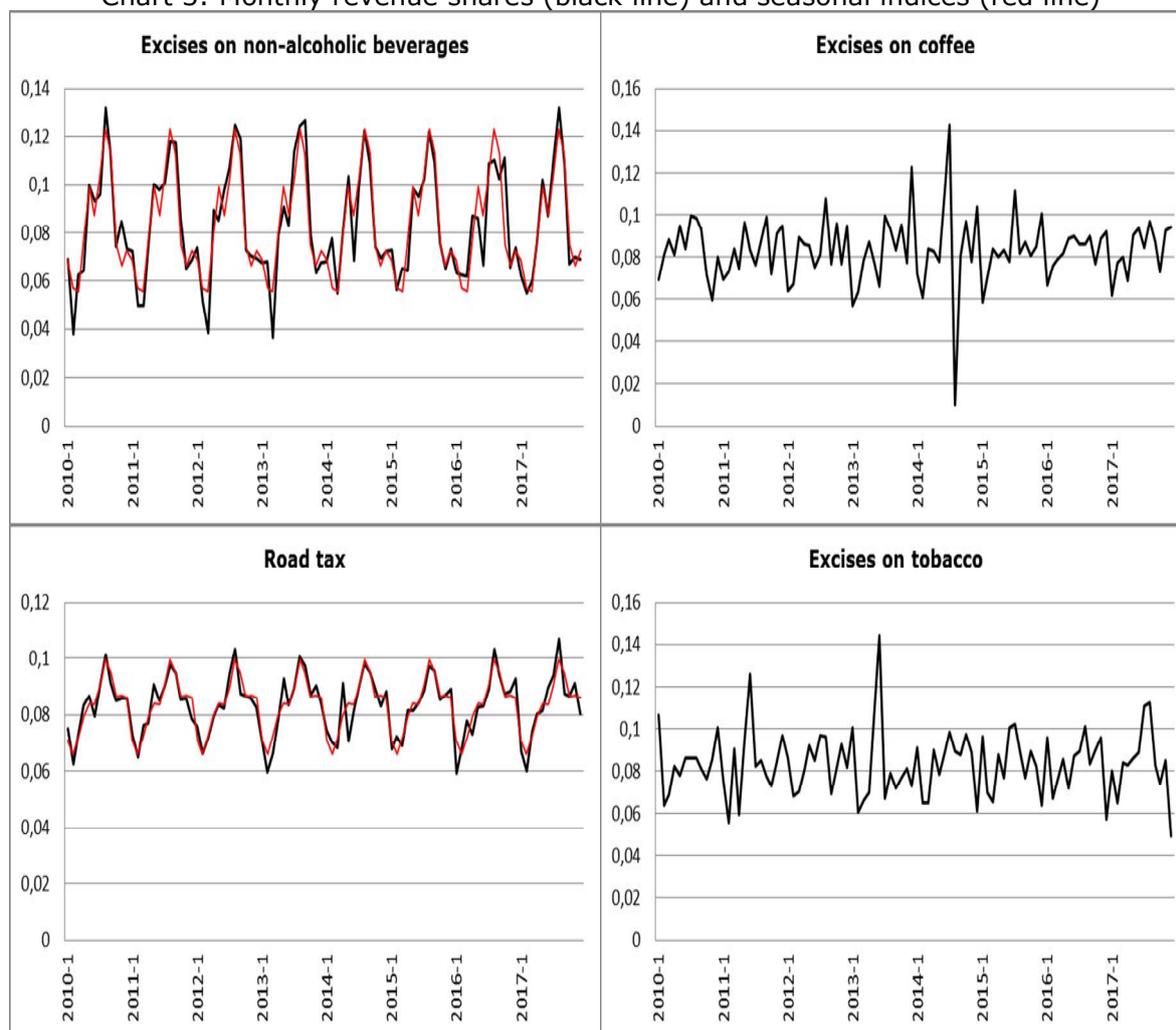


Source: Author's calculation based on the ITA data

Chart 3 shows revenues with the highest (left side of the chart) and the smallest (right side of the chart) coefficient of determination between seasonal indices and actual shares of indirect tax revenues. The high importance of the seasonal component (S_t) in excises on non-alcoholic beverages and road taxes can be seen. The correlation coefficient between actual monthly shares in the year (Chart 3, black line) in excises on non-alcoholic beverages and their seasonal indices (Chart 3, red line) amounts 92,3% for the period 2010-2017, which indicates high level of relationship, while the coefficient of determination amounts 85,2%. The correlation coefficient between the actual monthly shares in the year of road tax revenues and corresponding seasonal indices is also very high, amounting to 92,2%, as well as the coefficient of determination, which amounts 85%. On the other hand (right side of the chart), revenues from excise taxes on tobacco and excise taxes on coffee do not show a seasonal pattern, as indicated by the low coefficients of determination between their actual monthly shares and seasonal indices (Chart 2).

The coefficient of determination between monthly shares of the total net revenues in the year and their seasonal indices is 77,3% in the observed period, which means that the strength of the relationship is significant, but far from functional, and that it depends on factors other than seasonal (irregularity, trend-cyclical component, calendar). Since we are dealing with the monthly shares at the annual level, it is author's estimation that the trend-cyclical component had no significant impact (the exception would be the end of 2008, when the beginnings of the effects of the global economic crisis on the B&H market were manifested, but that year was not taken into consideration in our analysis). The author's estimation is that the most of the other factor's impacts relates to irregular (large company policies, return administration, etc.) and calendar component (changes in religious holiday dates and number of working days in a month).

Chart 3: Monthly revenue shares (black line) and seasonal indices (red line)



Source: Author's calculation based on the ITA data

Although statisticians, based on the calculated correlation coefficient of 87,9% and the aforementioned coefficient of determination, could conclude that there is a high relationship between the seasonal component and monthly shares of indirect tax revenue, relying only on these indices when making monthly revenue projections could lead to significant errors of estimated monthly amounts, even if the annual projection would prove to be completely correct. We have seen that the amount of the irregular component (that can hardly be predicted) is very high, so the indirect tax revenue planning is only possible on an annual basis, in accordance with the basis of projections of macroeconomic indicators (DEP).

4. Measures of variability in monthly revenues from indirect taxes

The mean of a data series often does not provide us with sufficient information about its characteristics. It is necessary to calculate the variability or dispersion of data around the mean. So is the case for monthly indirect tax revenue. The mean of monthly data only provides us with information on the average value of indirect taxes for the twelve months of a year. The dynamics of monthly revenues and their deviation from the mean are also important for the dynamics of budget inflows. There are numerous statistical measures of the variability of a data series, and here we will show Gini coefficients and coefficients of variation.

It should be noted that unadjusted revenues in the ITA IT system were not taken into account in the analysis.

4.1. Gini coefficients

The Lorenz curve is an important instrument used in time series variability analysis. It was developed by economist Max O. Lorenz in 1905 to represent wealth inequality.¹² Initially, this curve was applied only for this purpose, that is, it showed what proportion of the population has a certain share in the total income. The percentage of the population is shown on the x axis (starting with those with the lowest to those with the highest income), and the share of total income on the y axis. Perfect equality of distribution would exist if every percentage of the population appropriated the same percentage of income, which would be represented by a straight line of 45 degrees, or a "line of perfect equality." Today, in addition to the measure of wealth inequality, the Lorenz curve is widely used in the analysis of other economic phenomena.

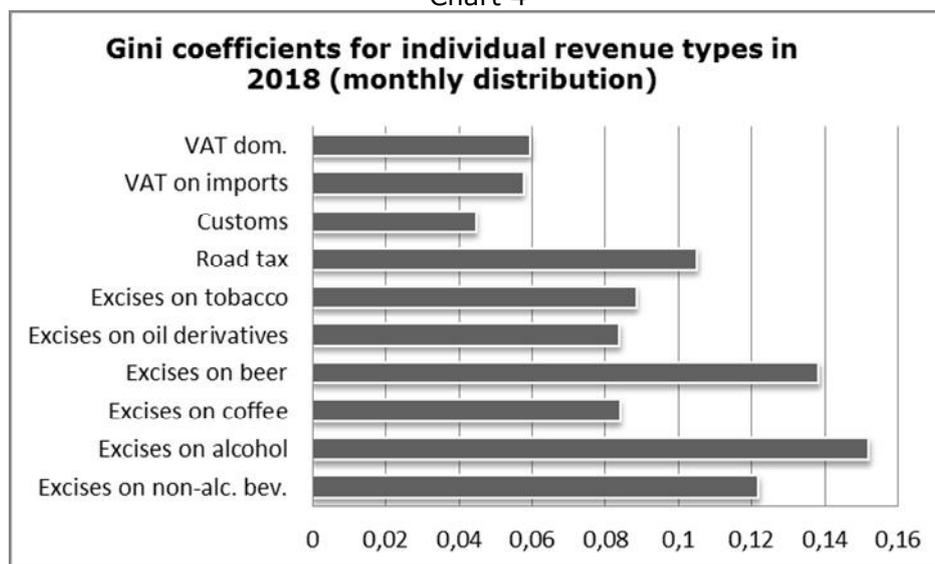
A Gini coefficient is calculated based on the Lorenz curve, showing how far it is from the "line of perfect equality". The more curved the Lorenz curve is, the higher the Gini coefficient is, or the higher the inequality of a given phenomenon. The Gini coefficient is a statistical measure of distribution. As in the case of the Lorenz curve, its basic application had been in measuring economic inequality or income distribution, while it can also be used in the analysis of the variability of other phenomena. It ranges from 0 to 1, that is, from perfect equality to perfect inequality of distribution. A country where every resident has the same income would have a Gini coefficient of 0. A country where only one resident earned all income, while everyone else earned nothing would have a Gini coefficient of 1. The Gini coefficient is, as already stated, a measure of distribution and should not be confused with the wealth indicators of a country. The two countries can have equal Gini coefficients, and huge differences in per capita income levels.

If we calculate the Gini coefficients for monthly distribution of individual types of indirect tax revenues, they will, as expected, be low, given the monthly deadlines for payment of these liabilities, as opposed to some direct taxes (e.g. property taxes). Though these indicators have low values for indirect taxes, this does not mean that the dynamics of indirect taxes have a low impact on the dynamics of general government revenues, given their huge share in total consolidated revenues of all levels of government. We will therefore compare these coefficients for individual types of indirect tax revenues, in order to draw conclusions about the levels of their variability by months of a given year. The last year for which annual data were available - 2018 was taken as an example.

Chart 4 shows the Gini coefficients for monthly distribution of gross indirect tax revenues by type. The revenues were taken from the ITA report on a cash basis (uncorrected amounts).

¹² "The econometrics of inequality and poverty, Chapter 4: Lorenz curves, the Gini coefficient and parametric distributions", Lubrano M., 2017

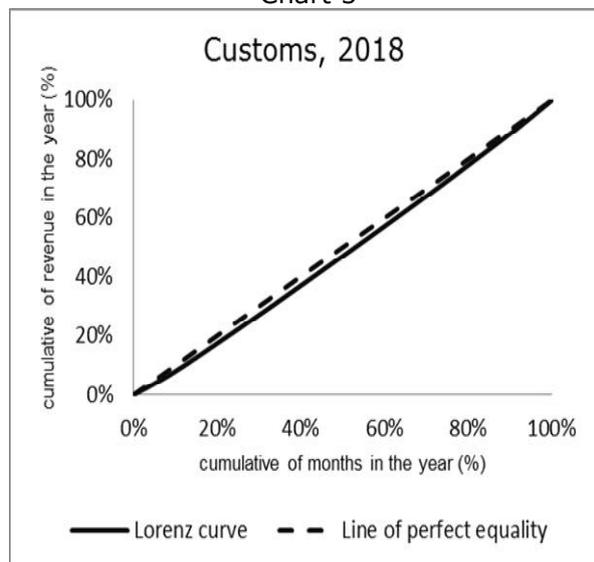
Chart 4



Source: Author's calculation based on the ITA data

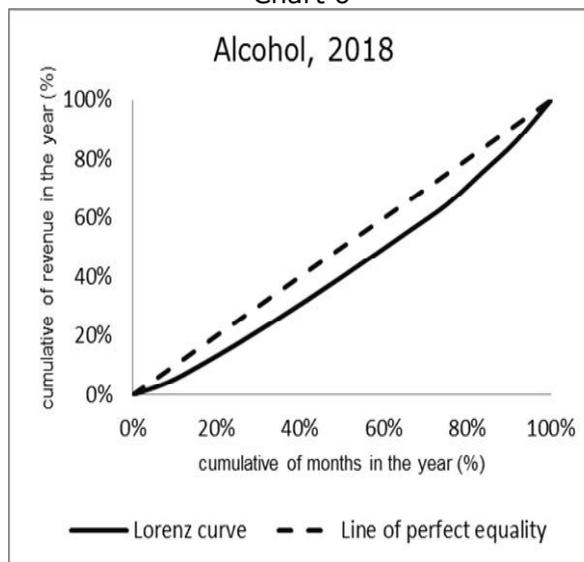
We see that the coefficient is the lowest for customs (0,04) and the highest for excise duties on alcohol (0,15), and the Lorenz curves for these types of revenues are shown in Charts 5 and 6.

Chart 5



Source: Author's calculation based on the ITA data

Chart 6

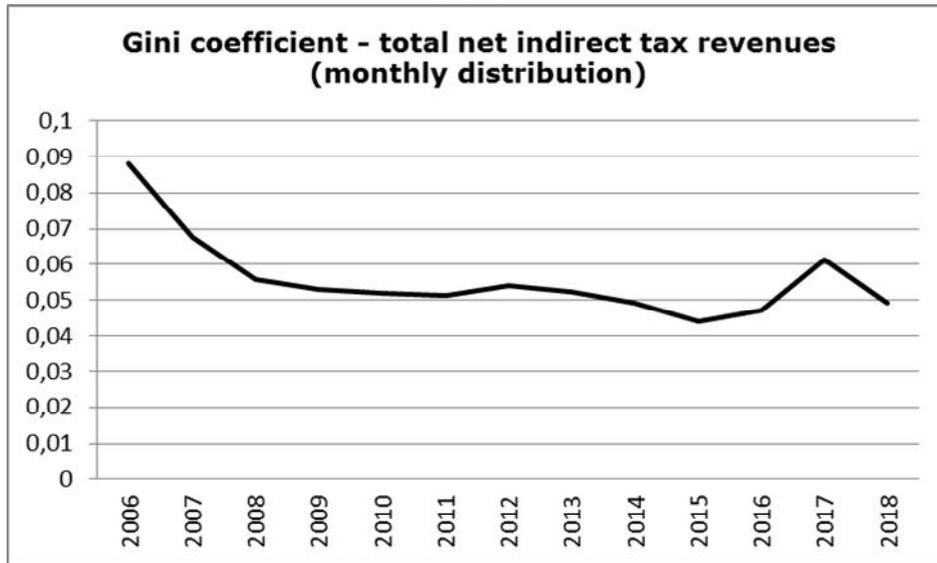


Source: Author's calculation based on the ITA data

Chart 7 shows that the Gini coefficient for total net revenues from indirect taxes on the ITA SA has a declining trend, with the interruptions of slight increases in 2012 and 2016, and with the exception in 2017, when a significant increase was recorded in comparison with the previous year (+0,014 p.p.). It is often stated in the literature that the Gini coefficient is less sensitive to the values at the extremes of the distribution¹³ than the coefficient of variation, and therefore the level and dynamics of the coefficient of variation (which is sensitive to the extreme values of the series) for indirect taxes will be shown below.

¹³ IMF Policy Paper, "Fiscal policy and income inequality", January 2014.

Chart 7

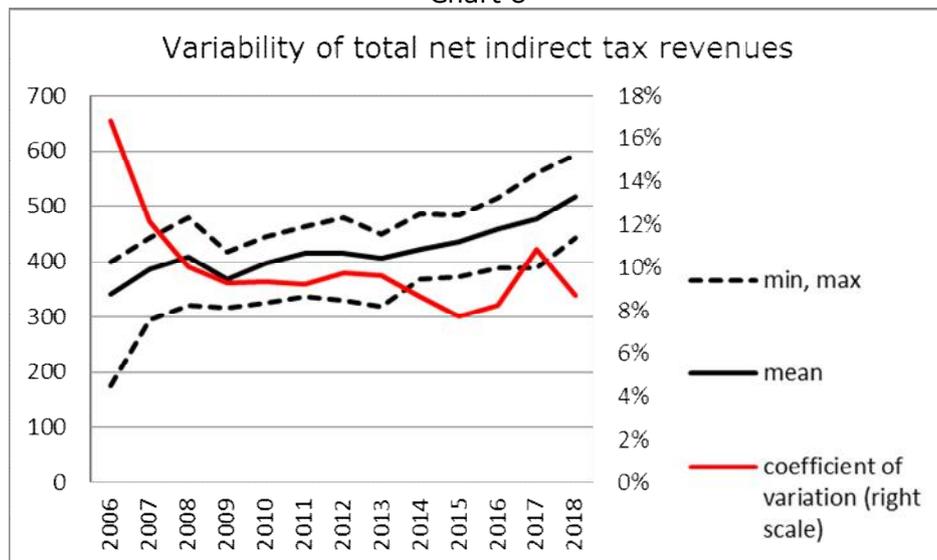


Source: Author's calculation based on the ITA data

4.2. Coefficients of variation

Monthly and annual revenues from indirect taxes on the ITA SA show a long-term growth trend. Chart 8 shows the mean of monthly indirect tax revenues, their extreme values by years, and the coefficients of variation of monthly revenues by years. The median of monthly revenues from indirect taxes increased from 354,5 million BAM in 2006 to 534,2 million BAM in 2018. The mean of monthly revenues has also increased significantly over the observed period (51,8%). Contrary to such developments, the standard deviation of monthly revenues declined from 57,4 million BAM to 45,2 million BAM. The coefficient of variation decreased from 16,8% to 8,7% in the observed period.¹⁴

Chart 8



Source: Author's calculation based on the ITA data

¹⁴ The coefficient of variation is the ratio of the standard deviation to the mean of data series.

In this section we will list the factors that determined the dynamics of the coefficient of variation over the observed period (Chart 8, red line). The coefficient of variation of total net indirect tax revenues was almost halved in 2018 (8,7%) compared to 2006 (16,8%).

The largest decrease was recorded in 2007 (-4,7 p.p.), primarily due to a fall in the variability of net VAT revenues (a decrease in c.v. of -10,4 p.p.), and increase in their share in the structure of indirect taxes (+1.4 p.p.). In 2006, there were huge fluctuations in gross VAT, as well as in refunds and net VAT revenues. It should be noted that the year 2006 was the year of introduction of VAT, and was characterized by the suspension of refunds for taxpayers who were not predominant exporters, while the payment of refunds started only in March. Although it would be expected for this to contribute to a greater fluctuations in monthly revenues, in this case the reverse situation occurred. In the first months of 2006, imports declined or stagnated compared to the same months of the previous year. Taking into account the huge increase in imports in December 2005, we can conclude that this was the result of business decisions to accumulate stocks before the introduction of VAT. In the first month of VAT introduction, there were no payments on the basis of VAT returns, due to the time lag between payments and the tax period to which they apply. Thus, suspension of refunds to non-predominant exporters had a positive effect on low revenues in the first months of the year, while the beginning of their payment at the end of the year reduced revenue growth, which is normally a seasonal feature of the end of the year. As a result, the coefficient of variation in 2006 was higher for gross revenues (25,8%) than for net revenues (23,0%), despite strong fluctuations in refunds (c.v. 71,9%).

Although the coefficient of variation of net VAT did not change significantly in 2008 compared to 2007 (+0,1 p.p. increase), the reduced variability in other revenues (customs,¹⁵ excises and road taxes), despite a decline in their shares in the structure, led to **a further decline in the coefficient of variation of total net indirect tax revenue by -2,0 p.p.**

In 2009, the coefficient of variation of net VAT and customs decreased (-3,8 p.p. and -4,8 p.p. respectively) while of excises and road tax increased (+5,2 p.p. and +24,8 p.p., respectively). In addition, there have been increases in the shares of VAT, excises and road taxes at the expense of the share of customs in the structure of indirect taxes. All this led to **a further decline in monthly fluctuations in indirect taxes** (a drop in c.v. of -0,8 p.p. in comparison with 2008).

In the following four years (2010, 2011, 2012 and 2013) there were no significant changes in the coefficient of variation of total indirect tax revenues (range between -0,1 p.p. to +0,5 p.p. annually), although some types of revenues recorded more significant dispersal changes (e.g. a drop in the coefficient of variation in road tax of -23,4 p.p. in 2010 as a result of applying the same rate of taxation throughout the whole year, as opposed to the previous year). Excise taxes for those four years (2013 compared to 2009) saw an increase in share of as much as +3,5 p.p. as a result of the increase in the fiscal burden on tobacco (Section 1, Structure of indirect tax revenues). The share of customs revenues has decreased by almost the same amount (-3,4 p.p.), as a result of trade liberalization with the EU.

In the next two years (2014 and 2015) the coefficient of variation decreased by equal amounts, by -1.0 p.p., and from the significant annual changes during that period we can mention the decrease in the coefficient of variation of excises in 2014 (-6,2 pp) and of road taxes in the same year (-2,5 p.p.), and a decrease in the coefficient of variation of customs in 2015 (-2,8 p.p.), which was achieved despite a slight increase of c.v. of imports (+0,2 p.p.).

¹⁵ Customs recorded a decrease in the coefficient of variation in 2008, despite the beginning of the application of the SAA provisions, primarily due to a fall in imports in the last two months of 2008, because of first manifestation of the effects of the global economic crisis on the B&H market. The high shares in last months is otherwise a seasonal feature of the movement of imports, so the fall has contributed to a decrease in the variability of imports and thus in customs.

In 2016, the coefficient of variation of total indirect tax revenues increased slightly (+0,6) as a result of the increase in c.v. of customs (+3,1) and road tax (+0,4). The coefficients of variation of VAT and excises did not change compared to the previous year, unlike the slight changes in their shares in the revenue structure (+0,2 p.p. and -0,6 p.p. respectively).

In 2017, the coefficient of variation of total revenues for the first time saw a stronger increase (+2,5 p.p.), and we see that it came from VAT (+2,6 p.p.) and excises (+5,4 p.p.). The increase in the coefficient of variation of net VAT came from fluctuations in VAT refunds (increase in c.v. of +4,9%) while the increase in c.v. of excises resulted from the increase in the coefficient of variation of excises on tobacco (+ 4,8 pp).

Table 2. Coefficients of variation in the monthly collection of individual types of indirect tax revenues

	Net VAT	Customs	Excises	Road tax	Total
2006	23,0%	17,5%	11,1%	13,9%	16,8%
2007	12,6%	15,1%	12,7%	12,6%	12,1%
2008	12,7%	14,2%	10,3%	10,2%	10,1%
2009	8,9%	9,5%	15,5%	35,0%	9,3%
2010	10,2%	12,4%	11,1%	11,6%	9,4%
2011	8,8%	13,4%	16,0%	11,0%	9,3%
2012	10,4%	12,9%	11,0%	11,3%	9,8%
2013	9,2%	13,3%	17,8%	14,3%	9,7%
2014	9,3%	14,4%	11,6%	11,8%	8,7%
2015	8,5%	11,6%	10,4%	11,1%	7,7%
2016	8,5%	14,7%	10,4%	14,0%	8,3%
2017	11,1%	11,3%	15,8%	14,4%	10,8%
2018	8,8%	8,5%	11,9%	19,3%	8,7%

Source: Author's calculation based on the ITA data

Table 3. Coefficients of variation in the monthly collection of individual types of excise revenues

	Excises	Oil der.	Tobacco	Coffee	Non-alc. bev.	Alcohol	Beer
2006	11,1%	12,9%	9,2%	10,9%	34,4%	24,2%	29,7%
2007	12,7%	12,0%	12,8%	12,6%	43,2%	24,3%	31,9%
2008	10,3%	9,1%	13,1%	11,7%	31,7%	29,3%	26,1%
2009	15,5%	17,0%	28,4%	18,7%	33,1%	25,1%	28,1%
2010	11,1%	13,4%	13,6%	14,1%	28,9%	29,3%	26,9%
2011	16,0%	20,1%	21,0%	11,9%	27,1%	24,2%	28,4%
2012	11,0%	11,4%	11,6%	14,3%	29,7%	22,9%	27,8%
2013	17,8%	13,8%	27,5%	20,7%	30,7%	30,5%	26,3%
2014	11,6%	13,0%	14,8%	36,4%	23,3%	41,0%	23,2%
2015	10,4%	10,8%	15,0%	15,2%	24,3%	22,7%	25,5%
2016	10,4%	11,3%	14,8%	8,7%	23,2%	27,3%	32,9%
2017	15,8%	13,8%	19,6%	12,8%	28,1%	26,4%	26,4%
2018	11,9%	14,7%	16,4%	14,8%	21,4%	28,5%	24,5%

Source: Author's calculation based on the ITA data

It remains the explanation of the **fall in the coefficient of variation in 2018 of -2,1 p.p.** Strong increase in c.v. of road tax revenues of 4,9 p.p., as well as in their share in the revenue structure (+3,3 p.p.) to some extent mitigated the decline in the coefficient of variation of total revenues, which was caused by a decline in c.v. of all other revenues: net VAT (-2,4 p.p.), customs (-2,8 p.p.) and excises (-3,9 p.p.). The change in c.v. of excises on tobacco (-3.2 p.p.) was again a main cause of changes in c.v. of total excises, while in the case of VAT revenues there had been reported decreases in c.v. of all components (imports -2,3 p.p., domestic -1,3 p.p. and refunds -1,0 p.p.).

5. Conclusion

Long-term indirect tax revenue trends are determined by the macroeconomic flows that influence their tax bases. Long-term collection trends are also affected by changes in legislation that have so-called *level shift* effects on revenues. In addition to long-term trends, monthly fluctuations in revenues within the year are also important for budget users, since the dynamics of revenue distribution from the ITA SA is determined by the dynamics of their collection. The monthly dynamics of indirect taxes depend on their seasonal and irregular component. Monthly dynamics is also affected by calendar factors that do not have seasonal effects, as well as by changes in legal provisions whose beginning of implementation do not coincide with the beginning of the year.

This article compares the degree of variability of individual and total net revenues from indirect taxes, based on their coefficients of variation. The change in the dynamics of this indicator over time was also analyzed. The variability of individual types and total net indirect tax revenues depends on all four components of the data series (see Section 2, Components of time series data). In analyzing revenue fluctuations on an annual basis, the component of the long-term trend (which refers to the tendency of fall or growth in a time series that lasts for a certain longer period of time) should be ignored. It is a component that changes gradually and reflects economic and other factors, although it can sometimes have a stronger impact on the annual revenue shares (the year 2008 is an example; see Section 3, Seasonal component of indirect tax revenues).

It should be borne in mind that the calculated coefficients of correlation and determination between the actual shares of monthly revenue in the year and their seasonal indices (Section 3, Seasonal component of indirect taxes revenues) do not determine the degree of variability of individual type of revenues, but the significance of the seasonal component in the total variations of some type of revenue, i.e. the level of "matching" of the seasonal pattern to the actual collection. It should be borne in mind that the seasonal scheme can have much more pronounced fluctuations in a particular type of revenue compared to others, with the same importance of seasonal component in the total fluctuations compared to other components (irregular, etc.). As examples, the cases of excise duties on non-alcoholic drinks and road taxes were shown in Chart 3. The significance of the seasonal component is different for different types of revenues. Based on the calculated coefficients of correlation and determination between the seasonal indices (based on the corrected median of the ratios of the original data and centered moving averages) and the actual revenue shares in the period 2010-2017, it was estimated that the seasonal component had the greatest influence on the dynamics of excise duties on non-alcoholic beverages, road tax and gross VAT (separately domestic and on imports). By contrast, excise taxes on tobacco and coffee do not have a seasonal effect at all.

We can see from Tables 2 and 3 (Section 4. Measures of variability in monthly revenues from indirect taxes) that the coefficients of variation are the highest for excise duties on non-alcoholic beverages, beer, alcohol and tobacco. Excise taxes on non-alcoholic beverages, alcohol and beer are both revenues with the highest coefficients of variation of their seasonal indices, and relatively high coefficients of correlation between seasonal indices and actual shares of monthly revenues. All these facts point to the high importance of seasonal factors in the variability of these revenues.

In the case of excise taxes on tobacco, on the other hand, the seasonal component plays no role in the degree of variability of the data; rather it is a high influence of the irregular component (policies of large companies).

The degree of variability in total indirect tax revenues is mostly determined by the degree of variability in net VAT revenues, which have the highest share in net revenues. It is interesting that in many years of the observed period the coefficient of variation of monthly shares in total net revenues has been below the coefficient of variation of all basic categories of indirect tax revenues (net VAT, customs, excises, road taxes; see Table 2). The reason is that their monthly schemes do not match, and so higher shares of some revenue category and lower share of another category in a month can smooth the scheme of total revenues.

In the period 2006-2018 the coefficient of variation of the monthly shares of total net revenues decreased by -8,1 p.p. In the structure of revenues, the share of excise tax revenues on tobacco increased, with a large share of irregular component, and road taxes, with a pronounced seasonal pattern. The main reason for the decline in the variability of total net revenues was the decrease in the irregular component, which was extremely high in the initial years of the observed period (2006-2009). Compared to 2009, the coefficient of variation decreased by only half a percentage point, and so we can conclude that significant changes in the structure of indirect taxes did not have a greater impact on the variability of total indirect tax revenues within the year. The coefficient of determination between the calculated seasonal indices for total net revenues and their actual shares is lower for the period 2013-2017 than for 2010-2014, which indicates a decrease in the importance of the seasonal component and an increase in irregular, which is understandable given the growth of the share of excises on tobacco in the revenue structure. The calculated seasonal indices also have a lower degree of variability in 2013-2017 than in 2010-2014.

From all of the above, we can conclude that the change in the variability of total net indirect tax revenues over the years is an extremely complex issue, because it depends on a number of factors: changes in the structure of indirect taxes, the degree of variability of individual types of revenues influenced by seasonal and irregular factors, and individual monthly schemes and their relations. If we take into account the high importance of the irregular component, which after the fall in the initial years of the observed period has again registered an increase in recent years, we can conclude that the monthly dynamics of indirect taxes is very difficult to predict.

Coffee as excise goods in European Union countries and Bosnia and Herzegovina - Part II

(Author: Mirjana Popović, Expert Advisor - Macroeconomists)

1. Introduction

The second part of the paper on topic named "Coffee as excise goods in the countries of the European Union and in Bosnia and Herzegovina" is a continuation of the first part, which was published in the previous bulletin of the Unit. In the first part, we analyzed coffee exchange, while in the second part we analyze coffee taxation.

2. Coffee Market in Bosnia and Herzegovina

Considering the culture and tradition in the country, we can say that Bosnia and Herzegovina (hereinafter: B&H) is a significant coffee market. Coffee is an integral part of B&H citizen's

culture¹⁶. The country has long been dominated by low-quality coffee varieties such as Robusta which mixed with less or more the Arabica coffee varieties is used as a raw material base for the preparation of traditional so-called "Turkish or Bosnian coffee", which is mainly prepared in households across the country. Higher-quality types of coffee such as Arabica previously had slightly less market share in B&H. These types are used to prepare espresso coffee, which is most commonly consumed in bars and restaurants.

Over time, there have been reversals, or so-called "conflicting trends". There has been an increase in coffee sales in bars and restaurants dominated by espresso and instant coffee, relative to coffee sales in coffee shops for preparing coffee in households. These changes can be attributed to different consumption philosophies between the older generations and the newer generations, clashing traditional value with western consumption trends causing a generational divide that is also evident in the preferences of coffee consumers. In addition, the improvement of economic environment and technology has an increasingly positive effect on producers focused on integrating social media platforms into their marketing apparatus, which drives the evolution of espresso coffee.

Bars and restaurants are dominated by espresso coffee sales followed by instant coffee sales which attract a similar consumer base as espresso coffee. This is largely the younger consumer population. In addition to espresso coffee, the consumption of instant coffee has also grown over the past few years. Looking at total coffee sales in B&H, strong growth was observed over the period 2013-2018.¹⁷ We can attribute these changes to the effects of globalization. Coffee has a large consumer area in B&H. It has reached a stage where it is evolving from a traditional beverage to a beverage that is more in line with global trends and preferences of western consumers.

2.1. Excise duties on coffee in Bosnia and Herzegovina

According to the Law on Excise Duties in Bosnia and Herzegovina¹⁸ (hereinafter: the Law) under coffee is considered:

- Raw coffee (with or without caffeine)
- Roasted coffee (with or without caffeine), in beans or ground
- Husks and membranes of roasted coffee
- Other coffee products containing 50% or more coffee.

The excise duty on coffee is paid for one kilogram of coffee net weight. If coffee is marketed in packages of more or less than one kilogram, excise duty is paid in proportion to the quantity in the package.

Excise duty on coffee is payable upon import per kilogram for:

- Raw coffee 1.50 BAM;
- Roasted coffee (beans or ground) 3.00 BAM;
- Husks and membranes of roasted coffee and other coffee products 3.50 BAM.

Table 1 shows the dynamics of movements of imported quantities and values of coffee in B&H in the period 2010-2019. The table shown percentage increase / decrease in the imported quantity and value of coffee and coffee based products which are excise products in comparison to 2010.

¹⁶ There are many social aspects of drinking coffee as coffee breaks, welcome coffee, business meetings, socializing and networking with coffee, etc. Most consumers in the country consume at least one coffee a day. Since that coffee as a drink has deep historical roots, consumers have a sense of belonging and tend to be in some way defined by the type of coffee they choose to drink. Those who drink traditional so-called "Turkish or Bosnian coffee" and those who drink espresso coffee represent two completely different consumer groups, with almost no overlap.

¹⁷ <https://www.euromonitor.com/coffee-in-bosnia-herzegovina/report>

¹⁸ "Official Gazette of B&H" no. 49/09, 49/14, 60/14, 91/17

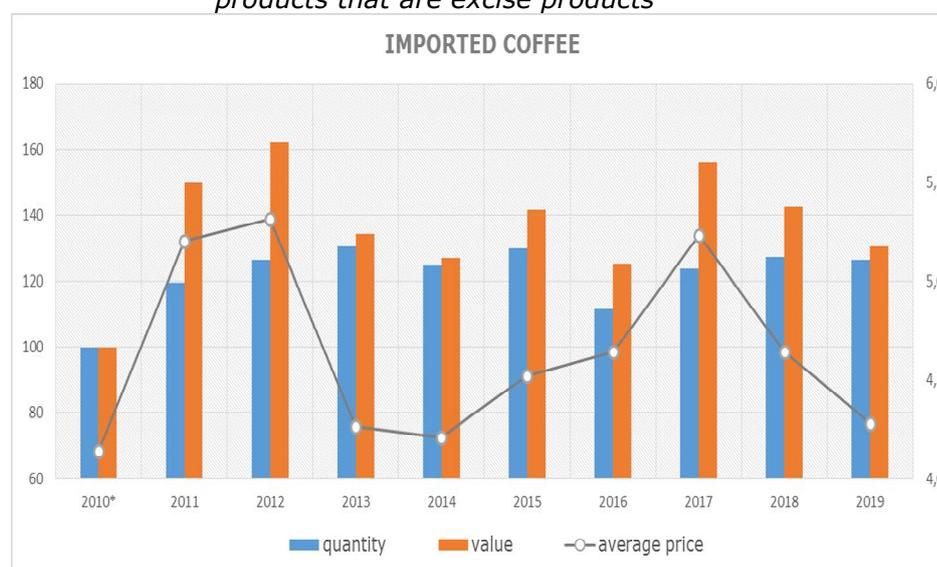
Table 1. Overview of the dynamics of movement of imported quantities and values of coffee and coffee products that are excise products¹⁹

	2010*	2011	2012	2013	2014	2015	2016	2017	2018	2019
quantity	100.0	119.5	126.6	130.7	125.0	129.9	111.6	123.7	127.3	126.5
value	100.0	150.1	162.3	134.4	127.0	141.6	125.1	156.2	142.6	130.6
average price	4.145	5.203	5.317	4.264	4.212	4.519	4.646	5.235	4.642	4.282
% of growth of average price	100.0	125.5	128.3	102.9	101.6	109.0	112.1	126.3	112.0	103.3

Source: BiH Indirect Taxation Authority data

* Base year

Chart 1. Dynamics of movement of quantity, value and average price of coffee and coffee products that are excise products



Source: B&H Indirect Taxation Authority data

* Base year

From Chart 1 we can see that during the period 2010-2019 the smallest oscillation occurred in quantity, while the value increased significantly. In 2012 and 2017 the value of imported coffee and coffee products subject to excise duty were significantly higher than in the base year 2010. The right scale shows the unit price per kilogram of imported coffee and coffee products subject to excise duty in Convertible Marks (BAM). A gray line represents this movement. The average price per kilogram of imported coffee in the observed period was between 4.10 BAM and 5.40 BAM.

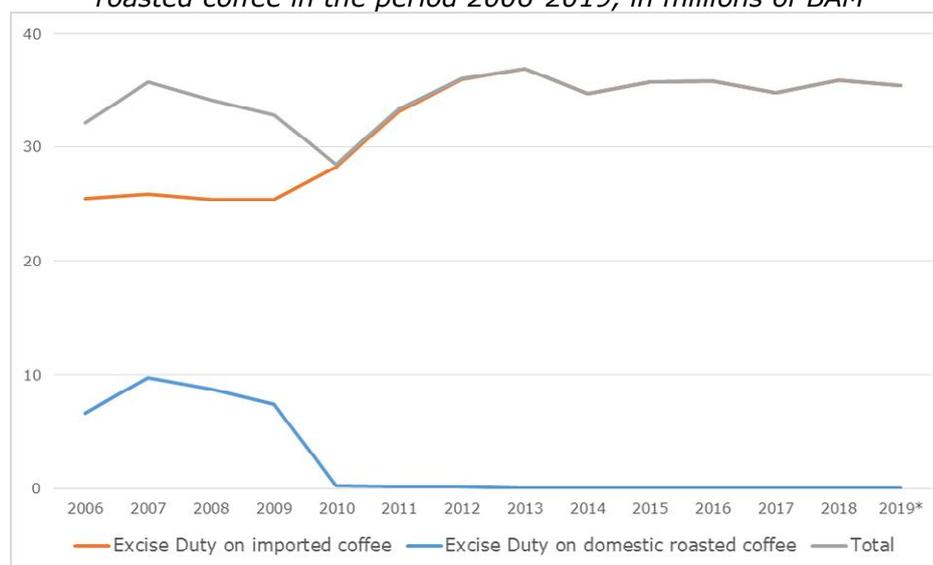
2.2. Movement of import and domestic excise duty

From the data presented in chart two, it can be seen how the revenue from excise duty on coffee, viewed by component, behaves differently. In cumulative terms, revenues have been stagnant over the period 2006-2019. Since the implementation of the current Law, as of July 1, 2009, the revenues observed individually have changed significantly. This difference of the coffee trade and the taxation occurs under the influence of legislative changes. In accordance with the current Law, excise duty is paid exclusively on cross-border traffic, i.e. on import, which stimulates domestic

¹⁹ *Methodology*: In the analysis, we used the available data relating to the period 2010 – 2019. We also opted to use base index with the base year 2010 in order to emphasize better the direction and intensity of the observed phenomena. It is important to emphasize that comparisons were made relative to the base year.

coffee processors, while the excise duty on coffee in the country is not paid. In this way the scope for fraud narrows, as excise duty rates on domestic products were higher than import rates, and any differentiation of rates opens the space for fraud. Accordingly, the data relating to the period before the date of starting application of the current Law and after July 1, 2009 are not comparable. The vertical scale shows the amount of revenue in millions of BAM.

Chart 2. Movement of excise duty revenues on imported and domestic roasted coffee in the period 2006-2019, in millions of BAM



Source: B&H Indirect Taxation Authority data

* Data for 2019 are preliminary

Table 2 shows the percentage increase/decrease in excise tax revenue on imported and domestic roasted coffee in the period 2006-2019 compared to 2006, which we used as the base year for analysis purposes. It shows the results of the Law implementation.

Table 2. Movement of excise duty revenues on imported and domestic roasted coffee, in the period 2006-2019 compared to the 2006

	2006*	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**
Imported Excise Duty	100.00	101.74	99.86	99.92	110.83	130.13	140.96	144.82	136.25	140.09	140.36	136.60	140.74	139.05
Domestic Excise Duty	100.00	147.15	131.03	111.15	3.24	3.15	2.29	0.13	0.05	0.05	0.01	0.01	0.00	0.00
Total	100.00	111.14	106.31	102.24	88.57	103.86	112.27	114.88	108.07	111.11	111.32	108.34	111.62	110.28

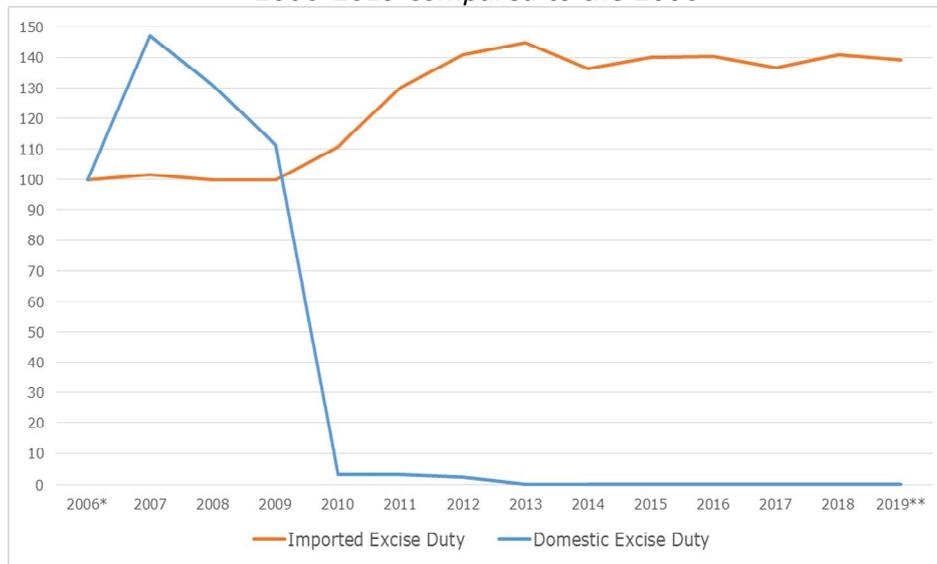
Source: B&H Indirect Taxation Authority data

*Base year

**Data for 2019 are preliminary

In order to visualize the effects of the application of the Law, the same is shown graphically in chart three. The vertical scale shows the percentage increase/decrease in revenues compared to 2006.

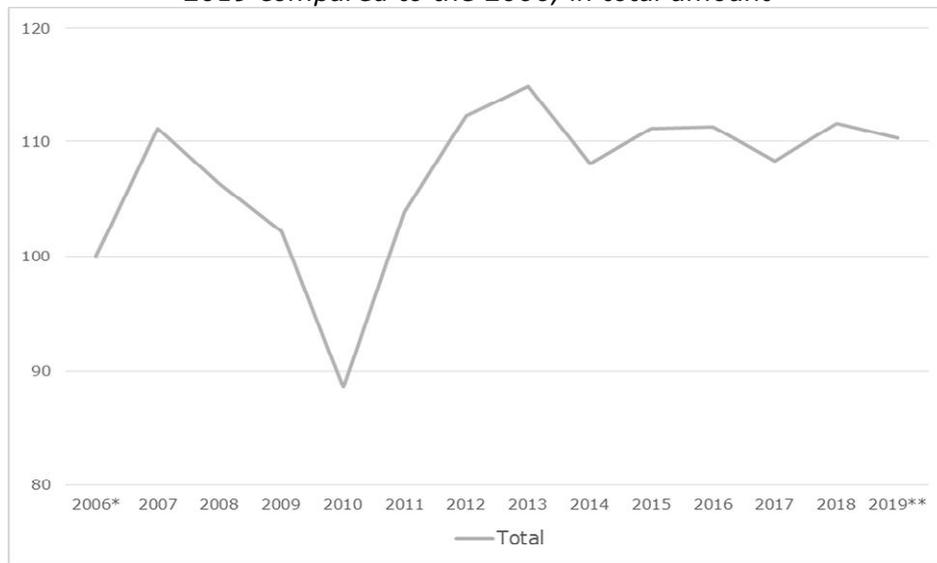
Chart 3. Movement of Excise Duty on imported and domestic roasted coffee, 2006-2019 compared to the 2006



Source: B&H Indirect Taxation Authority data
 *Base Year
 **Data for 2019 are preliminary

Chart 4 shows that total excise tax revenue on coffee is stable and has not had a fluctuating trend in recent years. The vertical scale shows the percentage increase/decrease in total revenues compared to 2006, which was used as the base year.

Chart 4. Dynamics of Excise Duty Trends on imported and domestic roasted coffee, 2006-2019 compared to the 2006, in total amount



Source: B&H Indirect Taxation Authority data
 *Base year
 **Data for 2019 are preliminary

3. An overview of the excise duty rates on coffee in the EU and neighboring countries

Table 3 gives an overview of excise duty rates on coffee in EU countries that apply excise duty rates, as well as in B&H, Serbia and Montenegro. A comparative overview of VAT rates is also presented.

Table 3. Overview of VAT rates and excise duty rates for coffee in some EU countries, as well as in B&H, Serbia and Montenegro

Country	VAT in %	Excise duty on coffee
Belgium	6	Raw coffee: 0.2001 EUR / kg net weight
		Roasted coffee: 0.2502 EUR / kg net weight
		Release: when coffee is for industrial use (not for roasting coffee or producing coffee extracts)
Croatia	25	Roasted coffee: HRK 6 / kg net weight
		Coffee substitute products containing coffee: HRK 6 / kg net weight
		Coffee products, extracts, essences, coffee concentrates: 20 HRK / kg net weight
Denmark	25	Roasted Coffee: 7.67 DKK / kg
Germany	7	Roasted coffee: 2.19 EUR / kg
Greece	24	Raw coffee: 2 EUR / kg
		Roasted coffee: 3 EUR / kg
Latvia	21	142.29 EUR / 100 kg of pure coffee
Bosnia and Herzegovina	17	Raw coffee: 1.50 BAM / kg
		Roasted coffee: 3.00 BAM / kg
		Other coffee products 3.50 BAM / kg
Serbia	20	Raw coffee: 90.09 din / kg
		Roasted coffee: 112.60 din / kg
		Husks and membranes of coffee: 123.86 din/kg
		Extracts, essences, coffee concentrates: 168.91 din / kg
		Coffee products: 337.82 din / kg net weight of coffee contained in the finished product
Montenegro	21	Raw coffee: 1.00 EUR / kg
		Roasted coffee: 0.80 EUR / kg
		Husks and membranes of coffee: 1.00 EUR/kg
		Extracts, essences, coffee concentrates: 1.30 EUR/kg
		Coffee products: 2.50 EUR / kg net weight of coffee contained in the finished product

Source: 2018-2019 European Coffee Federation Report²⁰, Laws and Regulations²¹

²⁰ European Coffee Report 2018-2019 (www.ecf-coffee.org)

²¹ Law on Excise Duties in Bosnia and Herzegovina ("Official Gazette of B&H", No.49/09, 49/14, 60/14, 91/17); Law on Excise Duties of the Republic of Serbia; Harmonized annual amount of consumer prices in 2018 ("Official Gazette of the Republic of Serbia", No. 4/19) and the Law on Coffee Tax ("Official Gazette of Montenegro", No. 08/15)