



Macroeconomic Unit of the Governing Board of the Indirect Taxation Authority

ОМА Билтен

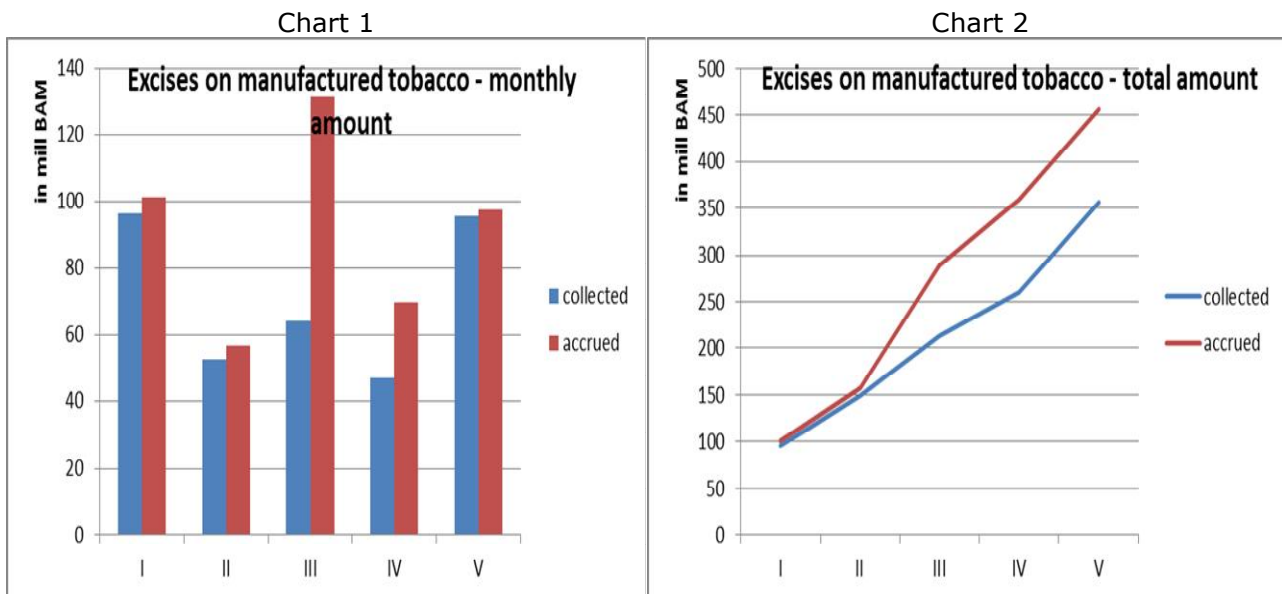


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With this issue

The new regime for payment of excise duties on tobacco products, which has been applied recently, entails payment of excises when importing tobacco products instead of payment of excises when taking over excise stamps. The transition to the new excise duty payment regime results in a one-time loss of excise revenue. The pace of the transition of tobacco companies to the new payment regime was different due to the adjustment to the customs procedures regarding the payment of excise duties on imports, so that the effect of the loss of revenues extends over two months period. Observed from a calendar perspective, it is about the period from the second half of February to the first half of April, i.e. three monthly reporting periods (February – April). The new excise duty payment regime has led to a structural break in the data series used to analyze the collection of excise duties on tobacco products, since there is a time gap between the calculation and payment of excise duties. The gap between the revenues from excises accrued when taking over excise stamps and excises collected during importation is significant, especially in the month of March (Chart 1).



In its April projections, the Unit estimated a one-time loss of excise revenue in the amount of the average monthly collection in 2022 (see MAU Bulletin no. 215/216). However, the discrepancy between the collected and accrued excise turned out to be greater than the estimate (Chart 2), from which it can be concluded that the time gap between the issuing of stamps and importation is still longer than a month. It depends on the location of cigarette production, transport and distribution costs, but it is also possible that a larger amount of stamps was taken compared to the practice in previous years. In any case, a larger discrepancy implies a larger loss of revenues from excises on tobacco products than assumed in the Unit's projections.

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Atypical fluctuations in revenues from indirect taxes with a focus on the period 2020-2022

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Introduction

Time series data can be decomposed into the following components: trend-cyclical, seasonal, calendar and irregular component. The Unit has presented definitions of the above components several times in its bulletins. Here we will deal with the irregular component of time series of certain types of revenues from indirect taxes. The irregular component consists of all effects that are not included in the other components. This time series component is residual, after the trend-cyclical and seasonal components (including calendar effects) have been removed. It is caused by many factors that are not predictable and represent random variations of the data series, as well as the effects of changes in legislation. A component of irregular behavior may have effects in a single period in a time series, may permanently change the level of the series, or may have effects that diminish over time.

Atypical fluctuations in revenues from indirect taxes can be very pronounced so that they blur the regularities of movement and prevent a correct interpretation of their economic and seasonal basis. In the numerous analysis that the Unit has so far published in its bulletins, we have seen that a certain number of types of revenues from indirect taxes have a pronounced seasonal collection pattern. Nevertheless, the period from the establishing of the Indirect Taxation Authority to the present day was marked by numerous phenomena that have led to large irregularities in the time series of collection of certain revenue types. These are primarily administrative factors, i.e. changes in regulations in the field of indirect taxation. In addition, other phenomena have also shaken the seasonal revenue collection pattern in certain periods of time, and among them weather disasters, the emergence of the corona virus and the outbreak of war in Ukraine should be pointed out.

In this article, it is analyzed how much the revenue collection pattern has deviated from the old, so-called *pre-COVID* collection pattern, which for a certain number of revenues was quite stable in the period from 2010 to 2019. The period from 2020 to 2022 was characterized by large irregularities in the collection of revenues from indirect taxes, initially due to the effects of restrictive measures in the fight against the corona virus and later due to the huge increase in the prices of oil derivatives and then prices in general, caused by the latest events on the global level.

1. Basics of seasonal adjustment of time series data

Seasonal adjustment of time series data is performed in order to gain insight into the dynamics of a certain phenomenon when seasonal factors are excluded. Even after adjustment, atypical fluctuations will be visible to the extent that they exceed the usual seasonal pattern. By eliminating the seasonal component¹, adjusted data series allow the analysis of other components of the time series that remain unfiltered. In seasonally adjusted (SA) data series, the seasonal component of the time series is eliminated based on the pattern of the phenomenon in the past. Even if new trends in a time series are the result of seasonal factors, they will not be filtered out until they repeat themselves over a long period of time. Raw, seasonally unadjusted, data show the actual dynamics of a certain phenomenon in the observed time period, while seasonally adjusted data show its background, that is, the movement of a given phenomenon in conditions

¹ The seasonal component refers to recurrent fluctuations within a year, which have more or less the same intensity and the period of fluctuation. This 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.

where it would not be affected by seasonal factors. If the calendar component² is also filtered, an even clearer picture of the tendency of a phenomenon can be obtained if the data for a certain month of the year is compared with the previous one, or with the same month of a previous year. When the irregular component is large, the graphical presentation of the seasonally adjusted data series will not be a smooth line. A further decomposition between the trend-cyclical³ and irregular components would be subject to high uncertainties, especially at the end of time series data, where it may be difficult to distinguish and allocate effects from new observations.

The seasonal component of a time series can change over time. The seasonal pattern may gradually evolve as economic behavior, structures, and institutional and social arrangements change. The seasonal pattern can also change due to changes in legislation.

It should be emphasized that estimates of the trend cyclical component for the most recent parts of time series must be interpreted carefully, as they may be subject to revisions. Irregular component can be one of the causes of significant revisions to estimates of the trend-cyclical component, since it is often not possible to distinguish irregularities from changes in trends based on fewer observations.

2. Administrative factors as causes of atypical fluctuations of indirect taxes in Bosnia and Herzegovina

The initial years since the establishment of the Indirect Taxation Administration of B&H (ITA) were particularly characterized by changes in regulations in the field of indirect taxation. The ITA was established in 2004, and in 2005 it became responsible for the collection of customs duties, excise duties, road taxes and sales taxes on excise products. In 2006, value added tax (VAT) was introduced, replacing the previous sales tax, and the ITA took over the authority to collect all types of indirect taxes. The year of the introduction of VAT was particularly turbulent in terms of collection of VAT revenues and payment of VAT refunds. The first payments of domestic VAT were made in the month of February, based on January VAT returns. The same year was characterized by the suspension of refunds for taxpayers who are not the main exporters, and by the fact that the payment of refunds has started in the month of March. In 2007, a significant part of refunds related to the previous year was paid. The situation culminated at the end of 2007, when the existing 10% rate of allocation to the reserve account for refunds of indirect taxes proved to be insufficient, which has led to problems in servicing of refund payments. At the beginning of February 2008, the Governing Board of the ITA overcame the problem of reserves by making a Decision to allocate 10% to the reserve account, and in the event that the stated amount is not sufficient for the payment of due obligations, Article 9 of the Law on Payments into the Single Account and Distribution of Revenues will be applied, where "the reserve is calculated as the sum of refunds for the next working day".

The legal changes that had more significant effects on other types of revenues from indirect taxes (see Box 1 below) were the following: phased liberalization of foreign trade with the EU (application of the Stabilization and Association Agreement with the EU – SAA, as of July 1, 2008) which had effects on customs revenues; the introduction of a specific excise tax on cigarettes from July 2009 and its phased increase until 2019 with the effects on excise revenues; and increases in the road tax on two occasions, as of July 2009 and as of February 2018. The aforementioned changes in regulations have had an indirect impact on VAT collection as well, given that the mentioned revenue types to which the changes refer are included in the VAT base.

² 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.

³ The trend-cyclical component is the basic component of a time series, which changes gradually and reflects economic factors.

Text box No 1. Legal changes in the area of indirect taxes with significant effects on collection

	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022	
	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2	h1	h2		
VAT																																
Excises on tobacco																																
Excises on oil derivatives																																
Road tax																																
Customs																																

1 Excise duties on cigarettes: Application of the new Law on Excises has begun on July 1, 2009. The new, ad valorem, rate was reduced from 49% to 42%, but the same is being calculated on the tax base including VAT, and approximately corresponds to the rate that has been previously applied. A specific excise tax of 0.15 BAM per pack of cigarettes was introduced, which since 2009 has been increased by the same amount every year until 2019, when it reached 1.65 BAM per pack of cigarettes. A category of minimum excise duty on cigarettes was introduced (applied as of January 1, 2010), related to the category of the most popular cigarettes in terms of price. Since the legal ceiling of the total excise duty on cigarettes of 176 BAM/1000 cigarettes was reached for all price categories of cigarettes in 2019, the harmonization with EU standards in the area of cigarette taxation was completed that year.

2 Excise duties on cut tobacco: The new policy of excise duty on tobacco has been in effect since August 1, 2014. The excise duty policy on tobacco from 2014 has brought an increase in the fiscal burden on cut tobacco. The main policy changes relate to the introduction of a specific excise tax on cut tobacco and its annual adjustment to the increase in the minimum excise tax on cigarettes.

3 Excise duties on oil derivatives: Application of legislative changes in the area of excise duties on oil derivatives has started on February 1, 2018. The changes in the excise policy on oil derivatives relate to the increase in the excise duty rate on heating oil from 0.30 to 0.45 BAM/l and the introduction of excise duty on biofuels and bioliquids (0.30 BAM/l);

4 Road tax: Application of the new Law on Excises has begun on July 1, 2009 and the changes related to the road tax include the introduction of an additional, earmarked, road tax for financing highways in the amount of 0.10 BAM per liter of oil derivatives. The total road tax rate has been thus increased from 0.15 to 0.25 BAM/l.

5 Road tax: Application of legislative changes that started on February 1, 2018. refers to the increase in the earmarked road tax rate from 0.10 to 0.25 BAM/l (with the separation of rates and funds according to the purpose for highways and other roads), as well as changes in the toll base in terms of including biofuels and bioliquids in the base, and liquefied petroleum gas for driving motor vehicles. The total road tax rate was thus increased from 0.25 to 0.40 BAM/l (road tax for road construction is 0.15 BAM/l, while earmarked road tax amounts 0.25 BAM/l: 0.20 BAM/l for the construction of highways and 0.05 BAM/l for the construction and reconstruction of other roads).

6 Customs: Application of the Stabilization and Association Agreement with a phased reduction and abolition of customs duties on the import of goods originating in the EU as of July 1, 2008 until 2013.

7 Customs: Abolition of customs registration on all imports since the fourth quarter of 2011.

3. Seasonal indices of revenues from indirect taxes - methodological explanations

In this article, the seasonal indices of revenues from indirect taxes by type are presented, calculated on the basis of collection trends in the period before the onset of corona virus. After that, the deviation of collection from those indices in the last three-year period 2020-2022 is analyzed.

A high irregular component can reduce accuracy of the process of seasonal adjustment of the time series, because signals from observations of changes in the seasonal pattern are more likely to be spurious, reflecting irregularities in the time series rather than a change in the seasonal pattern. Therefore, for calculation of seasonal indices of indirect tax revenues, the initial years after establishment of the ITA were avoided. As stated in the previous chapter of this article, the initial years since the establishment of the ITA were characterized by turbulences in collection of VAT revenues and payment of VAT refunds. The year 2008 was characterized by beginning of the liberalization of foreign trade with the EU under the SAA, but also by onset of the global economic crisis at the end of the year. Both of these factors had negative effects on revenue collection. The year 2009 was characterized by the mix of effects of the global economic crisis and the effects of changes in the Law on Excise Duties since the middle of the year. In order to avoid the mentioned effects, **we chose the period 2010-2019 for the calculation of seasonal indices of revenues from indirect taxes, with the exception of revenues from excises on oil derivatives and road tax for which the period 2010-2017 was taken**, in order to exclude the effects of changes in regulations that have entered into force as of February 2018.

In the absence of complex methods of official correction procedures, **seasonal indices were calculated according to a procedure for extraction the seasonal component by using the method of seasonal indices**. The method is based on the calculation of seasonal indices using the corrected median of the ratios of the original data and centered moving averages.⁴

Validation of seasonally adjusted data is an integral part of any seasonal adjustment procedure. Seasonal adjustment programs can produce "seasonally adjusted" data even when the input data do not contain seasonal effects. On the other hand, they can produce deseasonalized series that still contain residual seasonal effects. Therefore, it is necessary to analyze the results of the seasonal adjustment procedure. Again, due to the lack of complex programs for testing the strength of seasonal component in the time series of data, after calculating the seasonal indices for certain period, in the analysis presented in this article, regression models were estimated and the coefficients of determination of seasonal indices and actual shares of monthly amounts of individual revenue types in the corresponding period were calculated. In this way, it can be shown how well the seasonal indices "fit" into the real annual shares of revenues in the observed period. 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%.⁵

The following indicators are presented below for the all revenue types that, based on validation, have been shown to have a pronounced seasonal component: seasonal indices, actual shares of monthly data by year and seasonally adjusted data. It is important to note that the **calendar component is not filtered out in the seasonally adjusted data shown below**. Calendar effects that have a seasonal character (holidays with a fixed date, number of days in a month, etc.) were filtered by the process of extracting the seasonal component itself. On the other hand,

⁴ Newbold, P. et al. „Statistika za poslovanje i ekonomiju“, Mate, Zagreb (2010), p. 732; Original name: „Statistics for Business and Economics“

⁵ Blažić M. and Dragović V., „Opšta statistika“ (General statistics), Belgrade 1991.

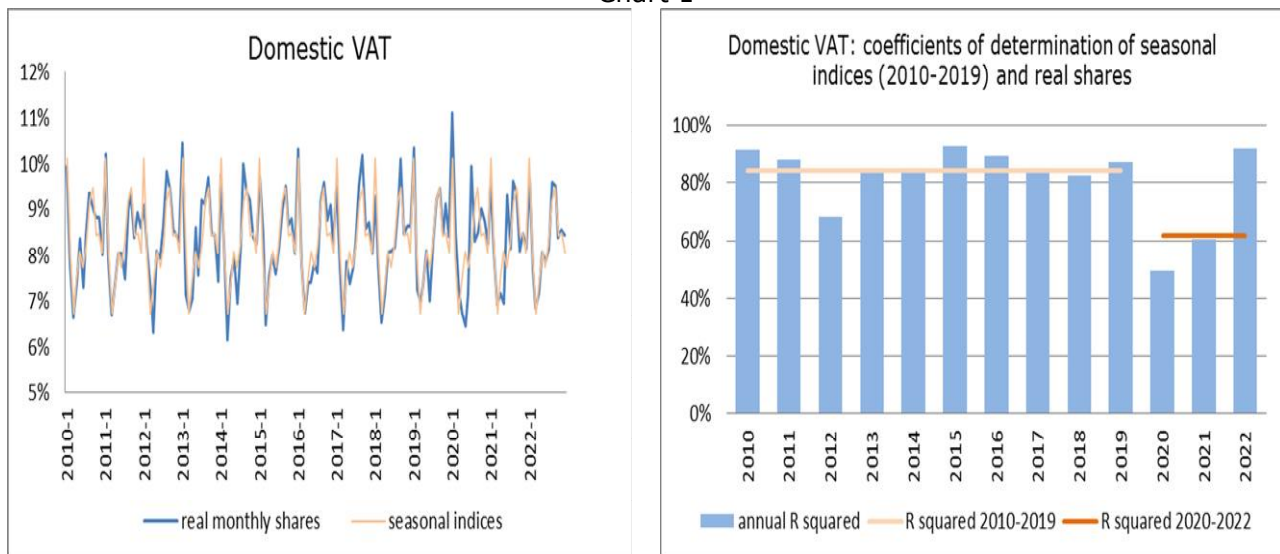
the effects belonging to the calendar component were not filtered: the different number of working days in the month, the effects of moving holidays and the effects of leap years.

4. Seasonal indices by revenue types and irregularities in the period 2020-2022

4.1. VAT revenues

Domestic VAT had the most pronounced seasonal component of all types of revenues from indirect taxes in the period 2010-2019. The coefficient of determination of seasonal indices and real shares for the period 2010-2019 is 84.4% (Chart 1, right).⁶ If we calculate the coefficient of determination of the given seasonal indices (based on the period 2010-2019) and the actual shares of domestic VAT revenue in the period from 2020 to 2022, we will see that it has dropped significantly, to only 61.8%. Since it is a coefficient for a three-year period, for the purpose of a deeper analysis it is necessary to observe its movement by years. In 2020, as a consequence of the effects of the introduction of restrictive measures to combat the corona virus, the coefficient of determination of seasonal indices and actual shares of domestic VAT revenue amounted to only 49.4%, indicating a significant deviation in the collection of domestic VAT from the *pre-COVID-19* seasonal pattern. Monthly growth rates have ranged from -19.6% to +20.9%. In 2021, the coefficient of determination of seasonal indices and real shares rose to 60.5%, which is still below the relationship that can be characterized as high, while in 2022 it rose to a high 91.8%, even above the average for the period 2010-2019. From the above, it can be concluded that the collection of domestic VAT in 2020 has largely fallen out of the old seasonal pattern, with a return to a significant share of the seasonal component in 2021, and to its high share in 2022.

Chart 1



Source: Author's calculation based on the ITA data

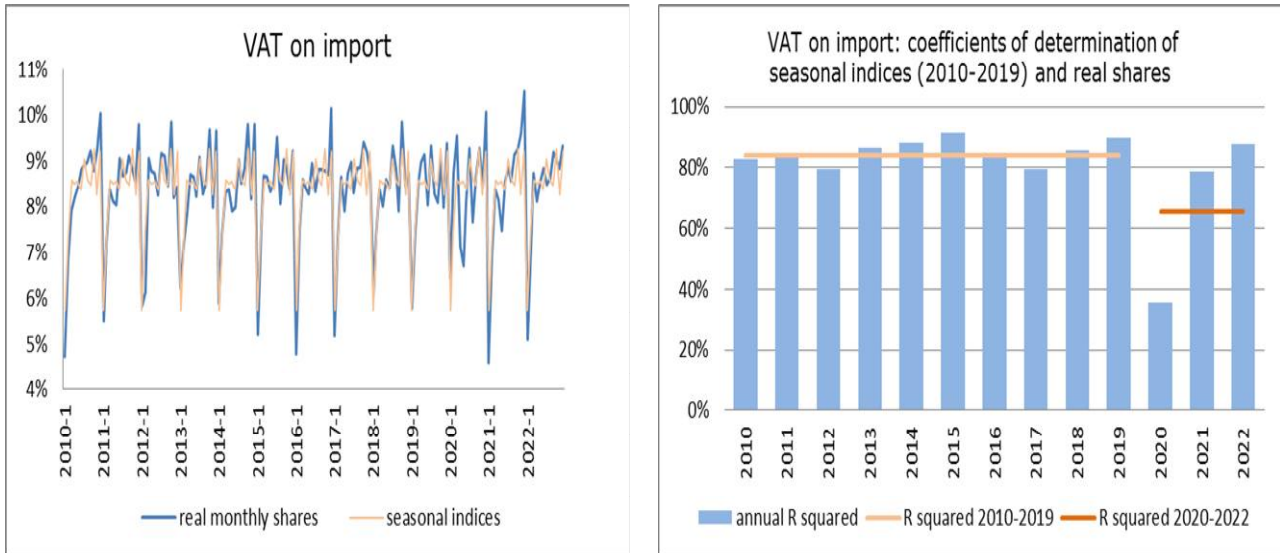
VAT on imports also had a pronounced seasonal component in the period 2010-2019, as indicated by the coefficient of determination of seasonal indices and actual shares for the period 2010-2019, which amounted to 83.8%.⁷ The coefficient of determination of seasonal indices and actual monthly shares in the next three-year period has dropped significantly (Chart 2, right, dark

⁶ On the basis of Chart 1, a significant deviation from the seasonal pattern can be seen in 2012, the reason being natural disasters (snowfall) in February 2012, which led to a large drop in domestic VAT revenue in the month of April.

⁷ It should be noted that the years with a slightly less pronounced seasonal component in the observed period were: 2012 (a strong drop in imports in the month of February due to heavy snowfall) and 2017 (a drop in imports and income in the month of December, which occurred after high growth rates), but, based on the calculated coefficient of determination (79.6% in both years), it can be concluded that the significance of the seasonal component was high in those two years as well.

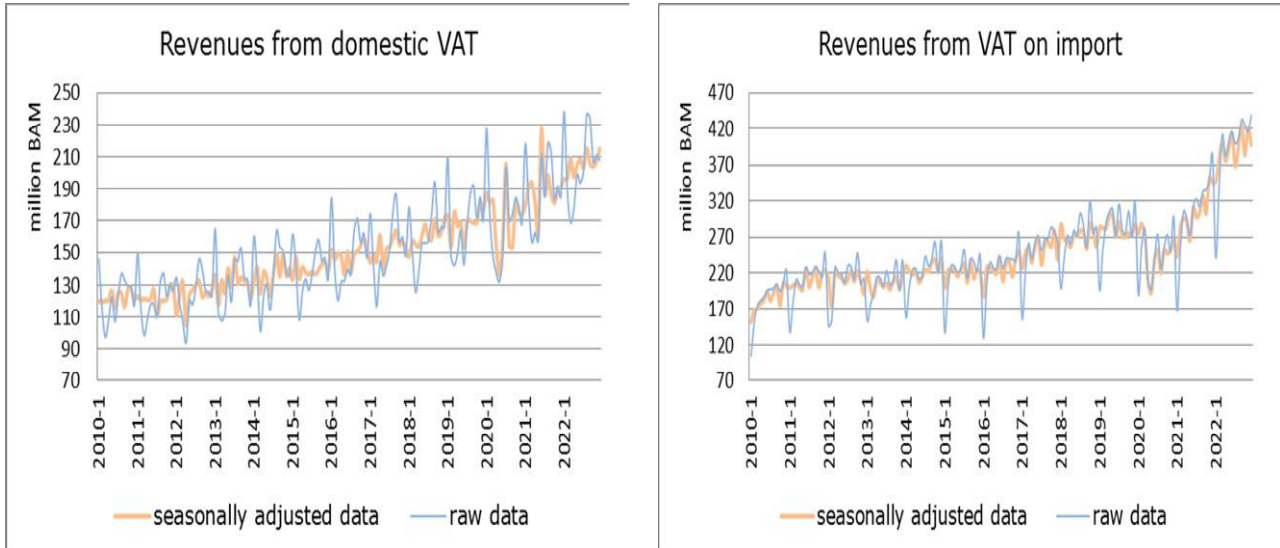
orange line)⁸, while the analysis by individual years provides the following conclusions: in 2020, it dropped drastically to 35.6%, but in 2021, it rose again to 78.9%, and in 2022, further to 87.5%. From the above, it can be concluded that VAT collection on imports in 2020 fell out of the seasonal pattern, with a return to a significant share of the seasonal component in 2021, but slightly below the *pre-COVID-19* level, and to a high share of the seasonal component in 2022 (Chart 2, right, blue columns).

Chart 2



Source: Author's calculation based on the ITA data

Chart 3



Source: Author's calculation based on the ITA data

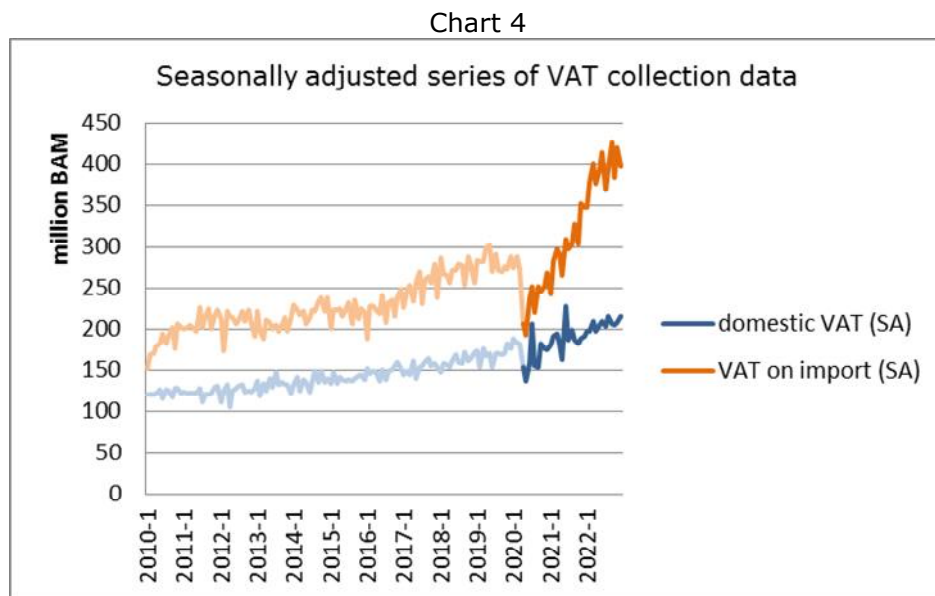
The same can be concluded on the basis of Chart 3, where raw and seasonally adjusted data on the collection of revenues from domestic VAT (left) and VAT on imports (right) are presented. The line showing the seasonally adjusted data is more smoothed than the raw data time series over the period 2010-2019, in both series. The exceptions are the years 2020 and 2021, when the line of seasonally adjusted data shows significant turbulences, indicating a high share of the irregular

⁸ The coefficient of determination of seasonal indices calculated on the basis of data for the period 2010-2019 and actual shares of revenues from VAT on imports in the three-year period from 2020 to 2022 amounted to 65.3%.

component. Much less turbulences in the seasonally adjusted data series in 2022 points to a return of collection to the old seasonal pattern and reduced irregular component.⁹

The coefficient of variation of seasonally adjusted domestic VAT collection data in 2022 is 2.9%, in contrast to 2020 when it was a high 10.9%. In the case of VAT on imports, the coefficient of variation of seasonally adjusted data in 2022 is 5.5%, in contrast to 2020, when it was 11.2%.

If we divide series of seasonally adjusted VAT collection data into two periods, before and after the first effects of the corona virus and the sharp drop in collection, or periods: (1) from I-2010 to III-2020 and (2) from IV-2020 to XII 2022, we can conclude that both revenue types (VAT on imports and domestic VAT) in the last analyzed period of time showed a sharper growth trend, which was particularly pronounced and steep in the case of revenues from VAT on imports.¹⁰



4.2. Customs revenue

In the period 2010-2019, revenues from customs had a seasonal component that is close to the lower limit of the range where the strength of the relationship is considered high (the coefficient of determination of seasonal indices and actual shares for the period 2010-2019 is 77.3%), and in the following three-year period (2020-2022) much lower (Chart 5, right, dark orange line).

In 2020, that coefficient fell to only 18.2%, as a result of strong variations in the monthly growth rates of customs revenues, ranging from -43.3% to +9.0%.¹¹ In 2021, the growth rates of customs revenue again varied strongly, from -12.3% to +69.6%, but the collection returned to the old seasonal pattern, as indicated by the coefficient of determination of seasonal indices and actual monthly shares, amounting to 81.1%. In 2022, the growth rates of customs revenues were positive and high, ranging between 20.4% and 46.1%. The coefficient of determination of seasonal indices and actual monthly shares fell to 68.2%, indicating a renewed deviation of

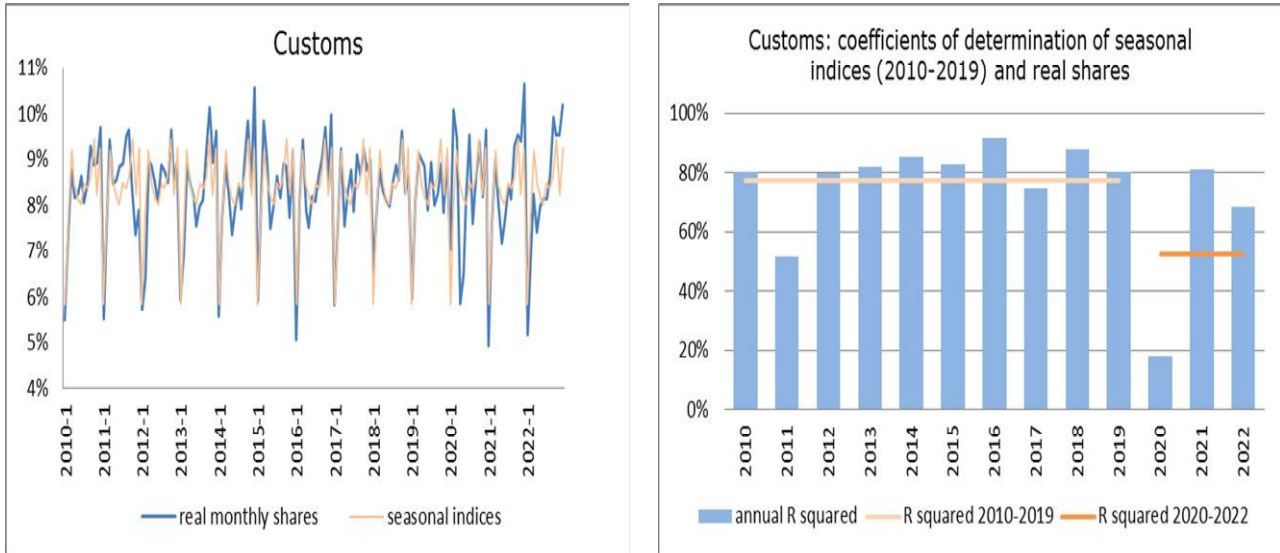
⁹ In the theoretical case, if the coefficient of determination of seasonal indices and real shares would be 100%, the line of seasonally adjusted data at the annual level would be represented by a straight line.

¹⁰ The collection of VAT on imports in 2022 was 39.0% higher than in 2019 (the year before the outbreak of the corona virus), while the collection of domestic VAT in the same period increased by 21.4%.

¹¹ In addition to 2020, the year 2011 also deviated from the seasonal pattern, which is the result of the abolition of 1% customs registration on imports from CEFTA countries and third countries in the fourth quarter of 2011.

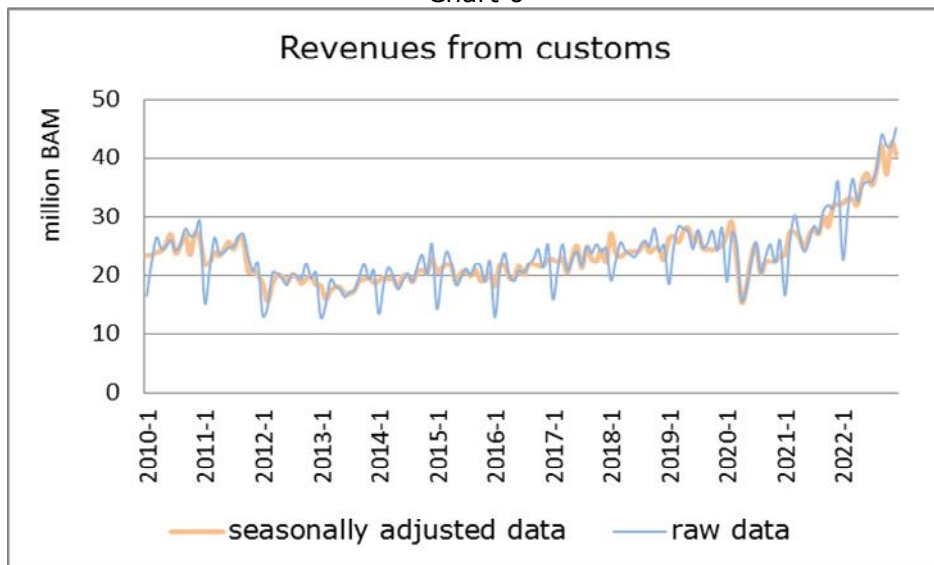
collection from the old seasonal pattern, although at a much smaller level than the 2020 deviation (Chart 5, right, blue columns).

Chart 5



Source: Author's calculation based on the ITA data

Chart 6



Source: Author's calculation based on the ITA data

Changes in raw and seasonally adjusted data provide different information. The change in the raw data of a series in a certain month compared to the previous month (Month-over-Month or *MoM* comparison) provides information on the overall change of a given variable, without separating the components of the time series (seasonal, trend-cyclical and irregular). Seasonal adjusted data provides information about the dynamics of a particular variable after its seasonal component has been extracted. So in our example, in the case of seasonally adjusted data, it makes sense to compare revenue collection in a given month against the previous month, while in the case of raw data, a comparison of data in a certain month with the same month of the previous year is usually made (Year-over-Year or *YoY* comparison). Observation of monthly changes of seasonally adjusted data on customs collection ($m/m-1$) indicates several extreme changes in the observed period: (1) a strong drop in collection in October 2011, caused by the abolition of customs registration in the

amount of 1% of the customs value on imports from CEFTA countries and third countries, and by slowing down the import growth rates compared to the beginning of the year; (2) strong growth in January 2018, achieved due to a much higher import growth rate compared to the rest of the year, (3) strong turbulences throughout 2020, caused by the onset of the effects of the fight against the corona virus, and (4) greater turbulences in the series of seasonally adjusted data than in the series of raw data in September, October and November 2022, due to greater deviations in the seasonal pattern in the given period from the old seasonal pattern (Chart 6).

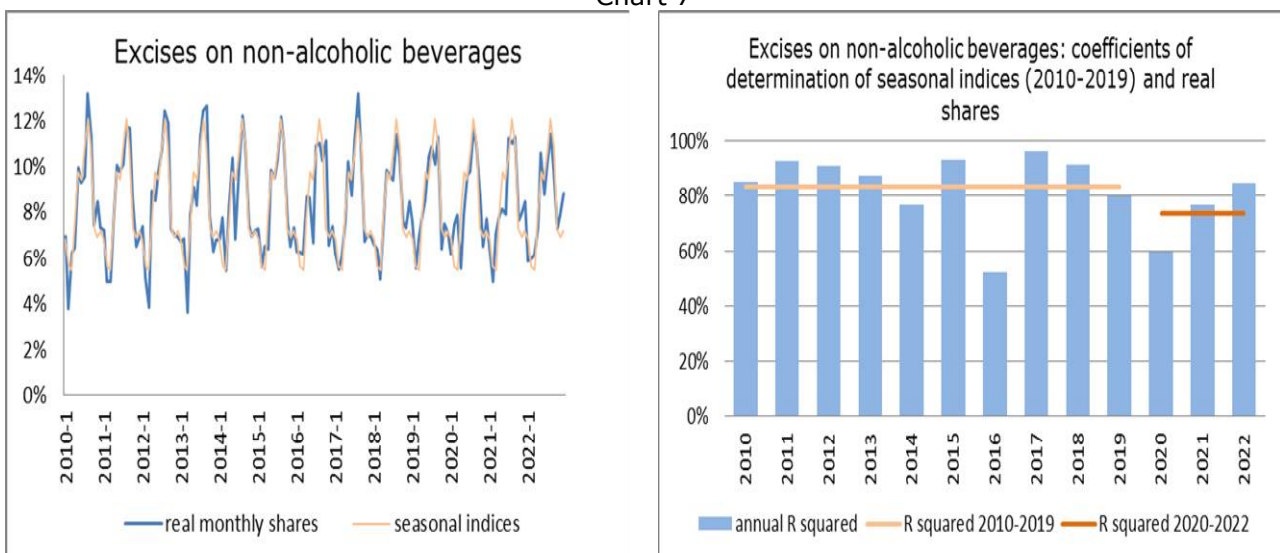
4.3. Revenues from excises and road taxes

Observation of revenues from excise duties (based on the level of the coefficient of determination of seasonal indices and actual revenue shares in the period 2010-2019 and 2010-2017 for excise duties on oil derivatives and road tax) shows that only excise duties on non-alcoholic beverages (83.3%), road tax (81.4%) and excise taxes on alcohol (76.2%) have a pronounced seasonal component. Revenues where the strength of the connection between seasonal indices and actual shares of monthly collection was much lower, but statistically significant, are: excise taxes on beer (65.5%) and excise taxes on oil derivatives (61.6%). On the other hand, revenues from excises on tobacco and coffee do not show a seasonal pattern at all.

Excise duties on non-alcoholic beverages

The analysis of collection excises on non-alcoholic beverages and their seasonal components is shown in Chart 7, based on which it can be concluded that in the period 2010-2019, only 2016 deviated significantly from the seasonal pattern. If 2016 is excluded from the calculation, the level of the coefficient of determination of seasonal indices and real shares in the period 2010-2019 amounts to a high 86.8%. After the end of that period, the year 2020 deviates significantly from the seasonal pattern, due to the effects of the fight against the corona virus. Over the next two years, the collection has gradually returned to the old pattern. In 2021, the coefficient of determination of seasonal indices and actual monthly shares increased to 76.5%, and in 2022 to a high 84.7%.

Chart 7



Source: Author's calculation based on the ITA data

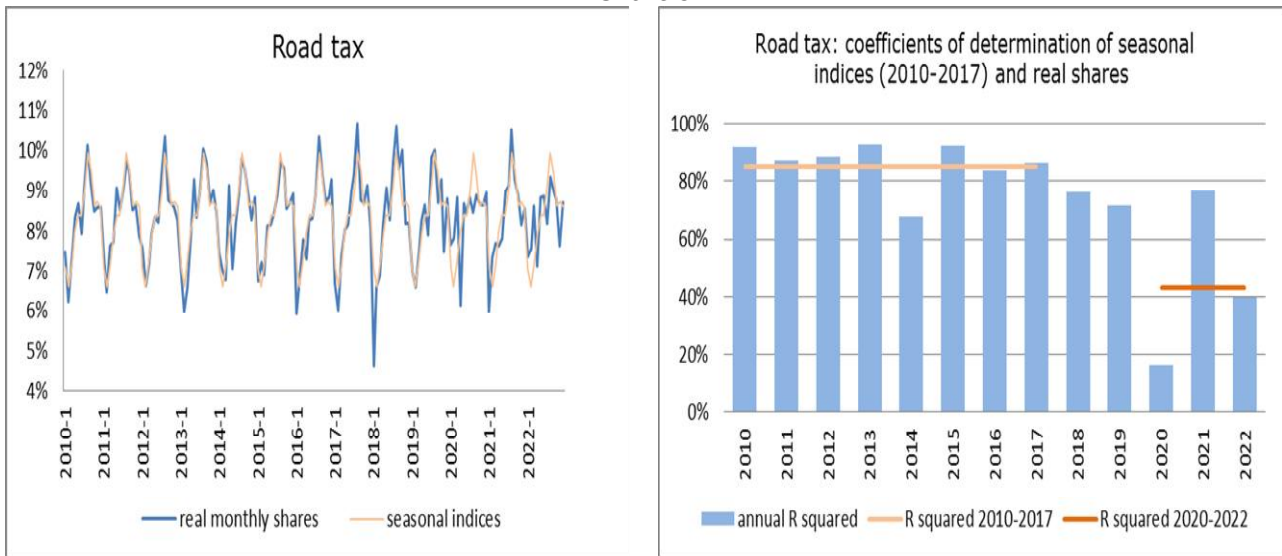
Validation of the seasonal component shows that the collection of excise duties on non-alcoholic beverages observed for the entire period 2020-2022 did not fall out of the seasonal pattern as

much as it was the case with other revenue categories (see the light and dark orange lines in Chart 7, right).

Road tax

The analysis of the seasonal component of road tax revenue is shown in Chart 8. As stated above, the period 2010-2017 was chosen for the calculation of seasonal indices of road tax revenue (and excises on oil derivatives), in order to avoid the effects of changes in regulations that came into force as of February 2018. Based on the presentation, it can be concluded that in the period 2010-2017, only the year 2014 significantly deviated from the seasonal pattern, which was the result of natural disasters in that year (floods), and the overhaul of the Oil Refinery Brod.

Chart 8

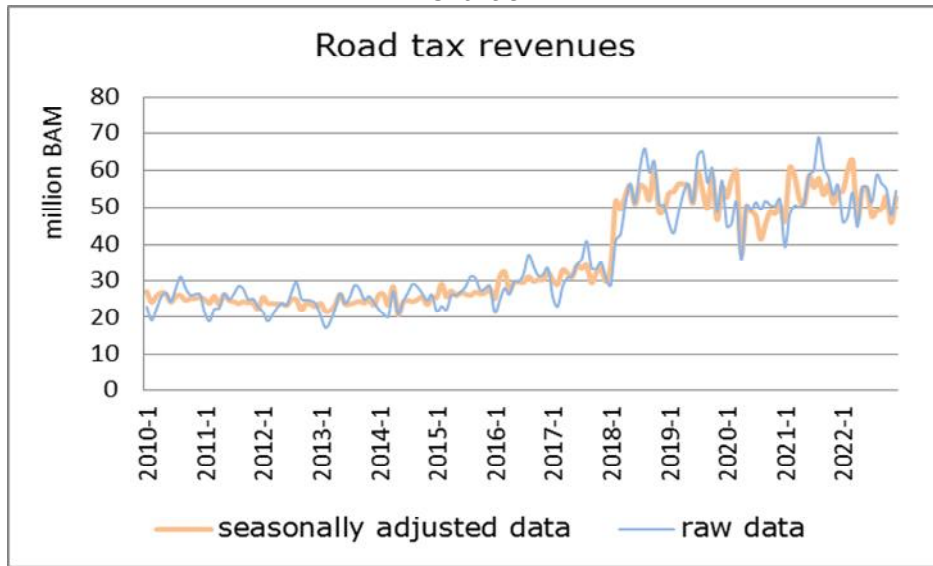


Source: Author's calculation based on the ITA data

Validation of the seasonal component shows that the road tax collection in the entire period 2020-2022 significantly fell out of the seasonal pattern. In 2020, the growth rates of road tax revenues varied in the range from -33.4% to +6.1%, and the coefficient of determination of seasonal indices and actual monthly shares fell to only 16.6%. In 2021, the coefficient increased to 76.6%, and in 2022, it decreased again to 39.8%, as a result of the effects of rising prices on the oil derivatives market.

Observation of the monthly change ($m/m-1$) of seasonally adjusted data on road tax collection (Chart 9) shows a fairly smoothed time series until 2018, followed by a big jump in collection in February 2018 (the so-called level shift irregular component), caused by an increase in the earmarked road tax rate (see Box 1), and significant turbulences in the period 2020-2022 resulting from the effects of the fight against the corona virus and then the events in Ukraine and the consequential turbulences on the oil derivatives market.

Chart 9



Source: Author's calculation based on the ITA data

Excise duties on oil derivatives

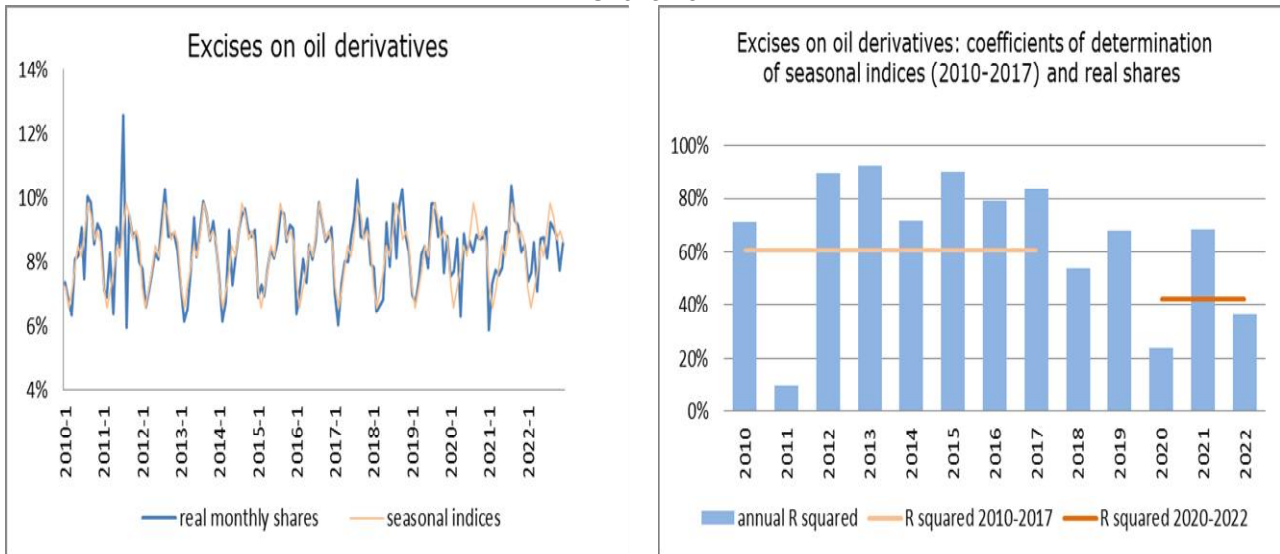
Revenues from excises on oil derivatives, i.e. their seasonal component, are shown in Chart 10. It has already been noted that the calculation based on the level of the coefficient of determination of seasonal indices and actual shares in the period 2010-2017 showed that excises on oil derivatives have a significant (61,6%) but not a high seasonal component, as is the case with road tax revenue. Given that the consumption of oil derivatives is the tax base for both revenue categories,¹² we examined why the importance of the seasonal component in the case of excise taxes is lower. The answer is a significant deviation from the seasonal pattern of excise duties on oil derivatives in one year of the observed period: 2011. In this year, the monthly growth rates of excise duties on oil derivatives compared to the previous year (YoY comparison) varied strongly in the range between -23.5 to +63.5%, and the reasons were of a technical nature.¹³ When this year is excluded from the calculation, we get a coefficient of determination in the amount of a high 83.4% for the period 2012-2017, which is similar to the level of the coefficient in the case of road tax.

After the end of the period 2012-2017, the collection of excise duties on oil derivatives deviates again significantly from the seasonal pattern in all subsequent years. Initially, the reasons for such a trend were legal changes with the start of application in February 2018 and suspension of production at the Oil Refinery Brod after the crash in October 2018, and later the effects of the corona virus and turbulences on the oil derivatives market as a result of the war in Ukraine (see Chart 10, right, blue columns).

¹² Differences in the dynamics of the collection of excises on oil derivatives and road tax originate from differences in the coverage of the base, differentiated taxation in the case of excises, and certain exemptions in the case of road tax. One of the reasons for the more pronounced seasonal component in road tax revenues than in revenues from excises on oil derivatives may be that the consumption of heating oil does not have a pronounced seasonal component, and it is not included in road tax base.

¹³ A significant amount of revenue was adjusted in the month of July, one part of which related to the declaration of the taxpayer "OPTIMA Group" Ltd. Banja Luka (Original name: "OPTIMA Grupa" d.o.o. Banja Luka) for the month of June, and the other for the declaration for the month of July, which the taxpayer paid from the tax credit.

Chart 10

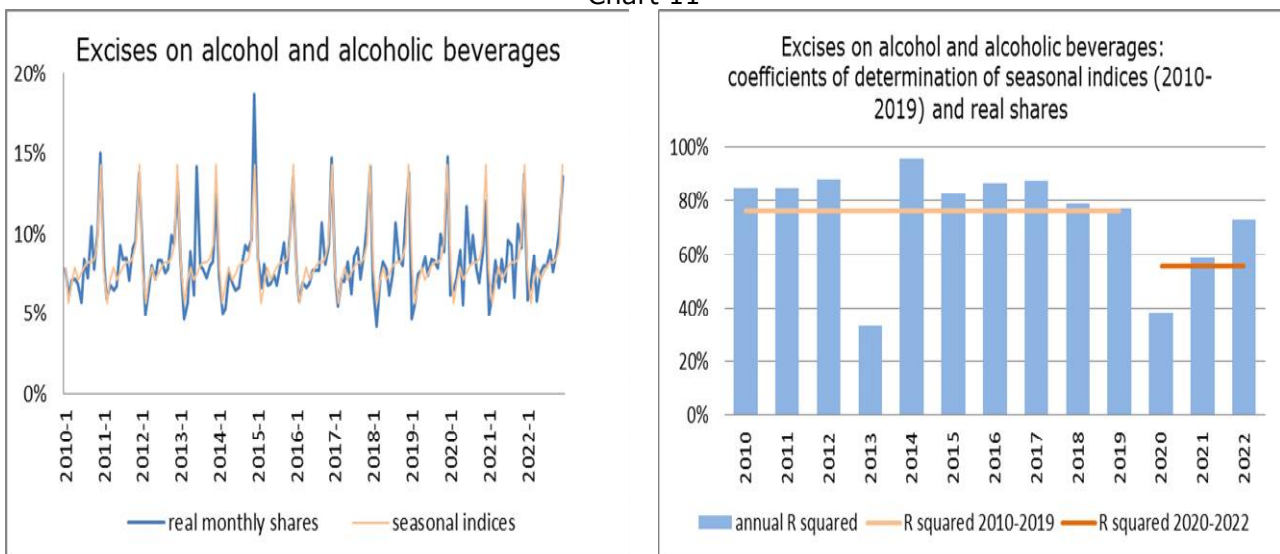


Source: Author's calculation based on the ITA data

Excise taxes on alcohol

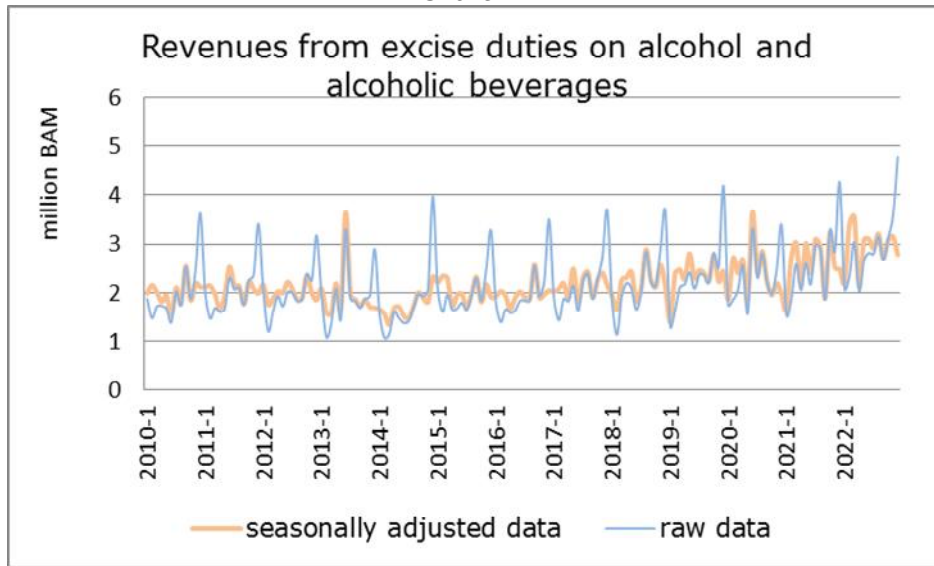
Excise taxes on alcohol have a pronounced seasonal component, and the highest collection of the year is usually in the month of December. Based on the analysis of seasonal component in Chart 11, it can be concluded that in the analyzed *pre-COVID* period 2010-2019, the collection in 2013 deviated pretty much from the seasonal pattern. As with most revenues, after the end of the period 2010-2019, the collection in 2020 fell out of the seasonal pattern (the coefficient of determination of seasonal indices and actual monthly shares amounts to 38.4%) due to the effects of the corona virus. In the following two years the collection has gradually returned to the old pattern. In 2021, the coefficient of determination of seasonal indices and actual monthly shares increased to 58.8% and in 2022 to 72.5%, which is still below the relationship that can be considered high. Thus, the series of seasonally adjusted data showed in Chart 12 shows significant irregularities in 2013, 2020 and 2021, with signs of a decrease in the irregular component in 2022.

Chart 11



Source: Author's calculation based on the ITA data

Chart 12

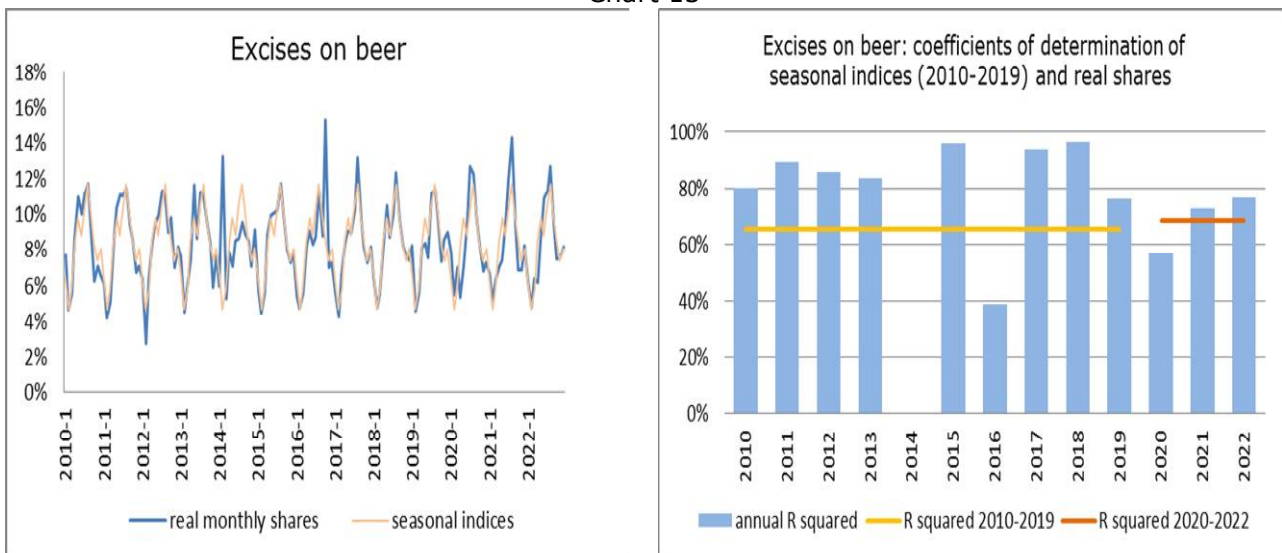


Source: Author's calculation based on the ITA data

Excise taxes on beer

The analysis of the collection of excise taxes on beer and their seasonal component is shown in Chart 13. Based on it, it can be concluded that in the period from 2010 to 2019, two years deviate significantly from the seasonal pattern: 2014 and 2016. If they are excluded from the calculation, the coefficient of determination of seasonal indices and real shares in the period 2010-2019 is a high 81.6%. The series of seasonally adjusted data shows a fairly stable line in the period 2010-2019, if we exclude the huge jumps in February 2014 and October 2016, as a result of the collection of a significant amounts of old debts.¹⁴ In the period from 2020-2022, a significant level of irregular component can be seen.

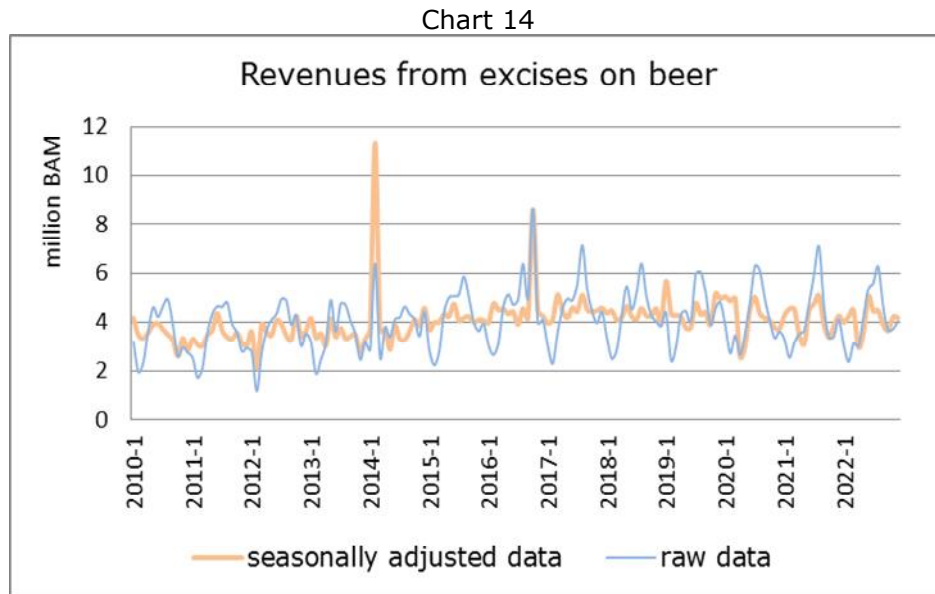
Chart 13



Source: Author's calculation based on the ITA data

¹⁴ The growth rates in the row data in those months compared to the same months of the previous year were 234.7% and 115.1%, respectively.

The validation of the seasonal component by period shows contradictory data that the significance of the seasonal component is higher in the period 2020-2022 compared to the period 2010-2019, but when technical effects are excluded (collection of old debts in 2014 and 2016), we come to the correct conclusion that the seasonal component nevertheless weakened in the period 2020-2022, with a gradual return to the old pattern in 2022.



Seasonal adjustment is a useful tool for statistical analysis only when there are evidences of seasonal effects. Otherwise, it should not be implemented. Therefore, this article does not show the series of other excise categories (coffee, tobacco) where the validation of seasonally adjusted data showed that there is no significant level of seasonal component in the time series.

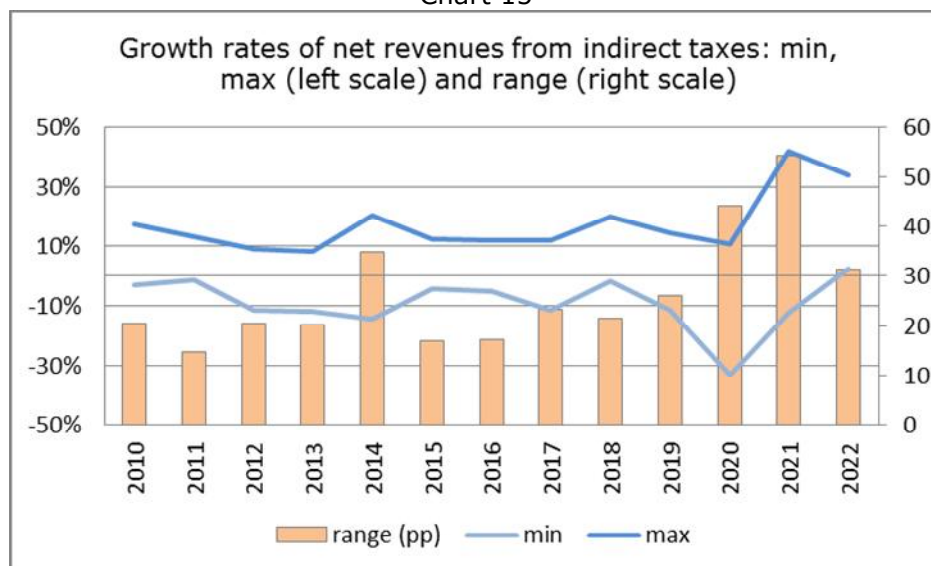
5. The level of the irregular component in total net revenues from indirect taxes

Bearing in mind that revenues with a pronounced seasonal component (measured according to the validation presented above) have a large share in total revenues from indirect taxes, it is not surprising that the total net revenues from indirect taxes also have a pronounced seasonal component to some extent. For example, gross revenues where the coefficient of determination of seasonal indices and actual monthly shares in the period 2010-2019 was over 75%¹⁵ had a share of close to 80% in total gross revenues from indirect taxes in the period 2010-2019.

Total net revenues from indirect taxes in the period 2010-2019 had a seasonal component that is close to the lower limit of the range where the strength of the relationship is considered high. The coefficient of determination of seasonal indices and real shares for the period 2010-2019 is 77.5% (Chart 16, right). Restrictive measures in the fight against corona virus in B&H were introduced at the end of March 2020 and completely shifted collection of revenues from indirect taxes from its seasonal pattern. In April and May 2020, the highest monthly rates of decline in revenues from indirect taxes were recorded since the establishment of the ITA. Also in the rest of the year, negative monthly growth rates of net revenues were recorded, with the biggest drops in August and September. The range of monthly growth rates of net revenues (the difference between the maximum and the minimum value) was 44.2 percentage points, which is the highest range of monthly growth rates in the period 2010-2020 (Chart 15).

¹⁵ Revenues from VAT, customs, road tax, excises on alcohol and alcoholic beverages and excises on non-alcoholic beverages.

Chart 15



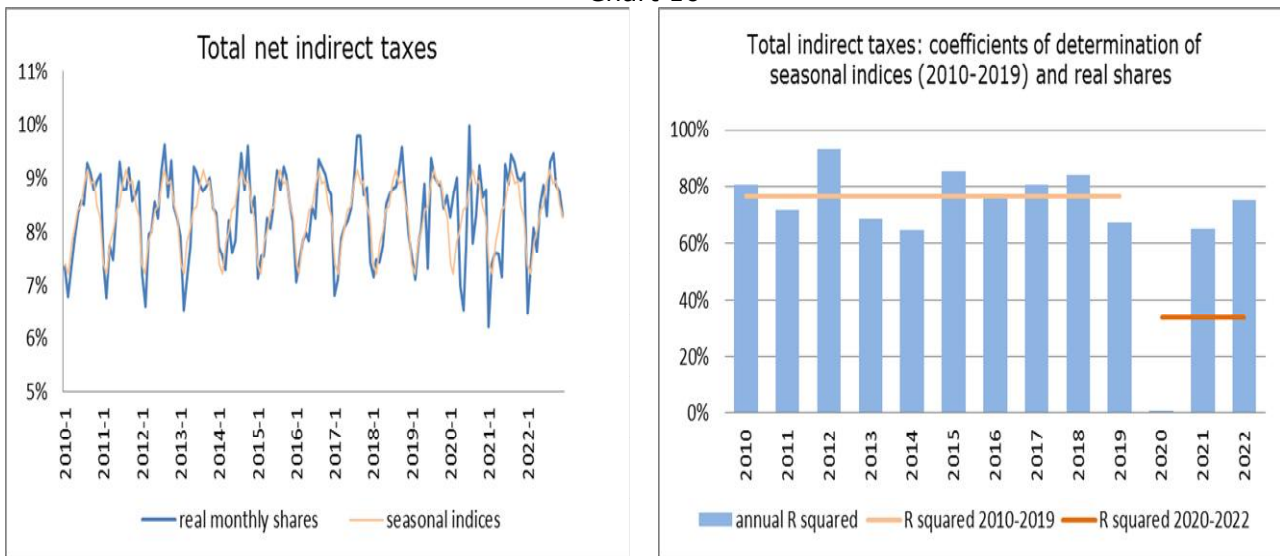
The coefficient of determination of seasonal indices and real monthly shares of total net revenues from indirect taxes fell to only 0.6% in 2020 (Chart 16, right, blue columns). In 2021, the range of monthly growth rates of net revenues from indirect taxes was even higher than in 2020 (54.1 p.p.), which was the result of: (1) disruption of the pattern in the base year 2020 and (2) the characteristics of the seasonal pattern in 2021. Although it increased significantly compared to 2020, the coefficient of determination of seasonal indices and real monthly shares of total net indirect tax revenues in 2021 was 65.3%, which is below the limit of the range where the strength of the relationship is considered high. In 2022, all monthly growth rates of net revenues from indirect taxes were positive, and their range was 33.1 p.p. The coefficient of determination of seasonal indices and real monthly shares of total net revenues from indirect taxes in 2022 rose to the limit of "high" significance of the relationship (74.9%), and slightly below the average for the *pre-COVID* period 2010-2019 (Chart 16, right).

The analysis of revenues from indirect taxes by types (Part 4 of this article) showed that the revenues where the importance of the irregular component decreased in 2022 and which have gradually returned to the old seasonal pattern in that year are the following: VAT, excise taxes on non-alcoholic beverages, excise duties on alcohol and alcoholic beverages and excise duties on beer. Unlike them, customs duties, and especially excise duties on oil derivatives and road tax, had a much greater importance of the irregular component in 2022¹⁶ compared to the previous year, when their collection had been partly returned to the old, *pre-COVID*, scheme¹⁷. The above is understandable, bearing in mind the turbulences in the oil derivatives market as a result of the war events in Ukraine and the repercussions of such events on imports.

¹⁶ Compared to the previous year, in 2022, the coefficient of determination of real shares and *pre-COVID* seasonal indices in revenues from excise taxes on oil derivatives and road tax fell by 32.4 p.p. and 36.7 p.p., respectively and in the case of customs revenue by 13.p.p.

¹⁷ In the case of the aforementioned revenues, the collection in 2021 has significantly returned to the old *pre-COVID* seasonal pattern. Compared to the previous year, in 2021, the coefficient of determination of real shares and *pre-COVID* seasonal indices in revenues from excise taxes on oil derivatives and road tax increased by 44.8 p.p. and 59.9 p.p., respectively. In the case of customs revenue, that growth was a high 62.9 p.p.

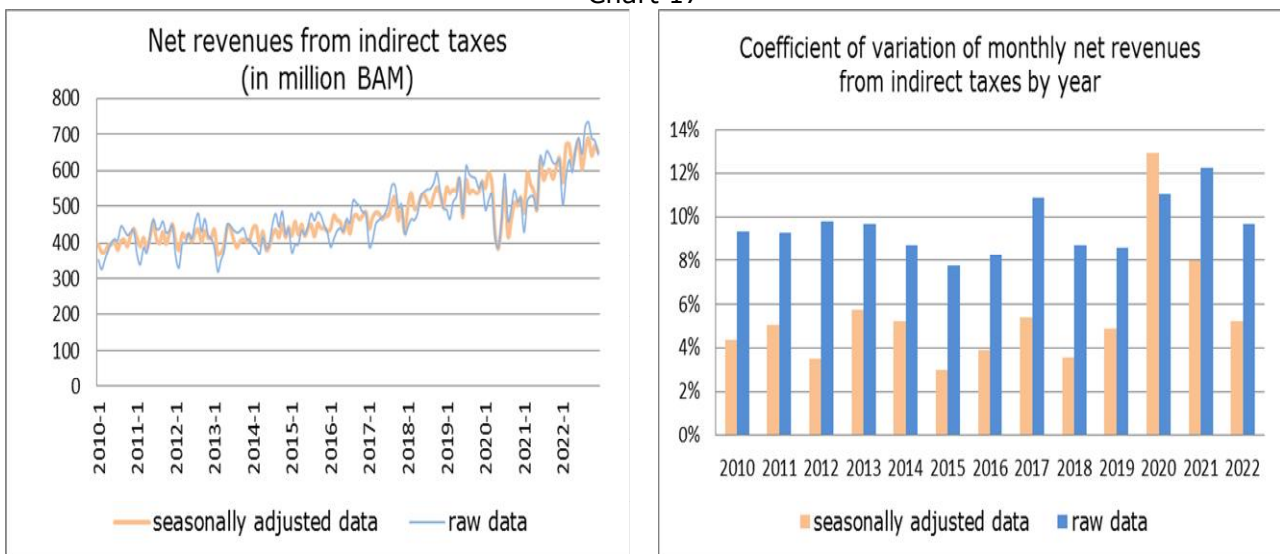
Chart 16



Source: Author's calculation based on the ITA data

The series of seasonally adjusted data on the monthly collection of net indirect taxes is quite "smoothed" compared to the raw data, with the exception of 2020, which can be seen from the left side of Chart 17.

Chart 17



Source: Author's calculation based on the ITA data

Right side of the same Chart shows the coefficients of variation of monthly collection of net indirect taxes by year, separately for the raw and seasonally adjusted series, from which the same conclusion can be drawn. Based on the previously drawn conclusions that in the *pre-COVID* period there was a significant level of the seasonal component in the series of monthly data on revenues from indirect taxes, and that, after the shock in 2020, collection has gradually returned to the old seasonal pattern in 2022, despite the events on a global level, it should be emphasized that **relying only on seasonal indices when preparing monthly revenue projections could lead to significant errors in the estimated monthly amounts, even if the annual projection turned out to be completely accurate.** Based on the presentation of a series of seasonally

adjusted data, it can be concluded that the level of the irregular component (which is difficult to predict) is very high (Chart 17, left), and **projecting revenues from indirect taxes is possible only on an annual basis, in accordance with the basis of macroeconomic indicators** (Directorate for Economic Planning - DEP).

If, as in the case of VAT, we divide the series of seasonally adjusted data on the collection of net indirect taxes into two periods, before and after the first effects of the corona virus and the sharp drop in collection, or: (1) I-2010 to III-2020 and (2) IV-2020 to XII 2022, we can conclude that a sharper growth trend was manifested in the last analyzed time period. In addition to VAT revenues, customs revenues also contributed to these trends (see Chart 6).

Finally, we note once again that the presentation of seasonally adjusted data should be taken with a grain of salt, because, in the absence of complex methods of official correction procedures, seasonal indices were calculated based on a simple procedure for extraction the seasonal component by using the methods of seasonal indices, and the calendar component has not been filtered.

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Analysis of revenue collection from excise duties on non-alcoholic beverages and current trends

(Author: Mirjana Popović, expert advisor - macroeconomist)

Summary

This analysis¹⁸ is focused on:

- *Annual collection of total revenues from excise duties on non-alcoholic beverages and annual collection of excise revenues on non-alcoholic beverages separated by components - revenues from excise duties on imported non-alcoholic beverages and revenues from excise duties on domestic non-alcoholic beverages in BiH¹⁹ in 2022²⁰ compared to the previous year, 2021²¹.*
- *Quarterly collection of total revenues from excise duties on non-alcoholic beverages and quarterly collection of excise revenues on non-alcoholic beverages separated by components - revenues from excise duties on imported non-alcoholic beverages and revenues from excise duties on domestic non-alcoholic beverages in BiH for the period from the first quarter (Q1) of 2021 to the first quarter (Q1) of 2023²².*
- *Monthly collection of total revenues from excise duties on non-alcoholic beverages and monthly collection of excise revenues on non-alcoholic beverages separated by components - revenues from excise duties on imported non-alcoholic beverages and revenues from excise duties on domestic non-alcoholic beverages in BiH for the period January 2021 - April 2023²³.*

1. Annual movement of revenues from excise duties on non-alcoholic beverages

Total revenues from excise duties have a large share in total revenues from indirect taxes. However, the share of total revenues from excise duties on non-alcoholic beverages, which consists of revenues from excise duties on imported non-alcoholic beverages and revenues from excise duties on domestic non-alcoholic beverages, in total revenues from excise duties at the annual level in the last two years is 1.9%.

Chart 1 shows the annual collection of revenues from excise duties on non-alcoholic beverages for 2021 and 2022, in millions of BAM. The annual collection of total revenues from excise duties on non-alcoholic beverages in the observed period and the annual collection of excise revenues on non-alcoholic beverages separated by components are shown - revenues from excise duties on imported non-alcoholic beverages and revenues from excise duties on domestic non-alcoholic beverages.

¹⁸ More on the policy of taxation of non-alcoholic beverages and the collection of revenues from excise duties on non-alcoholic beverages in: Popović, M. (2022). "Analysis of revenue collection from excise duties on non-alcoholic beverages". MAU bulletin no. 205/206.

¹⁹ Bosnia and Herzegovina

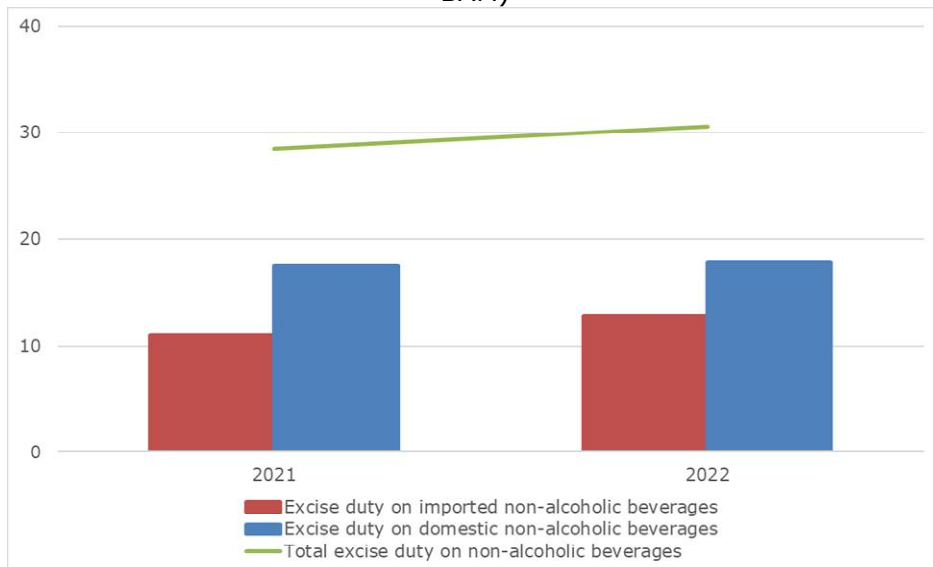
²⁰ Latest available annual data

²¹ Due to the emergence of the COVID-19 pandemic as well as the measures introduced to combat the spread of the virus, the 2020 is not relevant year for comparison, and the analysis does not show a longer time series that would include this period.

²² Latest available quarterly data

²³ Latest available monthly data

Chart 1. Annual revenue collection from excise duties on non-alcoholic beverages (in millions of BAM)

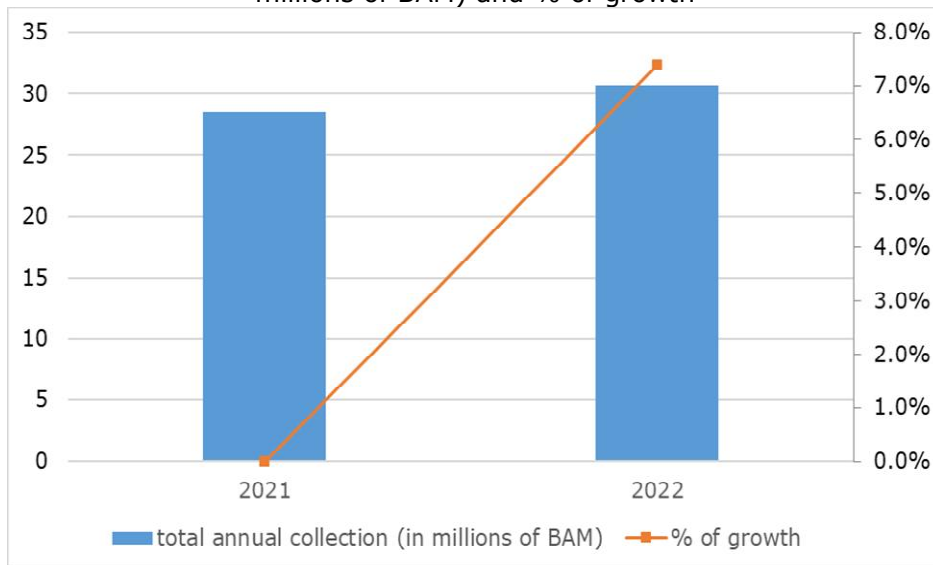


Source: Data from the Indirect Taxation Authority of BiH, MAU overview

1.1. Annual movement of total revenues from excise duties on non-alcoholic beverages

Chart 2 shows the annual collection of total revenues from excise duties on non-alcoholic beverages for 2021 and 2022, in millions of BAM (left vertical scale) and the annual growth rate of these revenues (right vertical scale)²⁴.

Chart 2. Annual collection of total revenues from excise duties on non-alcoholic beverages (in millions of BAM) and % of growth



Source: Data from the Indirect Taxation Authority of BiH, MAU overview

²⁴ 2021 year used as a base

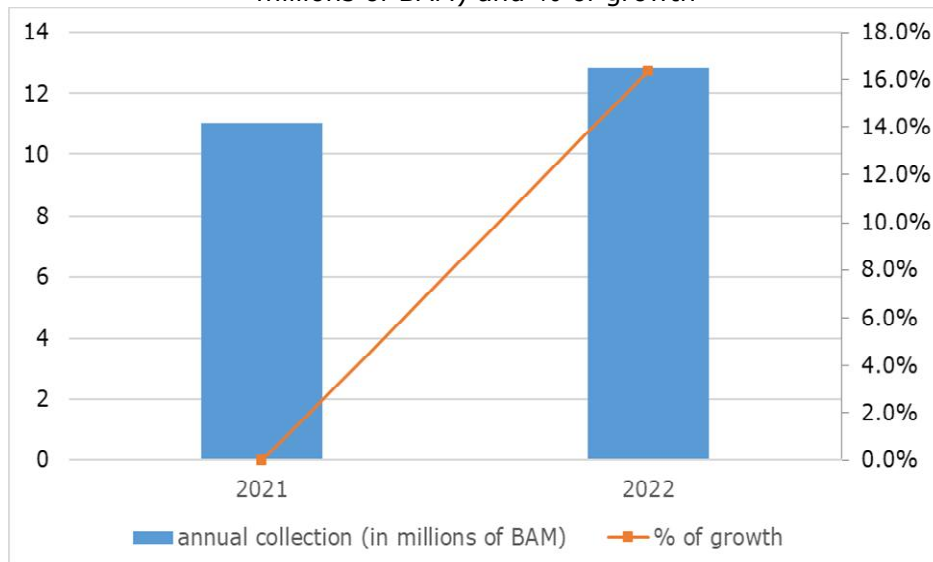
In 2022, the collection of total revenues from excise duties on non-alcoholic beverages is on the rise compared to 2021, and in 2022 more of these revenues were collected by 7.4% compared to the previous year (chart 2, % of growth).

In addition to the annual collection of total revenues from excise duties on non-alcoholic beverages in 2021 and 2022, below is the collection of excise revenues on non-alcoholic beverages separated by components for the same period, as well as the annual growth rate of these revenues. The analysis of revenue collection from excise duties on non-alcoholic beverages separated by components - import and domestic excise duty provides information on consumer preferences and the influence of other external factors on the consumption of non-alcoholic beverages more detailed.

1.2. Annual movement of revenues from excise duties on imported non-alcoholic beverages

Chart 3 shows the annual collection of revenues from excise duties on imported non-alcoholic beverages for 2021 and 2022, in millions of BAM (left vertical scale) and the annual growth rate of these revenues (right vertical scale)²⁵.

Chart 3. Annual revenue collection from excise duties on imported non-alcoholic beverages (in millions of BAM) and % of growth



Source: Data from the Indirect Taxation Authority of BiH, MAU overview

Looking at chart 3, it is noticeable that the annual collection of excise duties on imported non-alcoholic beverages in 2022 has increased by 16.4% compared to the previous year. The increase in revenues from excise duties on imported non-alcoholic beverages is significantly higher than the increase in revenues from excise duties on domestic non-alcoholic beverages, on an annual basis²⁶. This difference is largely the result of consumer preferences as well as a larger supply of imported non-alcoholic beverages compared to domestic ones. Additional factors that influence the increase in sales of imported non-alcoholic beverages are affordable prices, the influence of marketing and promotions, etc.

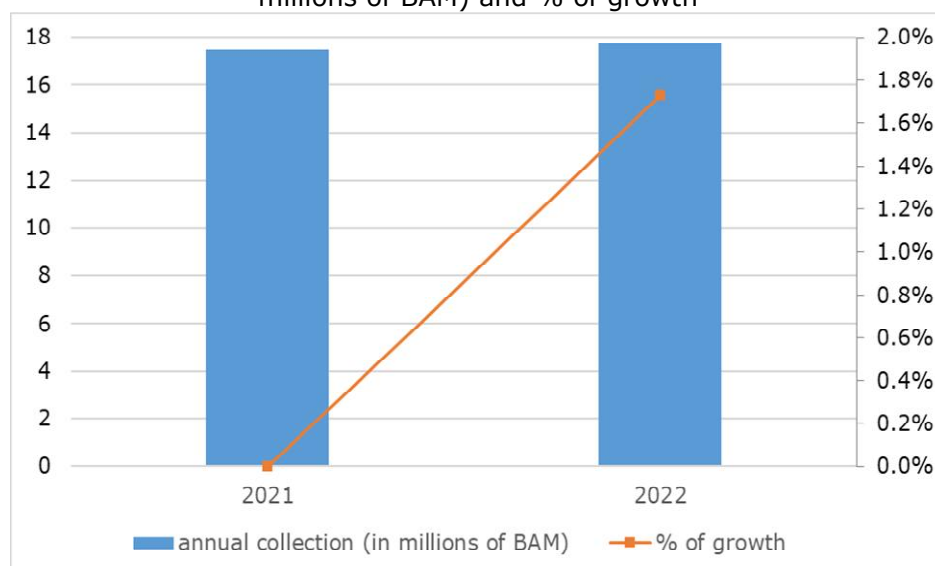
²⁵ 2021 used as a base

²⁶ which can be concluded after comparing chart 3 and chart 4

1.3. Annual movement of revenue from excise duties on domestic non-alcoholic beverages

Chart 4 shows the annual revenue collection from excise duties on domestic non-alcoholic beverages for 2021 and 2022, in millions of BAM (left vertical scale) and the annual growth rate of these revenues (right vertical scale)²⁷.

Chart 4. Annual revenue collection from excise duties on domestic non-alcoholic beverages (in millions of BAM) and % of growth



Source: Data from the Indirect Taxation Authority of BiH, MAU overview

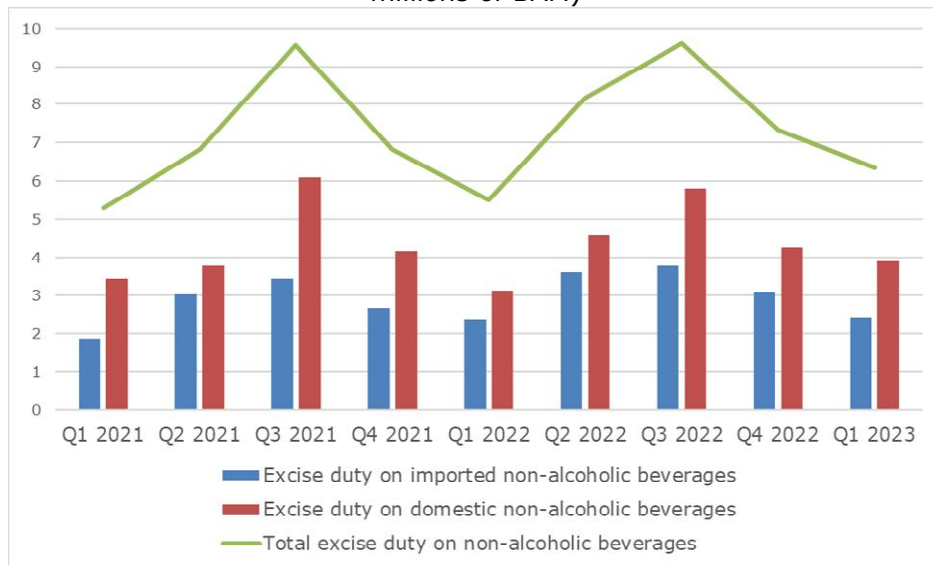
In 2022, a slight increase of 1.7% was recorded in revenues from excise duties on domestic non-alcoholic beverages compared to the previous year (chart 4, % of growth). In contrast to revenues from excise duties on imported non-alcoholic beverages whose collection increased significantly in 2022 compared to 2021, revenues from excise duties on domestic non-alcoholic beverages is on a slight increase. As previously stated, consumer preferences and other listed factors are the biggest causes of the growing difference between the growth rate of revenues from excise duties on imported and domestic non-alcoholic beverages.

2. Quarterly movement of revenues from excise duties on non-alcoholic beverages

Chart 5 shows the quarterly collection of revenues from excise duties on non-alcoholic beverages for the period from the first quarter (Q1) of 2021 to the first quarter (Q1) of 2023, in millions of BAM. The chart presents the quarterly dynamics of total revenues from excise duties on non-alcoholic beverages, as well as revenues from excise duties on non-alcoholic beverages by component - revenues from excise duties on imported non-alcoholic beverages and revenues from excise duties on domestic non-alcoholic beverages.

²⁷ The 2021 was used as a base

Chart 5. Quarterly collection of revenues from excise duties on non-alcoholic beverages (in millions of BAM)



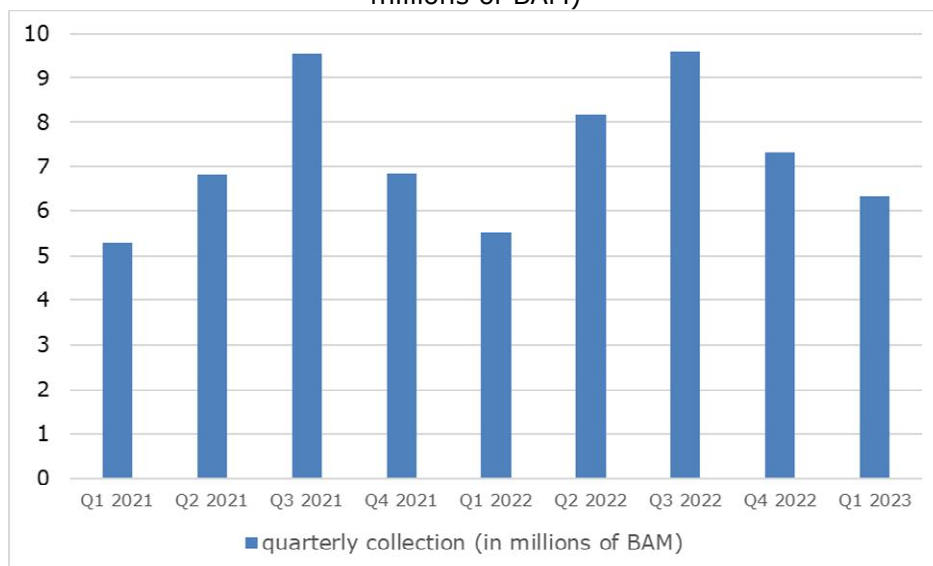
Source: Data from the Indirect Taxation Authority of BiH, MAU overview

The quarterly movement of revenues from excise duties on non-alcoholic beverages is seasonally influenced, which means that the consumption of this excise product, i.e. the collection of these revenues, is a consequence of weather conditions and the highest consumption of non-alcoholic beverages in the observed two years was recorded in the third quarters.

2.1. Quarterly movement of total revenues from excise duties on non-alcoholic beverages

Chart 6 shows the quarterly collection of total revenues from excise duties on non-alcoholic beverages for the period Q1 2021 - Q1 2023, in millions of BAM.

Chart 6. Quarterly collection of total revenues from excise duties on non-alcoholic beverages (in millions of BAM)

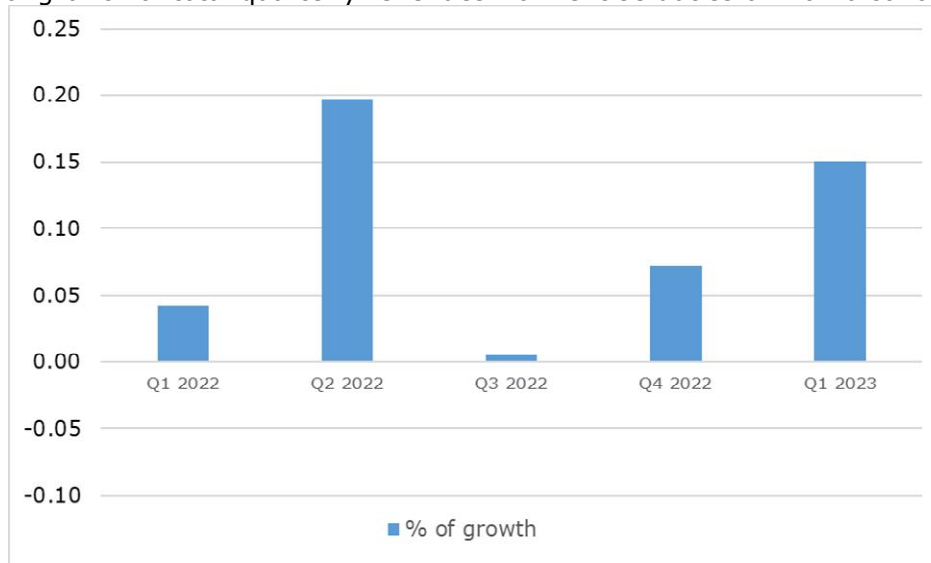


Source: Data from the Indirect Taxation Authority of BiH, MAU overview

Because of the seasonal influence, it can be seen from the chart that the collection of these revenues in the third quarters is significantly higher than the collection in the other quarters. The second quarter of 2022 is characterized by a higher collection of total revenues from excise duties on non-alcoholic beverages compared to the same quarter of 2021. The growth rate of these revenues is shown in the following chart.

Chart 7 shows the quarterly growth rate of total revenues from excise duties on non-alcoholic beverages for the period Q1 2021 - Q1 2023.

Chart 7. % of growth of total quarterly revenues from excise duties on non-alcoholic beverages



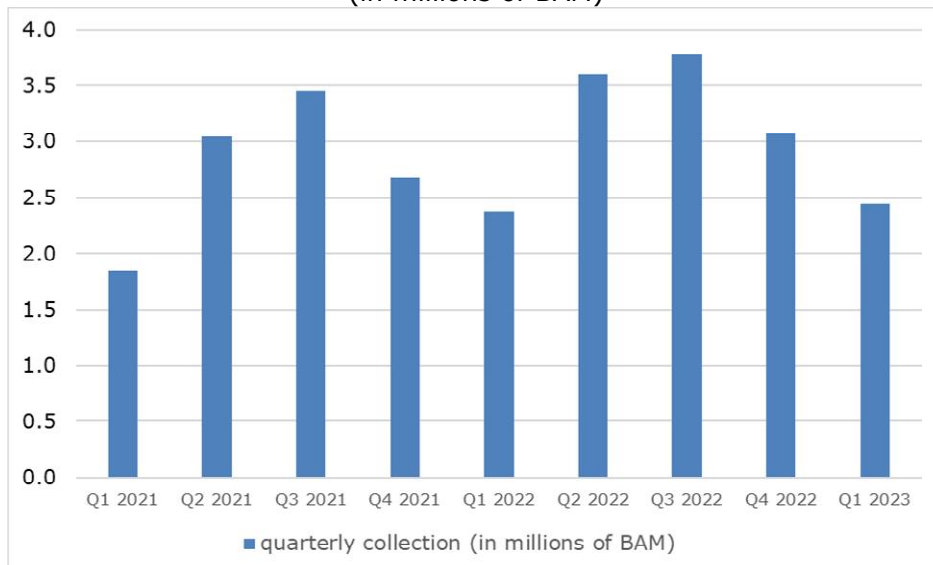
Source: Data from the Indirect Taxation Authority of BiH, MAU overview

Analyzing the quarterly movements in total revenues from excise duties on non-alcoholic beverages in the first quarters of the last three years, there is a noticeable increase in the collection of these revenues in the first quarter of 2022 compared to the first quarter of 2021 by 4.2%. The collection of these revenues in the first quarter of 2023 is higher by 15.1% compared to the first quarter of 2022. In the second quarter of 2022, an increase in the collection of total revenues from excise duties on non-alcoholic beverages was recorded by 19.7% compared to the second quarter of 2021. In the third quarter of 2022, the collection of these revenues was higher by 0.5% compared to the same quarter of the previous year. The total revenues from excise duties on non-alcoholic beverages observed in the fourth quarter of the analyzed two years are higher by 7.2% in the fourth quarter of 2022 compared to the fourth quarter of 2021.

2.2. Quarterly movement of revenues from excise duties on imported non-alcoholic beverages

Chart 8 shows the quarterly collection of revenues from excise duties on imported non-alcoholic beverages for the period Q1 2021 - Q1 2023, in millions of BAM.

Chart 8. Quarterly collection of revenues from excise duties on imported non-alcoholic beverages (in millions of BAM)

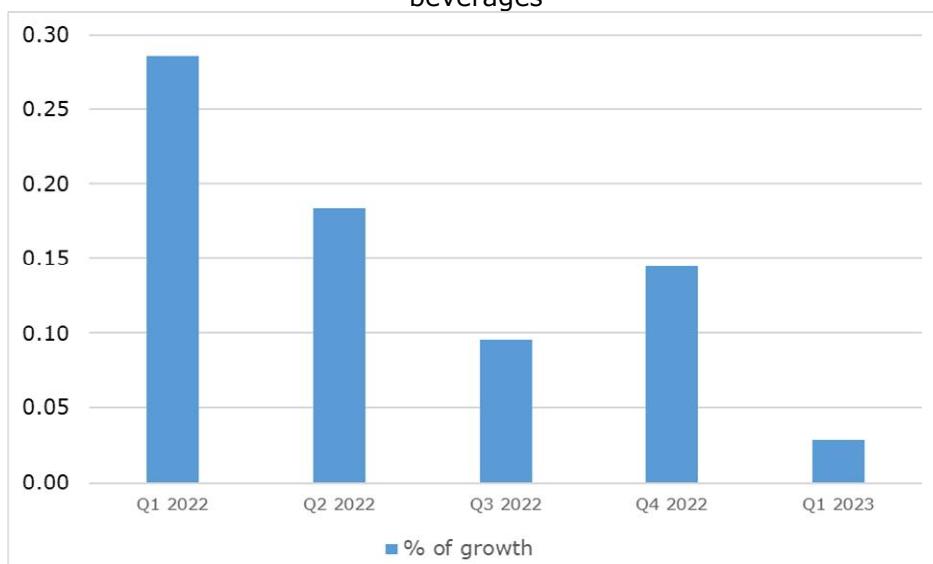


Source: Data from the Indirect Taxation Authority of BiH, MAU overview

As with the quarterly collection of total revenues from excise duties on non-alcoholic beverages, the quarterly collection of revenues from excise duties on imported non-alcoholic beverages is also under the influence of seasonality, and the highest collection of these revenues is in the third quarter in the observed two years.

Chart 9 shows the quarterly growth rate of revenues from excise duties on imported non-alcoholic beverages for the period Q1 2021 - Q1 2023.

Chart 9. % of growth of quarterly revenues from excise duties on imported non-alcoholic beverages



Source: Data from the Indirect Taxation Authority of BiH, MAU overview

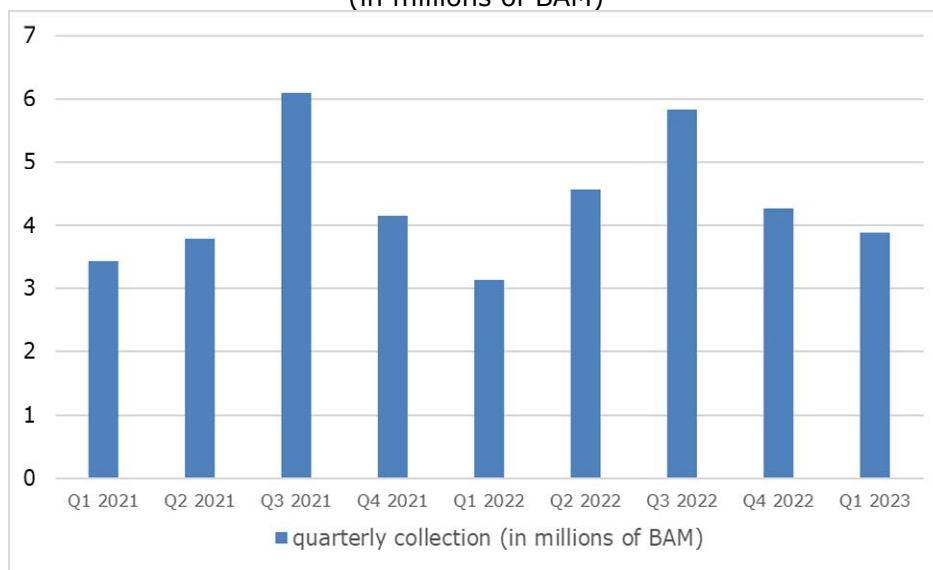
The quarterly collection of revenues from excise duties on imported non-alcoholic beverages has a positive trend during the first three quarters of 2022 compared to the quarterly collection in 2021, and the same trend continued in the first quarter of 2023 compared to the first quarter of 2022. In

the first quarter of 2022, the collection of these revenues is higher by 28.5% compared to the first quarter of 2021, while in the first quarter of 2023 the collection of these revenues is higher by 2.9% compared to the same quarter of 2022. In the second quarter of 2022, revenues from excise duties on imported non-alcoholic beverages increased by 18.31% compared to the same quarter of 2021. In the third quarter of 2022, the collection of these revenues increased by 9.6%, and in the fourth quarter of 2022, it increased by 14.5% compared to the same quarter of 2021.

2.3. Quarterly movement of revenues from excise duties on domestic non-alcoholic beverages

Chart 10 shows the quarterly collection of revenues from excise duties on domestic non-alcoholic beverages for the period Q1 2021 - Q1 2023, in millions of BAM.

Chart 10. Quarterly collection of revenues from excise duties on domestic non-alcoholic beverages (in millions of BAM)

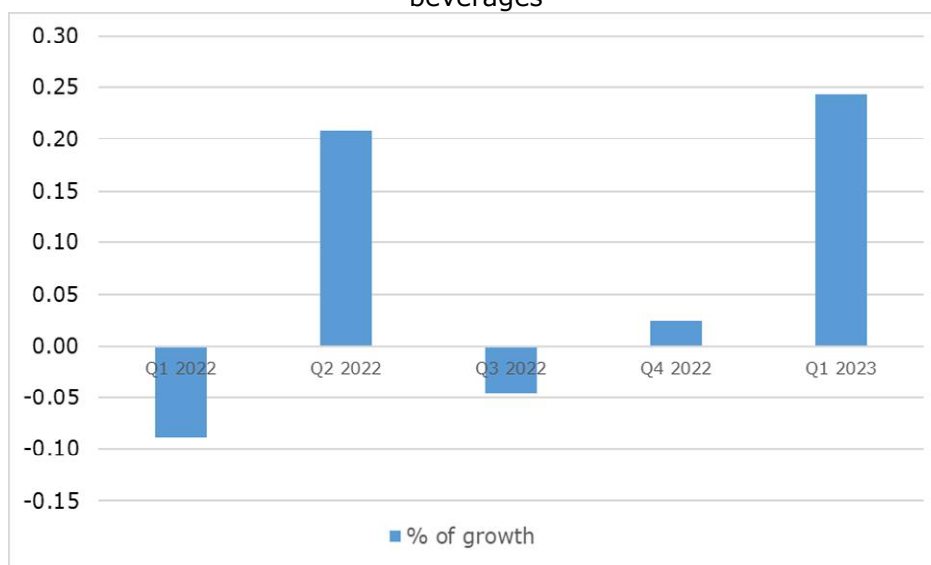


Source: Data from the Indirect Taxation Authority of BiH, MAU overview

As with the quarterly collection of total revenues from excise duties on non-alcoholic beverages, and the quarterly collection of revenues from excise duties on imported non-alcoholic beverages, the quarterly collection of revenues from excise duties on domestic non-alcoholic beverages is of a seasonal nature. In the observed period, the highest collection was recorded in the summer months, i.e. in third quarters.

Chart 11 shows the quarterly growth rate of excise duty on domestic non-alcoholic beverages for the period Q1 2021 - Q1 2023.

Chart 11. % of growth of quarterly revenues from excise duties on domestic non-alcoholic beverages



Source: Data from the Indirect Taxation Authority of BiH, MAU overview

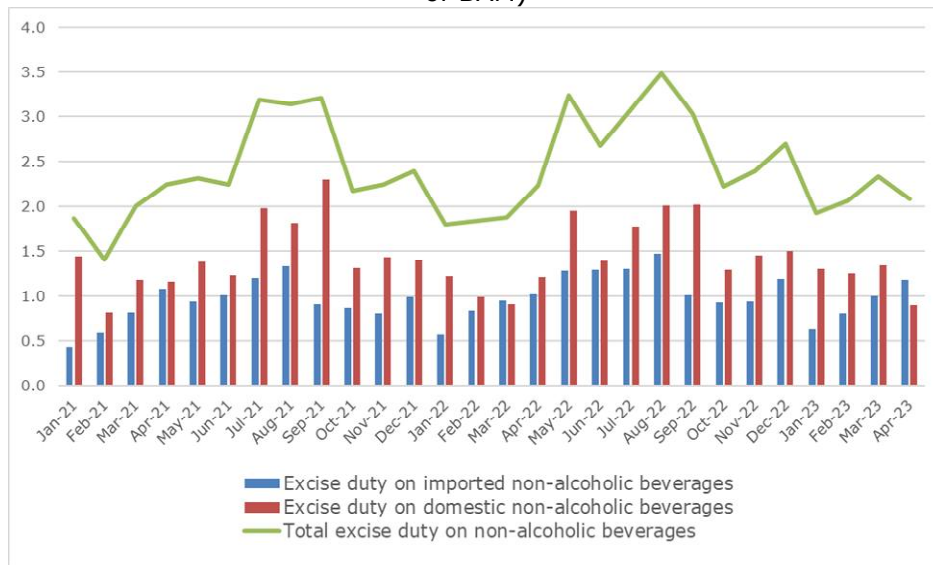
A positive growth rate of revenues from excise duties on domestic non-alcoholic beverages was recorded in the second and fourth quarters of 2022 and in the first quarter of the current year, compared to the same quarter of the previous year. In the first quarter of 2022, these revenues are lower by 8.9% compared to the first quarter of 2021, while their collection in the first quarter of the current year is higher by 24.4% compared to the first quarter of 2022. In the second quarter of 2022, the growth of these revenues by 20.8% compared to the same quarter of 2021 was recorded. In the third quarter of 2022 their collection was lower by 4.6% compared to the third quarter of 2021. The collection of revenues from excise duties on domestic non-alcoholic beverages recorded in the fourth quarter of 2022 is 2.5% higher than in the same quarter of 2021.

3. Monthly movement of revenues from excise duties on non-alcoholic beverages

The monthly dynamics of revenue collection from excise duties on non-alcoholic beverages is shown for the period from January 2021 to April 2023. The goal of the monthly analysis of revenue collection from excise duties on non-alcoholic beverages is a more detailed presentation of the collection of these revenues under the influence of current external factors such as the price of non-alcoholic beverages subject to excise duty, the consumed amount of these non-alcoholic beverages and other factors. When it comes to this excise product, from the monthly data on the collection of excise revenues on non-alcoholic beverages, it can be concluded that the seasonal influence, that is, weather conditions play a big role in the consumption of non-alcoholic beverages, and the highest consumption is in the summer months.

Chart 12 shows the monthly movement of revenues from excise duties on non-alcoholic beverages for the period January 2021 - April 2023, in millions of BAM. The monthly movement of the total collection of revenues from excise duties on non-alcoholic beverages in the observed period, as well as the monthly movement of collection of revenues from excise duties on non-alcoholic beverages separated by components - collection of revenues from excise duties on imported and domestic non-alcoholic beverages is shown.

Chart 12. Monthly collection of revenues from excise duties on non-alcoholic beverages (in millions of BAM)



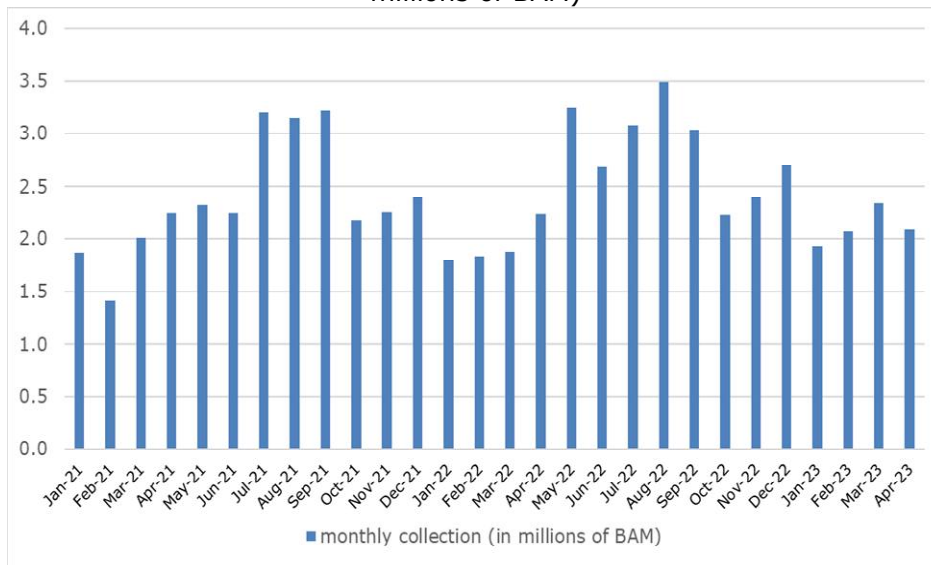
Source: Data from the Indirect Taxation Authority of BiH, MAU overview

The highest collection of total revenues from excise duties on non-alcoholic beverages on a monthly basis is in the period from July to September. Because of the good weather and the Labor Day, May 2022 is also characterized by an increase in revenues from excise duties on non-alcoholic beverages, which was particularly influenced by the growth in revenues from excise duties on imported non-alcoholic beverages. A more detailed analysis of the movement of total monthly revenues from excise duties on non-alcoholic beverages, as well as revenues from excise duties on non-alcoholic beverages by component - imported and domestic non-alcoholic beverages on a monthly basis, is presented below.

3.1. Monthly movement of total revenues from excise duties on non-alcoholic beverages

Chart 13 shows the monthly collection of total revenues from excise duties on non-alcoholic beverages for the period January 2021 - April 2023, in millions of BAM.

Chart 13. Monthly collection of total revenues from excise duties on non-alcoholic beverages (in millions of BAM)

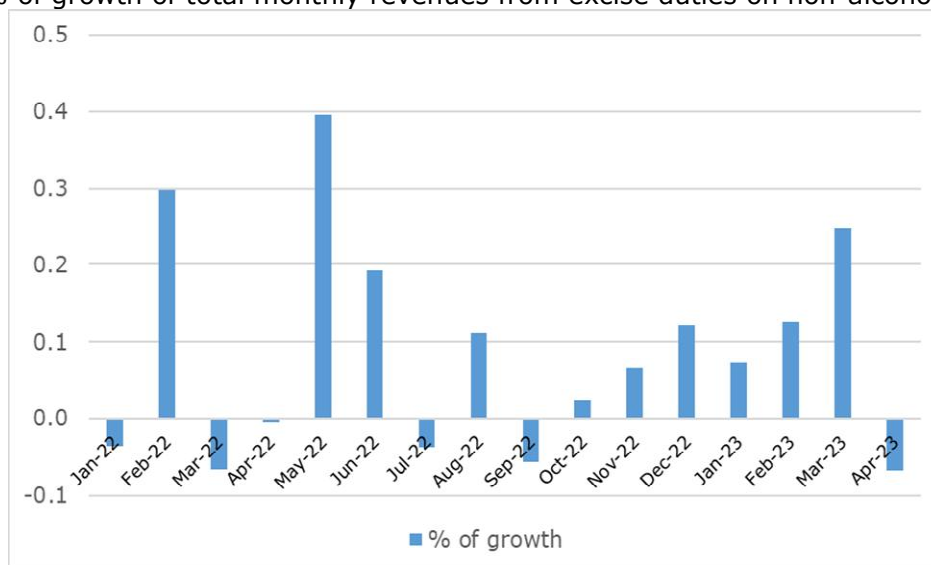


Source: Data from the Indirect Taxation Authority of BiH, MAU overview

In the observed period, the highest collection of total revenues from excise duties on non-alcoholic beverages on a monthly basis was recorded in August 2022 by 11.1% higher compared to August 2021. The lowest collection of these revenues on a monthly basis was recorded in February 2021 and it is lower by 23.0% compared to February 2022 and by 31.6% compared to February 2023.

Chart 14 shows the monthly growth rate of total revenues from excise duties on non-alcoholic beverages for the period January 2022 - April 2023, compared to the same month of the previous year.

Chart 14. % of growth of total monthly revenues from excise duties on non-alcoholic beverages



Source: Data from the Indirect Taxation Authority of BiH, MAU overview

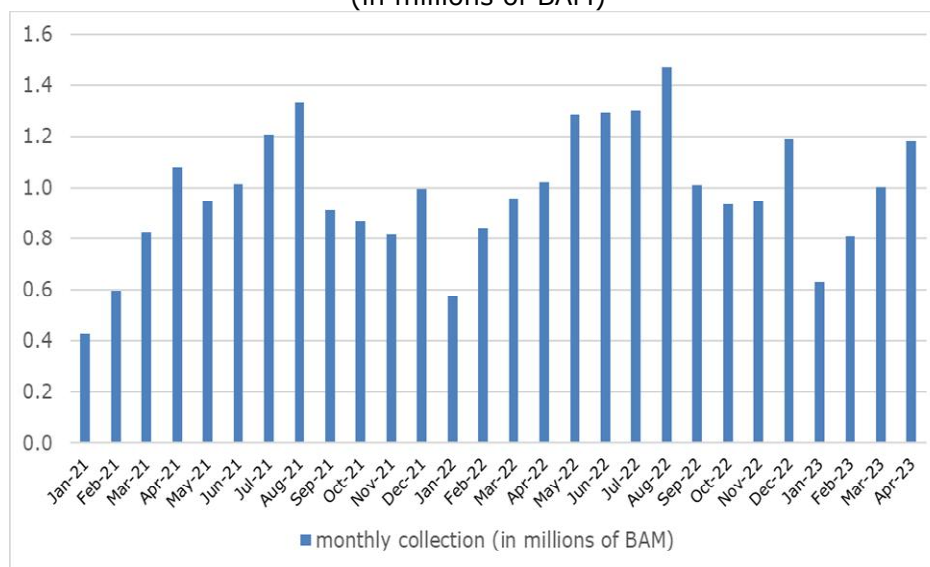
As previously stated, May 2022 is characterized by an increase in the collection of total revenues from excise duties on non-alcoholic beverages, and the collection in this month is 39.6% higher compared to the collection in May 2021. In addition to May 2022, a higher growth rate in the

collection of these revenues was recorded in February 2022 by 29.8% compared to February 2021 and in March 2023 by 24.9% compared to March 2022. In the observed period, a negative growth rate in the collection of total revenues from excise duties on non-alcoholic beverages on a monthly basis was recorded several times, and in April of the current year, the collection of these revenues was 6.7% lower compared to the same month of the previous year.

3.2. Monthly movement of revenues from excise duties on imported non-alcoholic beverages

Chart 15 shows the monthly movement of revenue collection from excise duties on imported non-alcoholic beverages for the period January 2021 - April 2023, in millions of BAM.

Chart 15. Monthly collection of revenues from excise duties on imported non-alcoholic beverages (in millions of BAM)

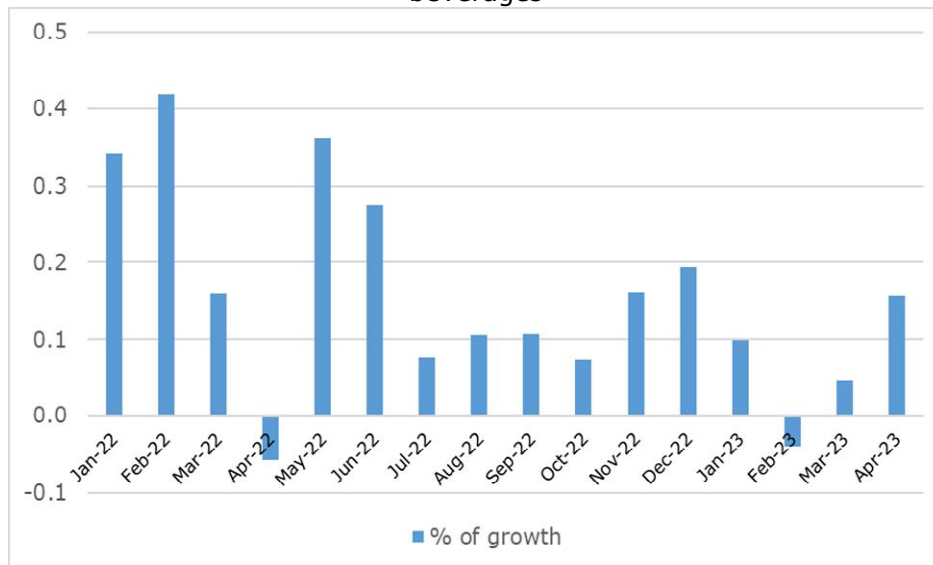


Source: Data from the Indirect Taxation Authority of BiH, MAU overview

As with the total revenues from excise duties on non-alcoholic beverages shown on a monthly basis, the highest revenue collection from excise duties on imported non-alcoholic beverages is also in the summer months. From the data shown in the chart, it can be seen that the highest revenue collection from excise duties on imported non-alcoholic beverages on a monthly basis was recorded in August 2022, and compared to the same month in 2021, it was 10.6% higher. The lowest monthly collection of these revenues in the observed period was recorded in January 2021, compared to January 2022 it is 25.5% less, and compared to the same month of the current year it is 32.3% less.

Chart 16 shows the monthly growth rate of revenues from excise duties on imported non-alcoholic beverages for the period January 2022 - April 2023, compared to the same month of the previous year.

Chart 16. % of growth of monthly revenues from excise duties on imported non-alcoholic beverages



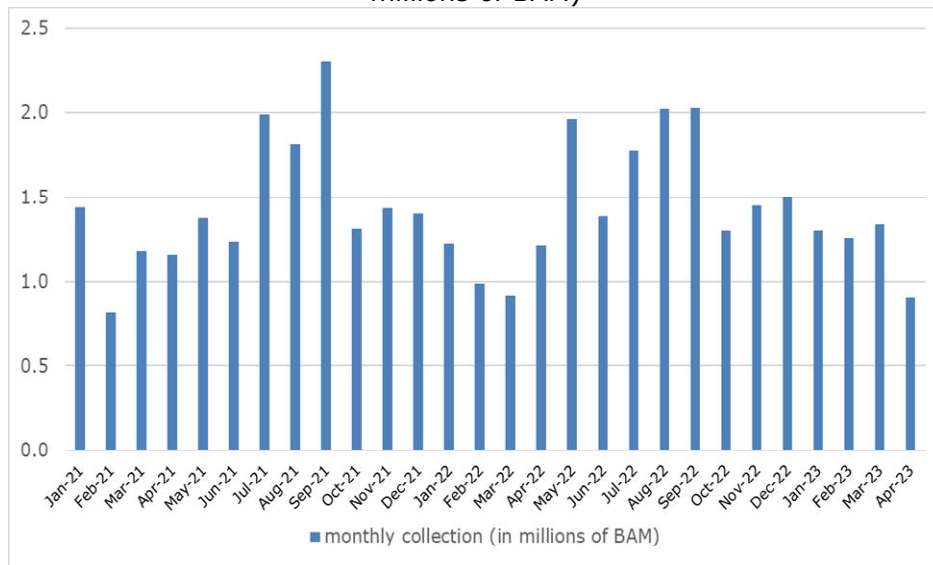
Source: Data from the Indirect Taxation Authority of BiH, MAU overview

The highest growth in revenue collection from excise duties on imported non-alcoholic beverages on a monthly basis was recorded in February 2022, 41.9% compared to February 2021. Also, a significant growth of these revenues was recorded in a few months in 2022, January 34.3%, May 36.1% and June 27.5%, compared to the same months in 2021. The negative growth rate of revenues from excise duties on imported non-alcoholic beverages in the observed period was recorded in April 2022, 5.8% and in February 2023, 4.0% compared to the same month of the previous year.

3.3. Monthly movement of revenues from excise duties on domestic non-alcoholic beverages

Chart 17 shows the monthly movement of excise revenue collection on domestic non-alcoholic beverages for the period January 2021 - April 2023, in millions of BAM.

Chart 17. Monthly revenue collection from excise duties on domestic non-alcoholic beverages (in millions of BAM)

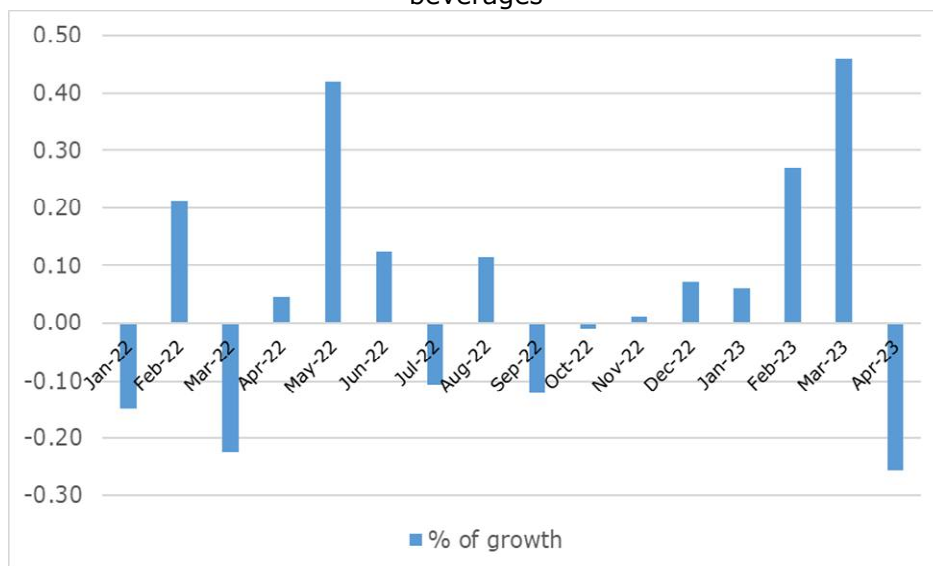


Source: Data from the Indirect Taxation Authority of BiH, MAU overview

In contrast to the total revenues from excise duties on non-alcoholic beverages and revenues from excise duties on imported non-alcoholic beverages, whose collection in the observed period is the highest in August 2022, the collection of excise revenues on domestic non-alcoholic beverages is the highest in September 2021, and compared to September 2022 it is higher by 13.8%. The lowest monthly collection of these revenues in the observed period was recorded in February 2021 and compared to February 2022 it was 17.4% lower, and compared to February 2023 it was 34.9% lower.

Chart 18 shows the monthly growth rate of excise duties on domestic non-alcoholic beverages for the period January 2022 - April 2023, compared to the same month of the previous year.

Chart 18. % of growth of monthly revenues from excise duties on domestic non-alcoholic beverages



Source: Data from the Indirect Taxation Authority of BiH, MAU overview

The growth rate of revenues from excise duties on domestic non-alcoholic beverages recorded the highest growth of 46.1% in March of the current year compared to the same month of the previous year. Also, just like the rate of growth of revenues from excise duties on imported non-alcoholic beverages, the rate of growth of revenues from excise duties on domestic non-alcoholic beverages is significantly higher in May 2022 by 42.0% compared to May 2021, contributing increasing the overall growth rate of revenues from excise duties on non-alcoholic beverages. The negative growth rate of revenues from excise duties on domestic non-alcoholic beverages on a monthly basis is more common than the negative growth rate of revenues from excise duties on imported non-alcoholic beverages, which should alarm domestic producers of non-alcoholic beverages that are subject to excise taxation. Although the first three months of the current year had a positive trend in the collection of these revenues, in April a drop of 25.6% was recorded compared to April of the previous year, which indicates the trend of consumer preferences towards imported non-alcoholic beverages compared to domestic that are subject to excise taxation.