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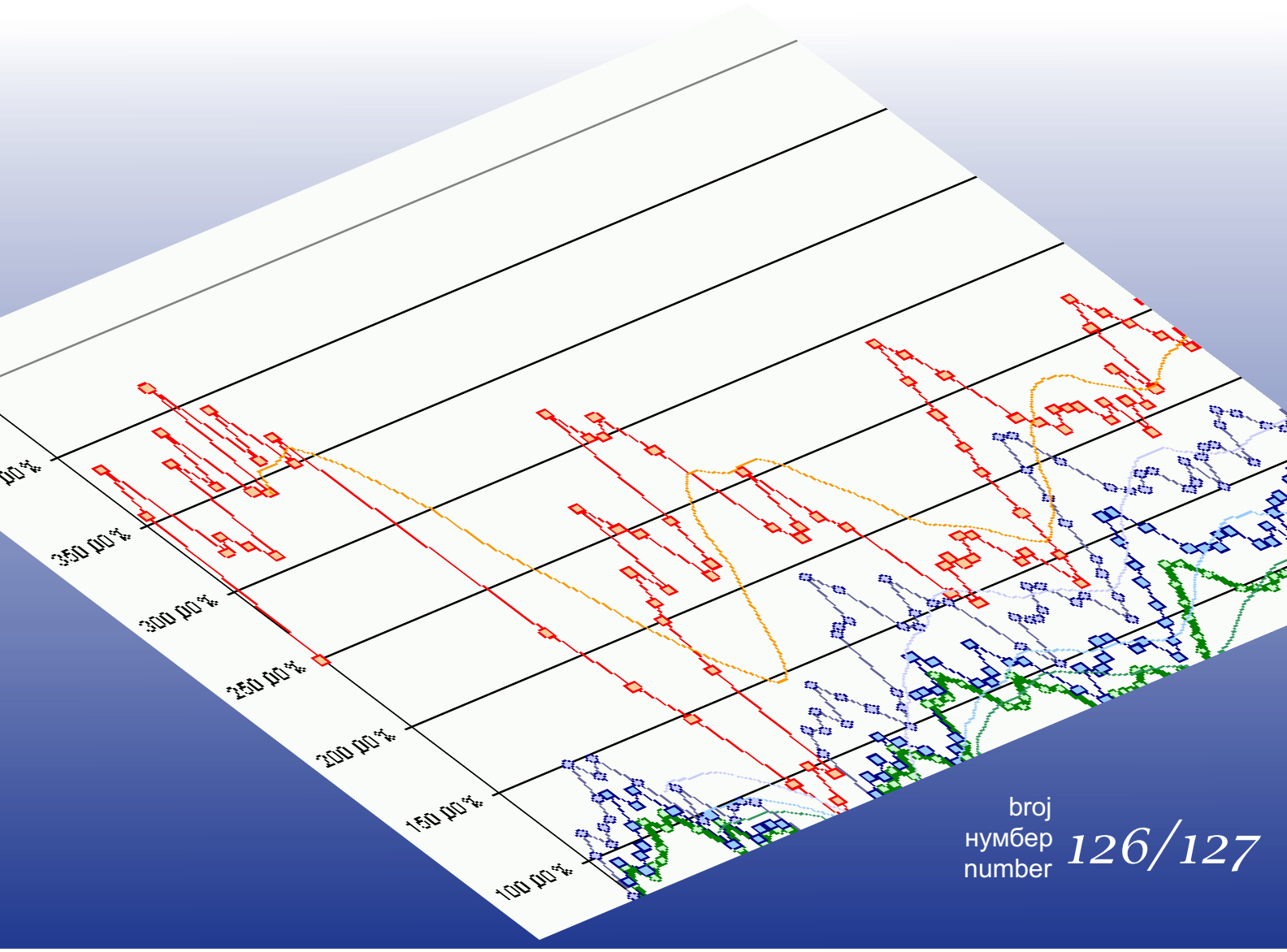
Odjeljenje za makroekonomsku analizu
Upravnog odbora Uprave za indirektno-
neizravno oporezivanje

Босна и Херцеговина
Одјељење за макроекономску анализу
Управног одбора Управе за индиректно-
неизравно опорезивање

Macroeconomic Unit of the Governing Board of the Indirect Tax Authority

Oma Bilten



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With this issue

After an increase of indirect tax collection in November 2015, it was realistic to expect a continuation of positive trends in December, especially as it comes to the end of the year when consumption usually increases due to the holidays. However, contrary to expectations, the end of the year brought a reduction of revenues. According to the cash flow report on ITA SA it was collected 537,1 million KM of gross revenues from indirect taxes in December 2015, which is less by 15,5 million KM (or 2,8%) than the collection in December 2014. Since the refund payments were lower by 5,1 million KM, the decline in net monthly collection was mitigated, and the decrease amounted to 10,4 million KM or 2,4%. Cumulative gross collection in 2015 amounted to 6,354 billion KM, representing an increase of 113,3 million KM, or 1,8% compared to gross collection in 2014. On the other hand, refund payments were lower by 76,4 million KM, which has significantly improved the final net effects of indirect tax collection in 2015. Finally, the cumulative positive effects of the growth in gross collection and the fall of refunds have brought the increase of the net cumulative collection to 3,7%, or in nominal terms to 189,8 million KM of revenues (Chart 1).

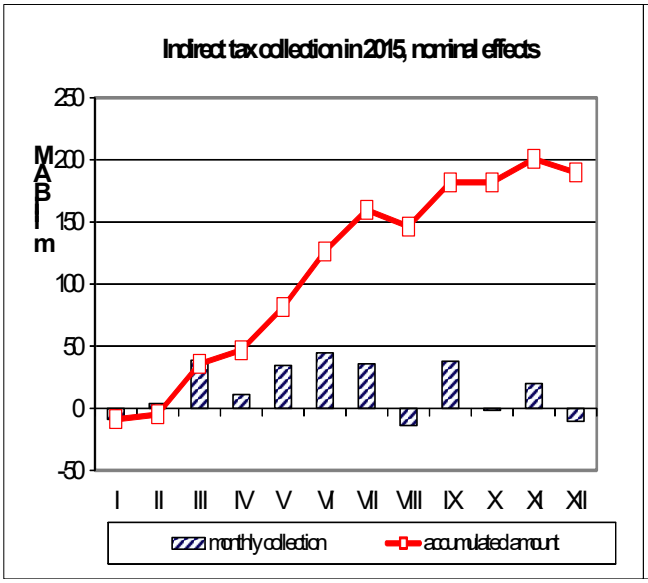

Chart 1

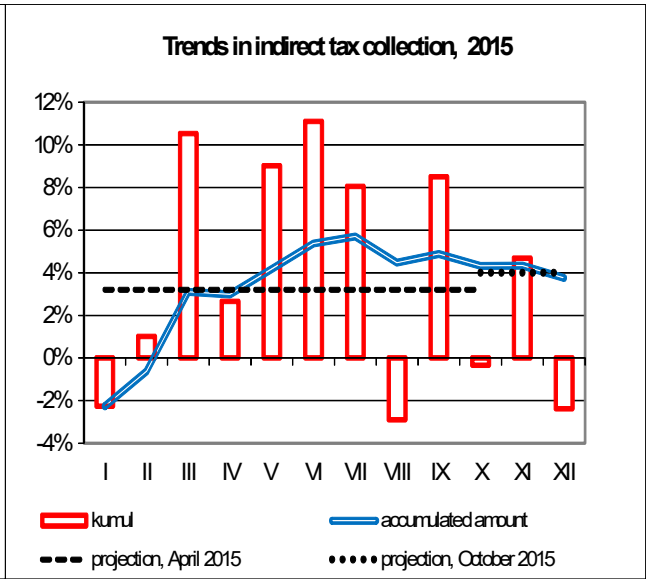

Chart 2

According to projections from April 2015 the expected revenue growth rate amounted to 3,2%, while in October it was revised to 4% due to positive trends in the first nine months of 2015. The dynamics of cumulative net collection in 2015 shows that in the period of seven months (May - November) the cumulative growth significantly exceeded even the revised growth rate (maximum overshoot is registered in July in the amount of 1,7 percentage points). However, due to the worsening the trends in December, the growth rate fell by 0,7 percentage points (Chart 2).

Dinka Antić, PhD
Head of Unit

Table of contents:

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Indirect tax revenue collection in 2015

(Prepared by: Dinka Antić, PhD)

Total collection

Review of revenue collection in 2015 compared to the previous two years shows a noticeable improvement (Chart 1). The other conclusion which can be drawn is the unequal distribution of the effects throughout the year, resulting from the new taxation policy of tobacco which has been applying as of 1st August 2014, so that the majority of the effects in terms of increased revenues from excise taxes were realized in the first seven months of 2015.

Chart 1

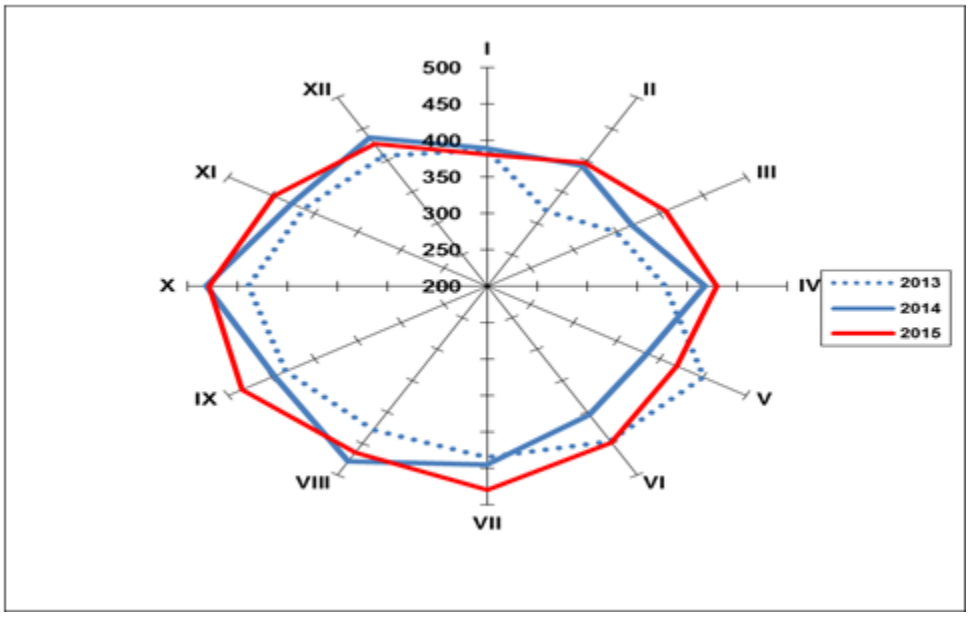
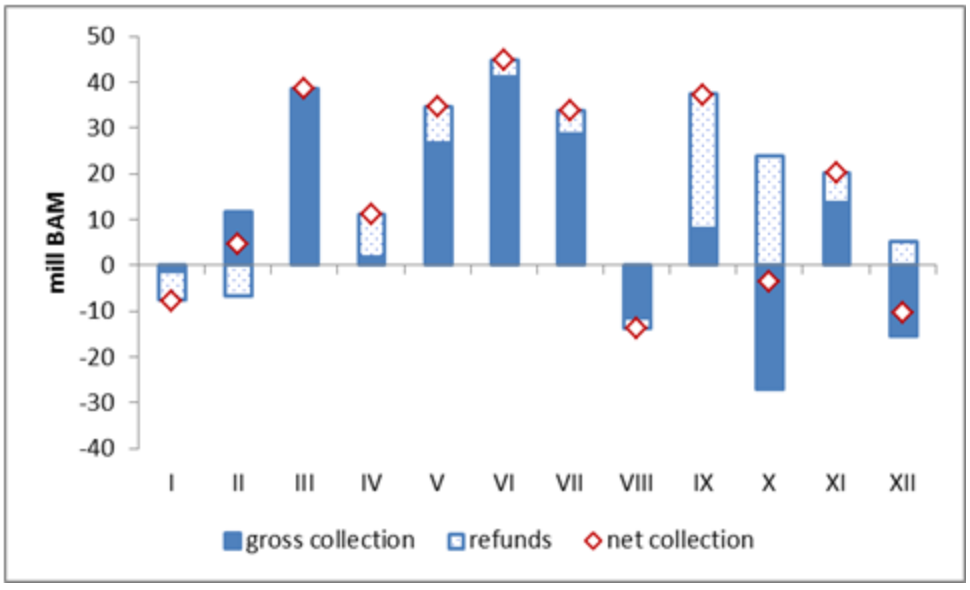


Chart 2

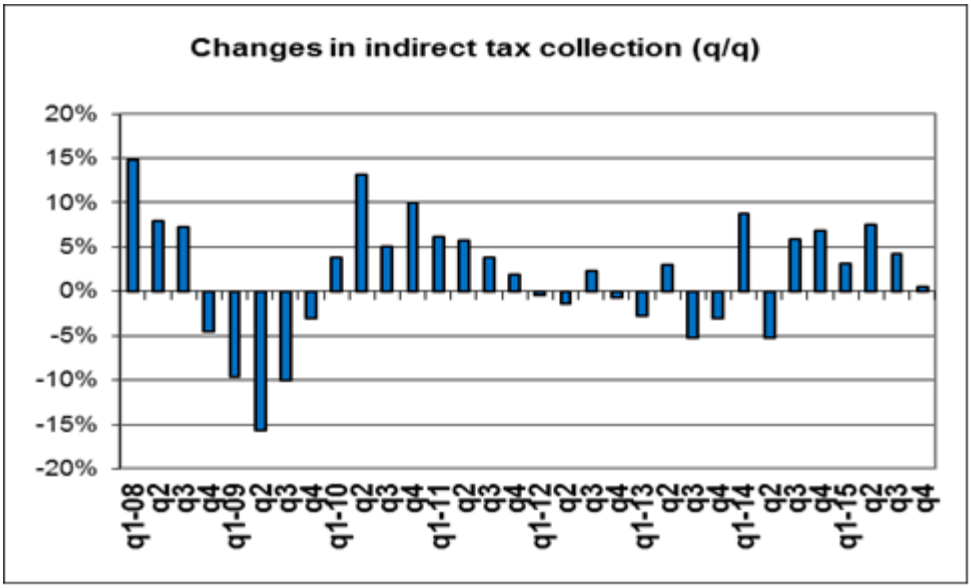


Monthly dynamics of inflows and outflows from the Single Account in 2015 (Chart 2) shows that the gross revenues grew in most of the year, and the monthly growth ranged up to 40 million KM.

The decline in gross collection has been recorded in four months, and has mainly been associated with a decline in imports in these months. In contrast to January, when the strong decline in revenues on imports (mainly VAT) was compensated by increase in other types of revenues (excises, road taxes), that did not happen in August, October and November, because at that time occurred the slowdown in revenues from excises. The strong compensatory factor of the reduction of gross collection in some months of 2015 was the reduced payment of VAT refunds.[1]

Quarterly analysis of indirect tax collection shows unevenness of the effects throughout 2015 (Chart 3). A growth of 3,1% was recorded in the first quarter. The growth in revenue collection from indirect taxes in the first quarter represented a continuation of positive trends from the second half of 2014. Collection of indirect taxes in the first quarter of a fiscal year is traditionally lower than in other quarters during the year, due to the seasonal fluctuations in consumption and business activities. However, there are specific circumstances which are characteristic for the first quarter, such as the transfers of refunds from the previous year (VAT refunds for November and December) or the accumulation of stock prior to the usual increase in excise duties on cigarettes as of 1 January. Refunds stemming from the increased VAT on imports from December 2014 had negative effects, while the new policy of cut tobacco taxation brought positive effects because, since, in addition to the inventories of cigarettes, there had also been carried out the inventories of cut tobacco due to the increase of rate of excise duty on cut tobacco. The accumulation of stocks of tobacco and cigarettes at the end of 2014 resulted in higher payments of excise tax differences (i e difference between excises already paid and the new liability) in January 2015. The increased refunds have reduced the net VAT collection, while the effects of payments of excise tax differences increased the collection of excises on tobacco in the first quarter of 2015.

Chart 3



The highest quarterly growth rate in 2015 was recorded in the second quarter (7,5%). In addition to reducing refunds, the main factors that determined revenue growth in the second quarter were the following (i) a new taxation policy of tobacco which has been applying as of 1st August 2014, so the total annual effects on the excises emerged in the first half of 2015; (ii) growth in consumption of derivatives which has brought the increase in revenues from excises on derivatives and from road taxes; and (iii) lower statistical base for comparison of revenue collection which has resulted from the negative impact of floods in May 2014 on the revenue collection. The floods in 2014 and renovation that followed had a double positive effect on the

[1] Reduction in refund payments (Chart 2) is shown as a positive number, and the increase as a negative number.

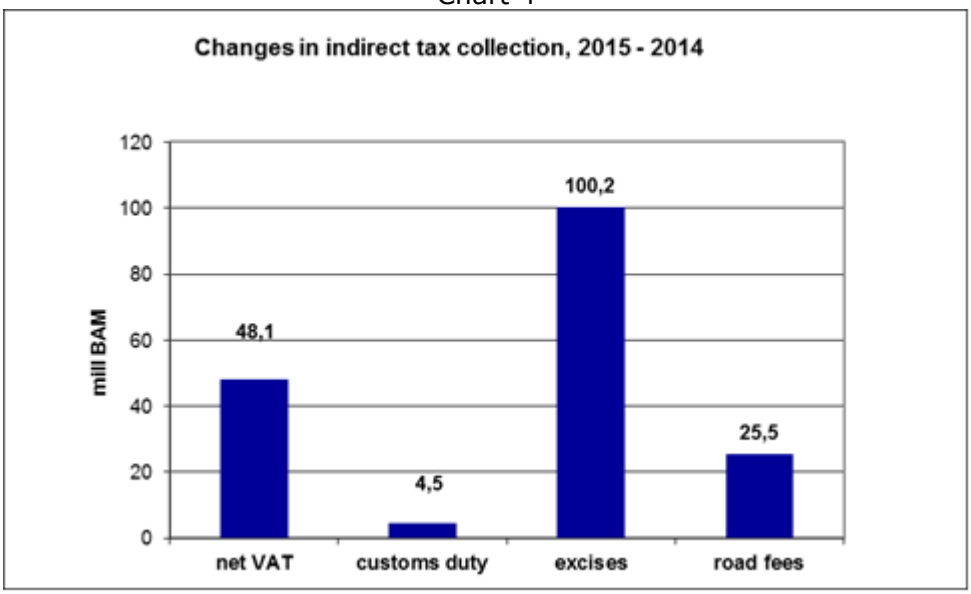
revenue growth rate in the first half of 2015 due to the lower base for comparison (May / June) and due to the increased consumption (and hence domestic VAT) because of the implementation of reconstruction projects in the first half 2015.

There was a slowdown in revenue collection in the second half of the year, which was expected on the one hand due to the exhaustion of the effects in the first seven months of the new policy of tobacco taxation, and on the other hand due to the higher statistical base for comparison from 2014 which included the effects of reconstruction on increase in consumption, and thus on increase in revenues. As a result of those factors it was recorded revenue growth rate of 4,2% in the third quarter and, due to the fall in imports in two months, only 0,5% in the fourth.

Trends by type of revenue

Negative trends in revenue collection in December 2015, which have resulted from the fall in imports, reflected mainly on VAT by reducing the cumulative surplus to 48,1 million KM. Similarly, surplus of the revenues from customs was reduced to only 4,5 million KM, while, thanks to the increase of the collected taxes on oil and tobacco, surplus of excises and road taxes increased to 125,7 million KM (Chart 4). It should be noted that, according to the preliminary ITA report, there is currently 16,5 million KM of unadjusted revenues and that after aligning it can be expected a higher surplus of VAT and of other types of revenues.

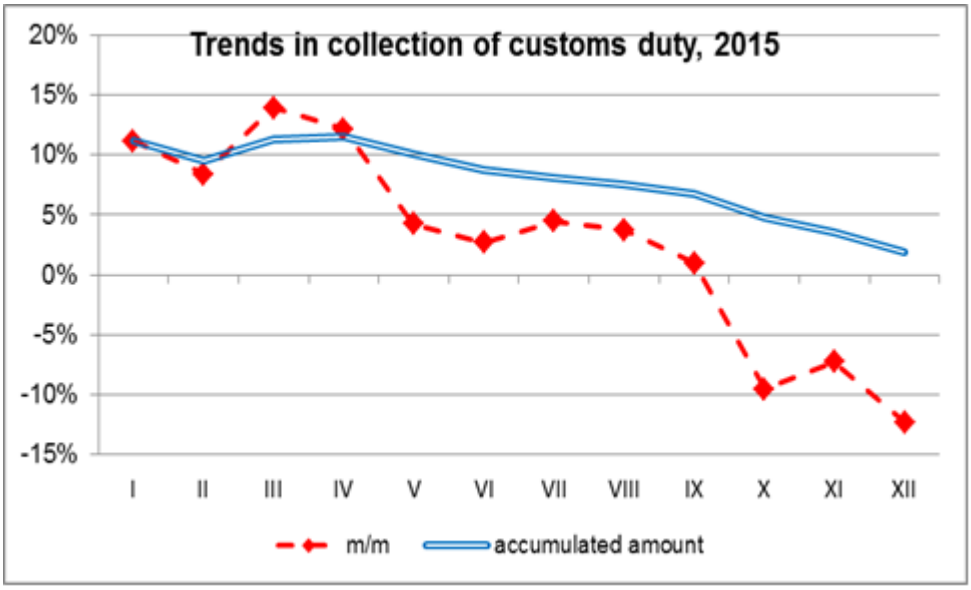
Chart 4



Custom duties

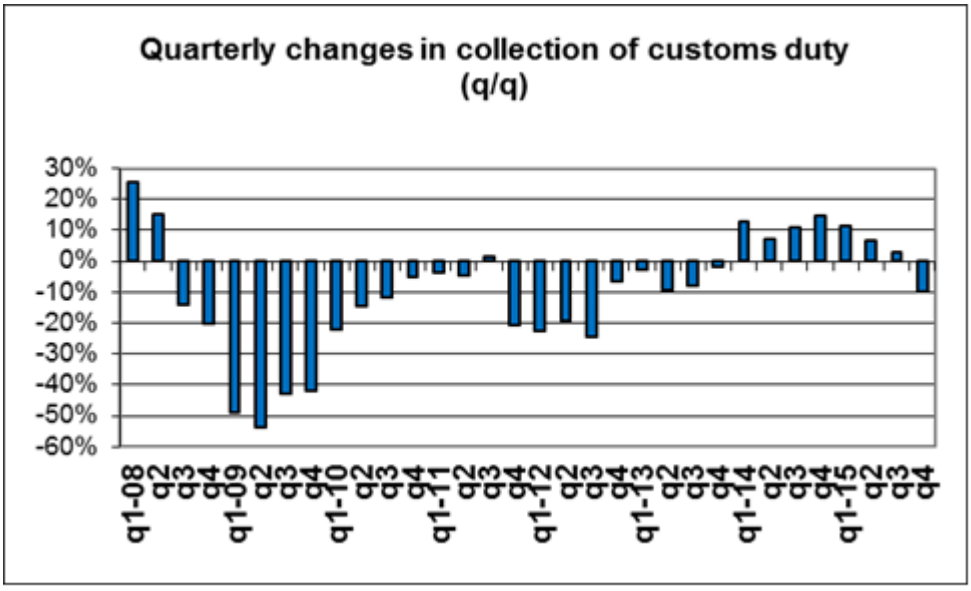
Revenues from customs duties in December fell as much as 12,3% compared to the same month in 2014, as a result of the further reduction of imports from Russia (even 45,1%). The decrease in imports from China due to the completion of large investments (TPP Stanari) and rapid reduction of oil imports from Russia because of the situation on the world oil market have produced a downward trend in revenue collection from customs duties. From the initial 10%, the cumulative growth is reduced to a minimum of 1,9% (Chart 5).

Chart 5



According to data from the Agency for Statistics of B&H the import from China in 2015 was lower by 19,7%, and from Russia by even 29,6% compared to 2014. Quarterly overview of trends (Chart 6) shows the effects of imports for large investments in 2014 on customs revenues, and rapid deterioration in 2015. At the same time, the trends have worsened due to the application of duty-free import arrangements with the EFTA grouping, which has led to the increase in imports from its member states by 12,7%. Since the large investments from China brought one-off effect on the revenues from customs duties in 2014, that can not be the reference year for the comparison of collection of customs revenues in 2015. If we take 2013 as a reference year, the cumulative revenue growth amounts 13,7% which, however, gives a different look of current trends.

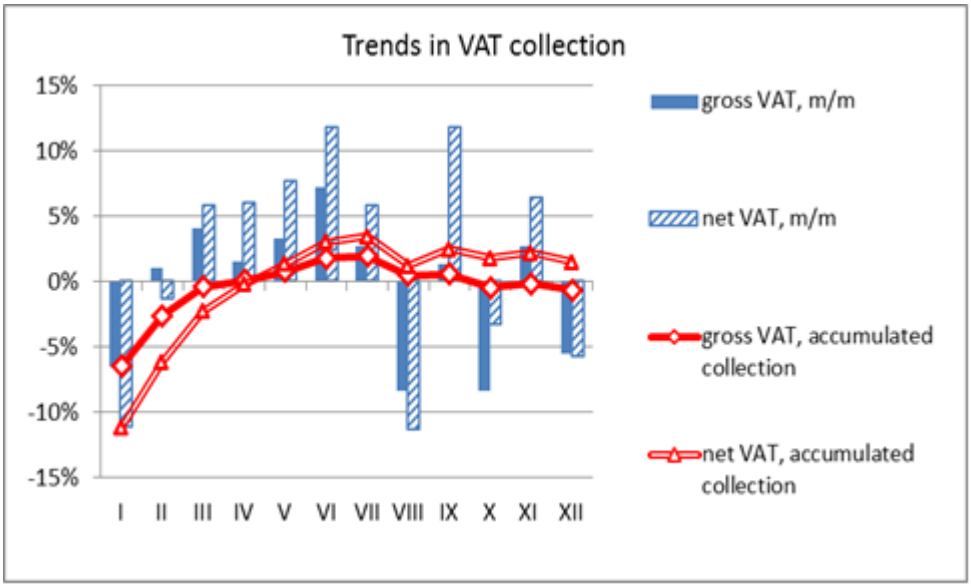
Chart 6



VAT

December has brought again a sharp deterioration in revenue collection from VAT. Gross collection fell by 5,5%. The decline in net collection was partially mitigated by decrease in refunds of 4,8%. Deterioration in VAT collection in December reflected considerably on the cumulative net growth, which from the achieved growth rate of 2,2% in the eleven months of 2015, fell to only 1,5%. The past year was characterized by unstable trend in VAT collection. After a big deterioration at the beginning of the year, the following six months have brought a gradual growth which culminated in July with a cumulative growth rate of 3,5%. The strong oscillations have been recorded in the last five months, the sharp declines in gross collection caused by reduction in imports and the increase in net collection as a result of large decrease in refunds, in the first place for the international projects. Monthly fluctuations in net collection ranged from -12% to + 12% (Chart 7).

Chart 7



The oscillations in VAT collection and a sharp downward trend can also be seen from the review of quarterly collection (Chart 8). The first quarter brought a drop in VAT collection of 2,3%. After exclusion of the effects of collection of old debts from the base for comparison, quarterly growth shifts minimally in the positive zone (Chart 8 - „—"). It was recorded an increase of as much as 8,4% in the second quarter. The factors of net VAT growth were the following: increase in gross collection (consumption growth, growth of base due to increase in revenues from excise taxes), reduction of refunds, weak growth of VAT debts, lower statistical base for comparison caused by the floods in May 2014, and the effects of reconstruction on consumption in the first half of 2015.

There has been a significant slowdown in growth at only 1,5% already in the third quarter. There were sharp fluctuations in collection, the effects of the higher base due to rising excise taxes were exhausted, and statistical base for comparison was higher due to increased spending for reconstruction after the floods in the second half of 2014. The net VAT collection decreased by 1,2% in the fourth quarter compared to the same quarter of 2014, due to two negative monthly growth rates (October and December). It can be concluded that the net VAT collection in the first half was determined by the growth of gross collection (base), while the reduction in VAT refunds dominated in the second half.

Chart 8

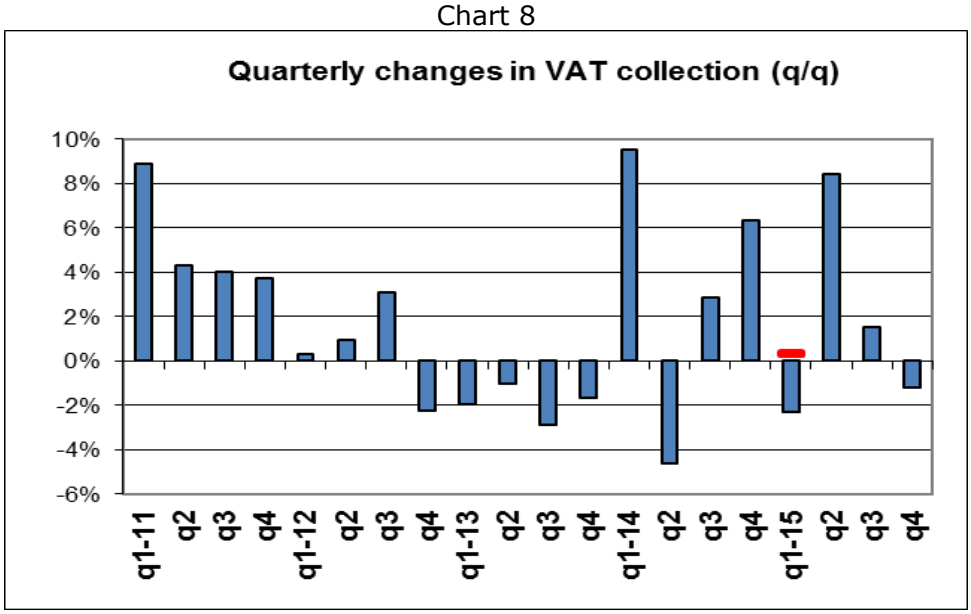
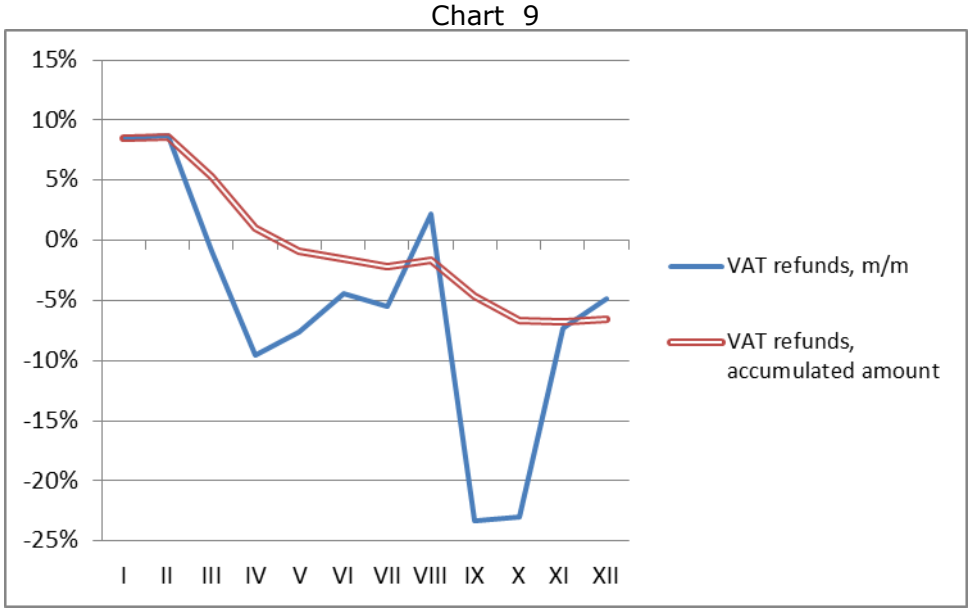


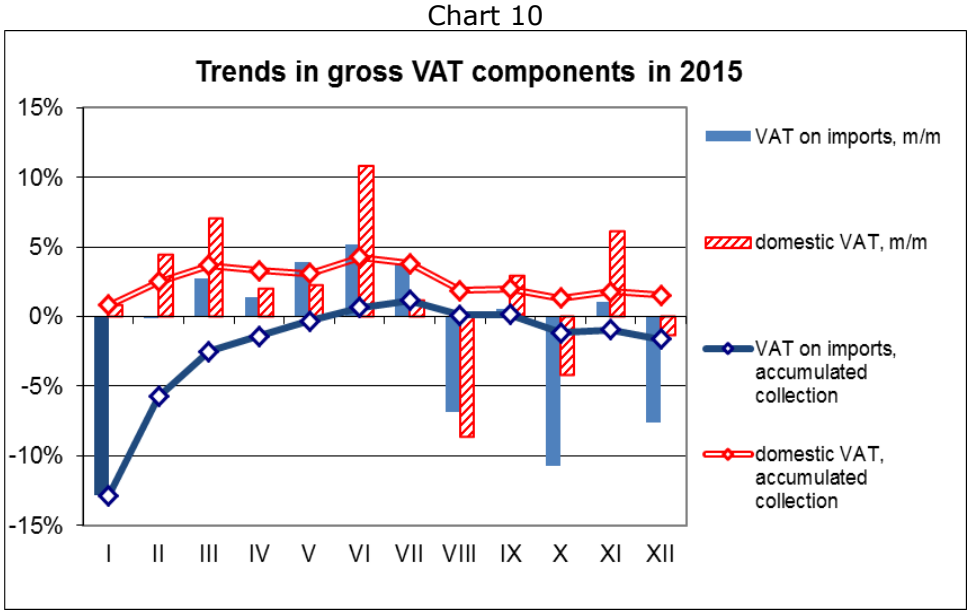
Chart 9



Even 94% of the total net effects of VAT in 2015 was realized in the first half of the year, while the large decrease in refunds completely neutralized a sharp drop in gross VAT collection in the second half (Chart 9).

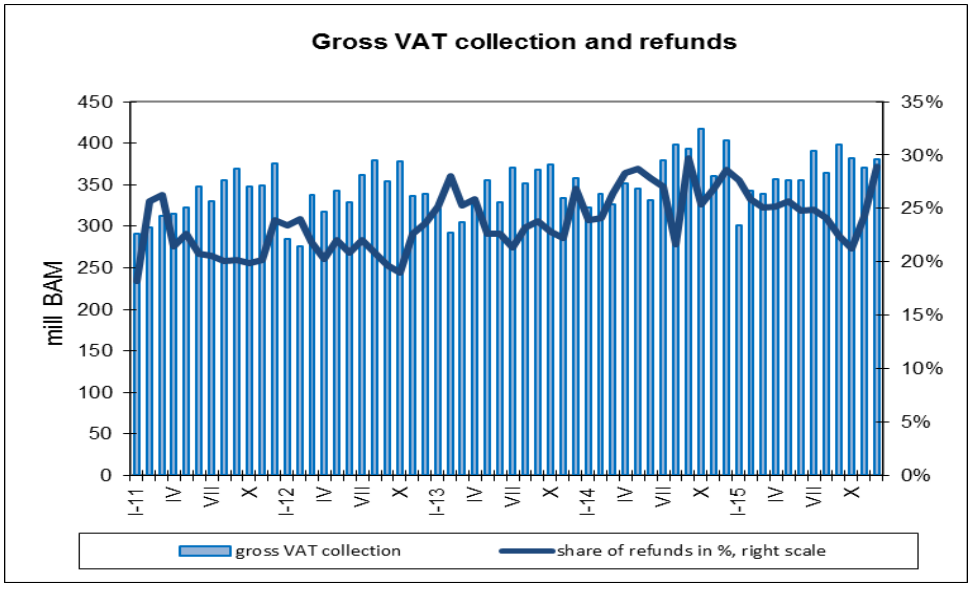
When analyzing the structure of gross VAT collection, December brought deterioration in terms of falling both VAT on imports and VAT from VAT returns (Chart 10). The cumulative VAT on imports entered minimally in the positive zone of growth in the period June - September, while the sharp falls were recorded in other months. Negative trends have resulted in cumulative drop of VAT on imports of 1,6%. For the most part of the year the collection of VAT from VAT returns recorded solid and even high growth rates, which even exceeded 10% in the first half as a result of, among other things, growth in consumption due to the reconstruction after the floods. Expectedly, the decrease in domestic VAT was recorded in the second half of the year, and the cumulative growth decreased from 4,3% in June to 1,5% in December 2015 (Chart 10).

Chart 10



The last year has also been characterized by a downward trend in VAT refunds which was, however, undermined in December when the share of VAT refunds in gross VAT collection increased to 28,9% (Chart 11).

Chart 11



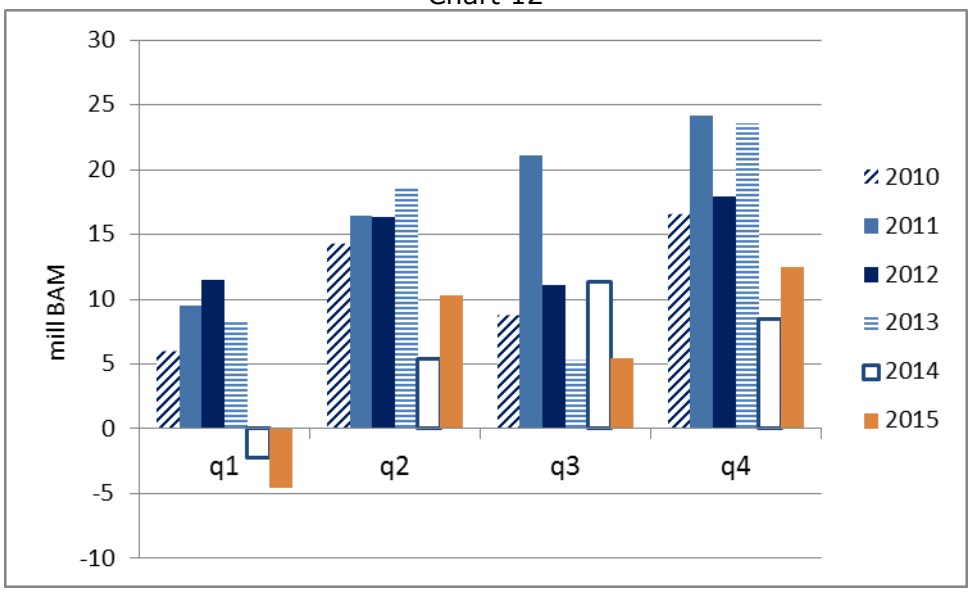
However, despite this deterioration, the average annual share of refunds in gross collection amounted to 25%, which is 1,5 percentage points less than the share of refunds in 2014. The share of refunds for the taxpayers stagnated, while the share of refunds for the international projects decreased.

Refunds to taxpayers decreased by 14,4 million KM or 1,4% compared to 2014, while refunds to international projects decreased by 61,7 million KM or 40,4%. Nominally high refunds in 2014 were the results of large investments in TPP Stanari and of changing the regime of the some companies involved in internal processing (*lohn* jobs) to a standard VAT calculation. These companies have also remained in the VAT system in 2015, so only the effects of investments in

TPP Stanari had the one-time character. Because of the importance of this effect, the year 2014 can not be taken as a reference for comparison of VAT refunds. A more realistic picture of dynamics of refunds to taxpayers can be acquired by comparing the refunds from 2015 with the refunds from 2013. In that case refunds to taxpayers increased by 13,3%, due to inclusion of the companies dealing with *lohn* jobs and the growth in exports.

Cumulative state of debts on the basis of reported and unpaid VAT on the day 31 December 2015 amounted to 351,4 million KM, which points to the almost same pace of debt increase as it was in 2014. After including the automatically assessed debt, the overall VAT debt amounts to 440,9 million KM.

Chart 12

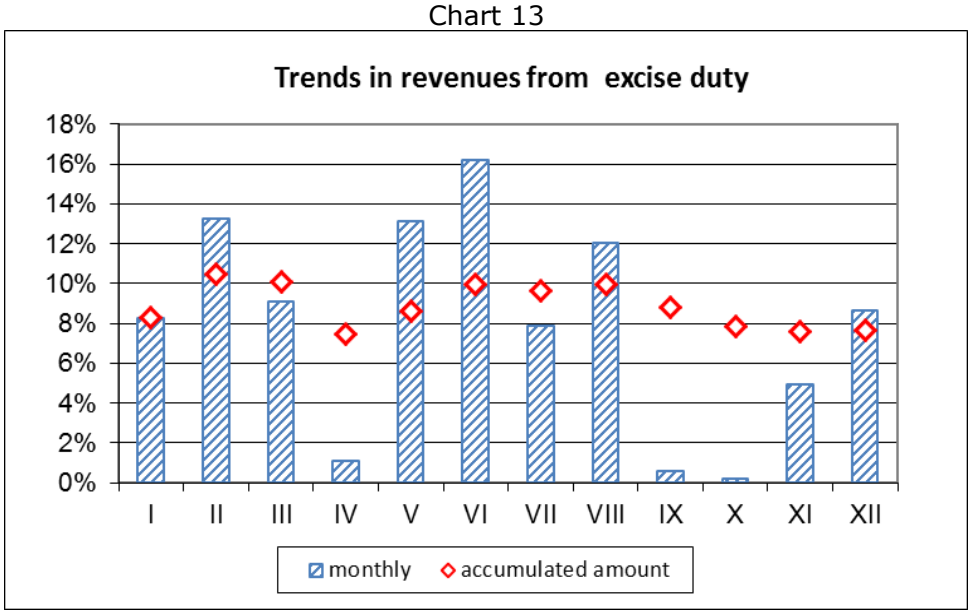


Quarterly review of new debt dynamics indicates a significant reduction in the growth of debt in 2014 and 2015 compared to the previous years (Chart 12). It was also changed the distribution per quarters in comparison to previous years, when the debt had a constant growth with a peak in the fourth quarter.

Excises

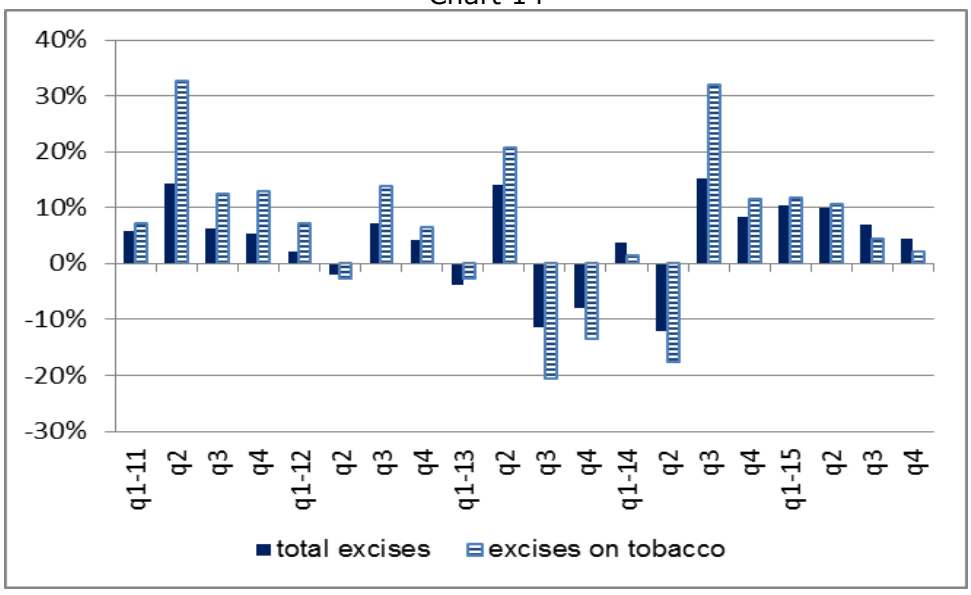
A trend of rapid growth in excise revenues has been continued in December 2015. The biggest increase in revenues from excises in December was recorded in excises on domestic tobacco and in excises on imported oil derivatives, while there were decreases in excises on alcohol and alcoholic beverages. The high collection of excises on domestic beer of 10,6% growth rate could not compensate for the decline in revenues from excises on imported beer of 16,5% due to the small weights, and the total revenues on this basis fell by 10,7%. The growth of revenues collected from excises on tobacco and on oil derivatives (including road taxes) in December 2015 only strengthened further the cumulative growth, while the decline in revenues in the group of alcoholic beverages and soft drinks reduced the final effects for 2015.

Chart 13



Regardless of heterogeneity of the subgroups and trends in the consumption of certain excise goods, the revenues from excises represented the most stable revenues from indirect taxes in 2015. Despite the sharp fluctuations in monthly collection, the excise revenues in 2015 kept the following two characteristics: positive collection and stable growth trend in the range from 7,5% to 9% (Chart 13). The main subgroups of excise revenues are the revenues from excises on derivatives and excises on tobacco. An important characteristic of the collection of excises in 2015 was a stable collection of revenues from excises on derivatives during the year, while the uneven distribution of the effects of the new excise tax policy on tobacco expectedly reflected on the collection of total excise revenues through the higher growth rates in the first seven months and through slowing down the growth in the rest of the year.

Chart 14



Quarterly trends in the best way illustrate the distribution of the effects of the new policy of excises on tobacco on the collection of excises in B&H (Chart 14). It was recorded a huge increase in revenues from excises on tobacco in the third quarter of 2014 (which represented a quarter of

the initial application of the new policy), and in the next three quarters were maintained the high growth rates above 10%. During those quarters the revenues from excises on tobacco grew faster than total revenues from excise taxes. The exhaustion of the effects of the new policy of tobacco taxation has started, expectedly, in the third and fourth quarter of 2015, and the growth rates of revenues from excises on tobacco were lower than the growth rate of total excise revenues.

The slowdown in revenues from excises on tobacco was compensated by the growing trend of revenues from excises on oil derivatives (Chart 15). The growth of this group revenue has begun in the third quarter of 2014 and continued during 2015. Strong growth of revenues can be explained by the effects of falling prices of oil derivatives on energy consumption, economic growth, as well as by the effects of cross-border and transit retail of derivatives due to the competitiveness of products from Bosnia and Herzegovina because of the low excise rates and the lower VAT rate compared to neighboring countries, and especially compared to EU countries.

Chart 15

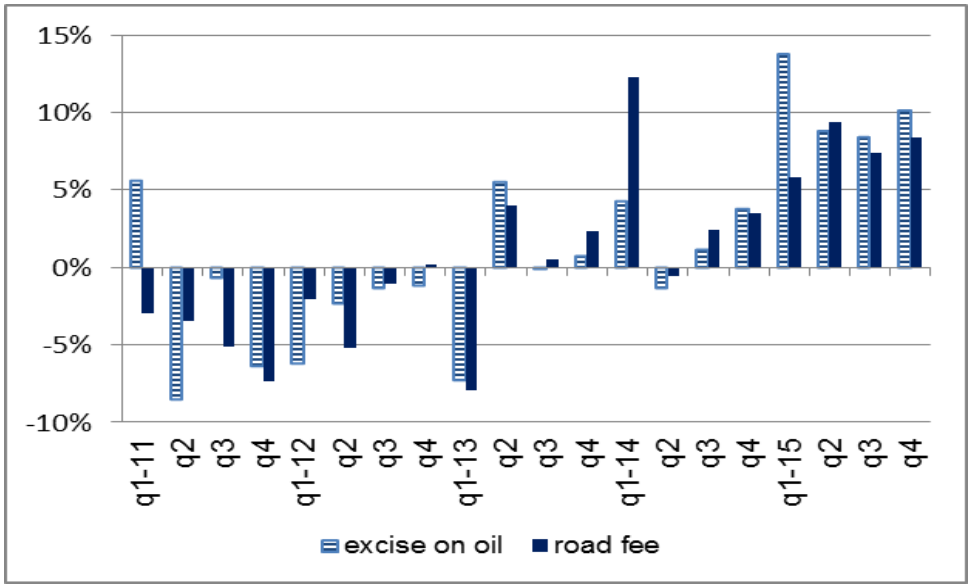
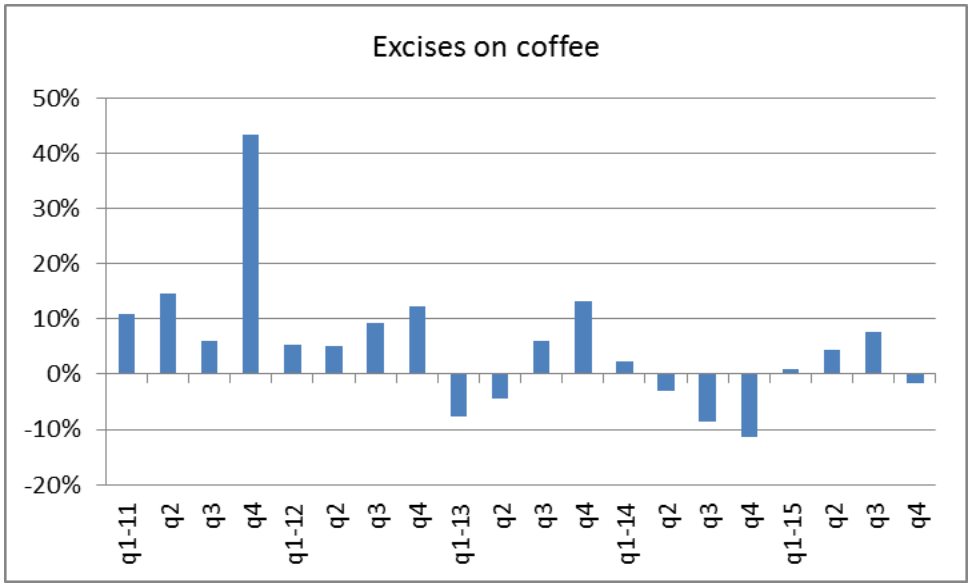


Chart 16

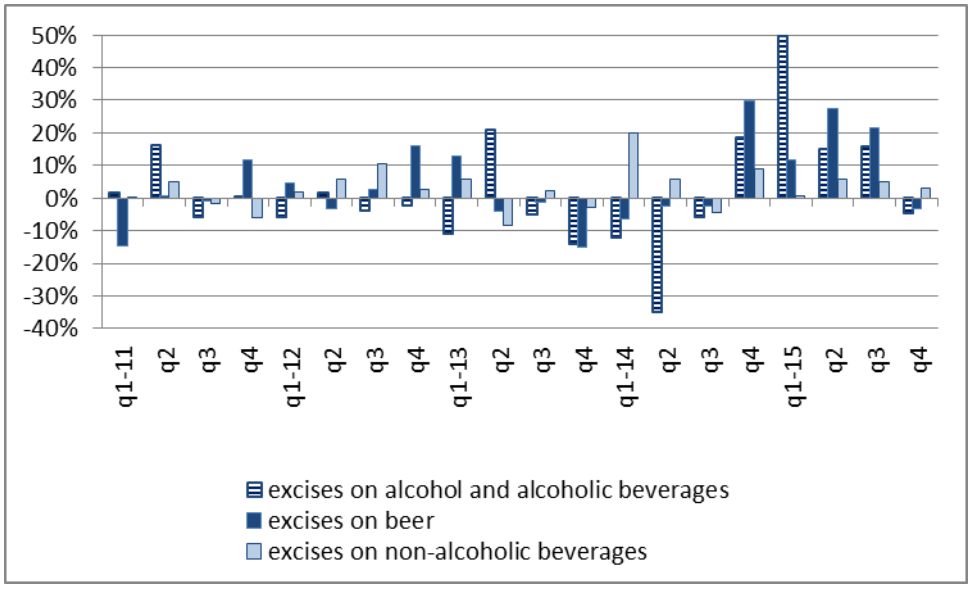


After a poor collection of revenues from excises on coffee in 2014, the trends have significantly improved in the last year (Chart 16). The growth rates have been increasing from quarter to quarter, with a maximum 7,7% in the third quarter, and than the decrease in the fourth quarter of 1,7% brought the cumulative growth down to 2,8%. In the end, it was not enough to reach a nominal historic maximum in the collection of revenues from excises on coffee from 2013.

Collection of excise duties on alcohol and alcoholic beverages was extremely high during most of the year, and growth rates ranged up to 50% (Chart 17). However, in the fourth quarter the collection shifted to the zone of negative growth, which brought down the annual growth rate to the still high rate of 13,9%. After the turbulences in 2014, revenues from excises on soft drinks have stabilized around a solid 4% growth.

The effects of the new excise tax policy on beer[2] have partly emerged in 2015, although they were marginal in comparison to the growth rates of indirect tax revenues in 2015. In accordance with expectations of the Unit the introduction of differentiated rate of excise duty on beer has brought the changes in the beer market in B&H in terms of improving the situation of domestic breweries. According to forecasts of the Unit it was expected that more favorable tax position would encourage the sale of local beer, and that the quantities of taxed domestic beer would increase by 10%[3], and that in the same time the amount of imported beer would decline due to rising taxes. Information on increasing quantities of domestic beer of 9,3% has confirmed the expectations of the Unit. However, despite the increase of taxes on imported beer, the quantity of taxed imported beer increased by 1,8%, thanks to aggressive marketing campaigns. Although the share of taxed domestic beer on the market increased to 35,5%, that was not enough to reach a historic maximum from 2012. The new excise policy had a positive effect on revenues from excises. In addition to growth in revenues from excises on domestic beer, it was also recorded the strong growth of 17,3% in revenues from excises on imported beer as a result of the cumulative effects of the increase in quantities of imported beer and increase of the rate of excise duty. After excluding the collection of old debts from excise taxes on beer from the basis for comparison from 2014, it was collected an additional 6,4 million KM of revenues from excises in 2015.

Chart 17



[2] Amendments to the Law on Excises in the area of beer taxation are applicable from 1st September 2014.
[3] Projections of revenues from indirect taxes 2014-2017, April 2014. Source: OMA Bulletin No 109, May 2014. www.oma.uino.gov.ba.

Concluding remarks

The upward trend of revenues from indirect taxes from 2014 has continued in 2015. It was achieved the growth in revenues of 3,7% or nominally 189,8 million KM.

Various factors influenced the growth of revenues. The most important were the new taxation policy of tobacco products and the effects of falling prices of oil derivatives on energy consumption. The specificity of 2015 was the impact of one-off factors on the statistical base for comparison from 2014, which decreased due to flooding in the first part of that year, while it increased in the second part due to the application of amendments to the Law on Excises in the field of tobacco taxation as well as because of increased spending for reconstruction after the floods. The slowdown in gross collection in 2015 was expected due to the completion of large investments in TPP Stanari, while, on the other hand, a drastic reduction in international aid projects was unexpected. Reducing the realization in this area has brought a significant reduction in the VAT refunds. Despite a decline in gross collection, the reduction in refunds contributed to faster growth in net collection of indirect taxes. Semi-annual analysis of the structure of gross collection points to the conclusion that 2/3 of the total net effects in 2015 were collected in the first half of the year, of which 93% was a result of revenue growth, while the net collection effects in the second half of the year *de facto* stem from a reduction in refunds.

Analysis of trends in the ten-year period (2006-2015) shows a growing trend of revenues from indirect taxes (Chart 18).

Overview of trends in the collection of VAT, as the dominant source of revenues for all levels of government in B&H, shows the similar trends in the period 2006-2015 as the total collection of indirect taxes.

Oscillations in the growth rates of indirect taxes generally followed the developments in the economy, but with few exceptions. According to the conclusions from the research of the IMF experts[4], in times of crisis revenues are falling faster than the economy, while in the time of economic growth the revenues are growing faster than the economy. A similar has happened in B&H, although the effects of policy changes in the area of indirect taxes in that period should be considered. In times of crisis, the strong falls in revenues from indirect taxes have been recorded in B&H, while in the last two years the revenue growth rates exceeded the growth rates of the economy. Chart 19 shows stagnation of the revenue growth rate in 2015. That fact should be taken as a warning signal for the achievement of revenue projections in the medium term as well as for the realization of measures for fiscal consolidation of budgets.

[4] Sancak, C., Velloso. R. and Xing, J., 2010. „ Tax Revenue Response to the Business Cycle". IMF Working Paper WP/10/71. Washington: International Monetary Fund.

Chart 18

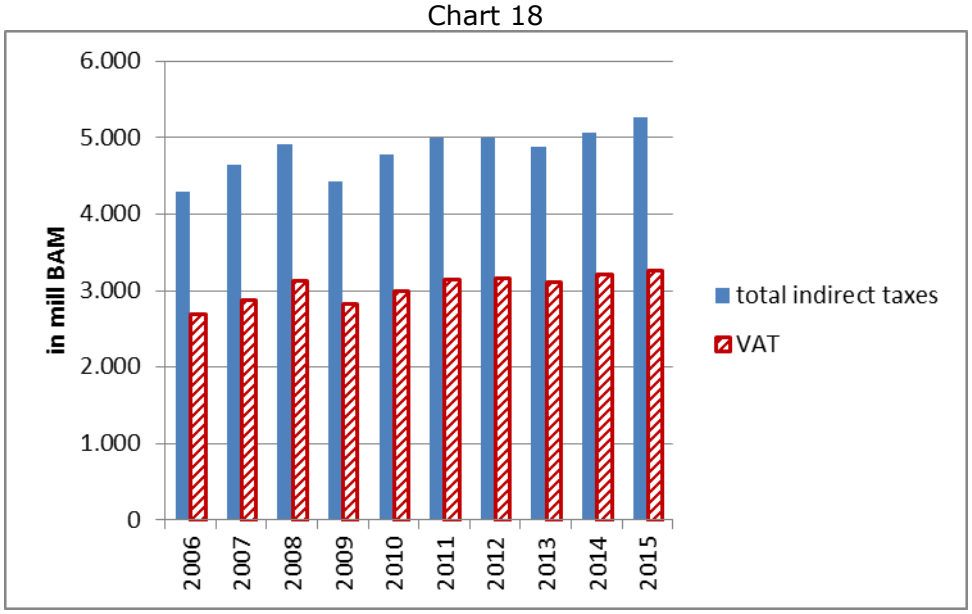
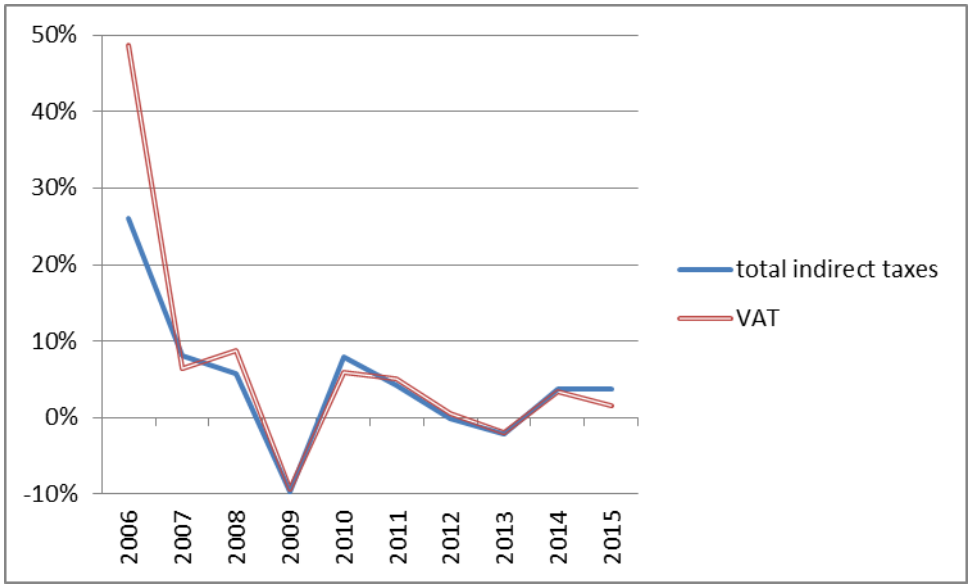


Chart 19



Minor differences in the trends of total revenues and VAT were the results of trends in the collection of other revenues, primarily the excises on tobacco. Changes in taxation policy of cigarettes in the early years (2009-2011) mitigated the decline in total revenues from indirect taxes, which had been caused by the economic crisis and the drastic fall in customs revenues due to the implementation of the SAA, while the decline in VAT was sharper. Later, in 2012 and 2013, the trends have coincided, because the strong tax evasion in the tobacco market has led to a sharper fall in revenues from excises, and at the same time the increasing refunds jeopardized the net VAT collection. The past two years have brought faster growth of total indirect taxes compared to the increase in VAT thanks to the recovery of revenues from excises on tobacco and, afterward, revenue growth in the derivatives.

Seasonal adjustment of time series

(Prepared by: Aleksandra Regoje)

Introduction

Atypical fluctuations of the time series can be very pronounced so that they hush up regularity of the movement and prevent the proper interpretation of its economic base. Seasonal adjustment of the time series is carried out in order to gain insight into the dynamics of phenomena, after excluding the seasonal factors. Seasonal factors are those that affect dynamics of phenomena with similar intensity in certain periods within the year (month, quarter). The atypical fluctuations will be visible after the adjustment to the extent that they exceed the usual seasonal pattern.

Seasonally adjusted data therefore do not show the usual fluctuations, but point to the novelties in the dynamics of the time series. Even if the new trends in the time series result from the seasonal factors (e.g. changes in consumption pattern due to the introduction of the new holiday, extension of the construction season due to the introduction of material more resistant to cold, etc.), they will not be filtered until they repeatedly reiterate in longer period of time.

Opinions about whether to use raw data or seasonally adjusted depend on their purpose. It is necessary to have all kinds of series (adjusted, unadjusted) if the data is used for short-term assessments, and their seasonal component is particularly important. If the effects of a single event have to be estimated, it is important to look at the irregular component. The argument in favor of required availability of unadjusted (raw) data is that the seasonally adjusted data for a certain period are subject to revisions with the passage of time, when data for some future period become available.

The components of time series

Seasonal adjustment means using analytical techniques to break down the time series into the following components:

1. trend-cycle component (T_t),
2. seasonal component (S_t),
3. calendar component (C_t),
4. irregular component (I_t).[5]

1. Trend-cyclical component

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 long-term trend component refers to the tendency of time series to decrease or increase which takes a certain long period of time. This is the component which changes gradually, and reflects the economic and other factors such as demographic changes. It is often grouped with the cyclical component.

[5] 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)

2. Seasonal component

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). By eliminating the seasonal component, the adjusted time series enables analysis of the trend-cycle component.

3. Calendar component

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:

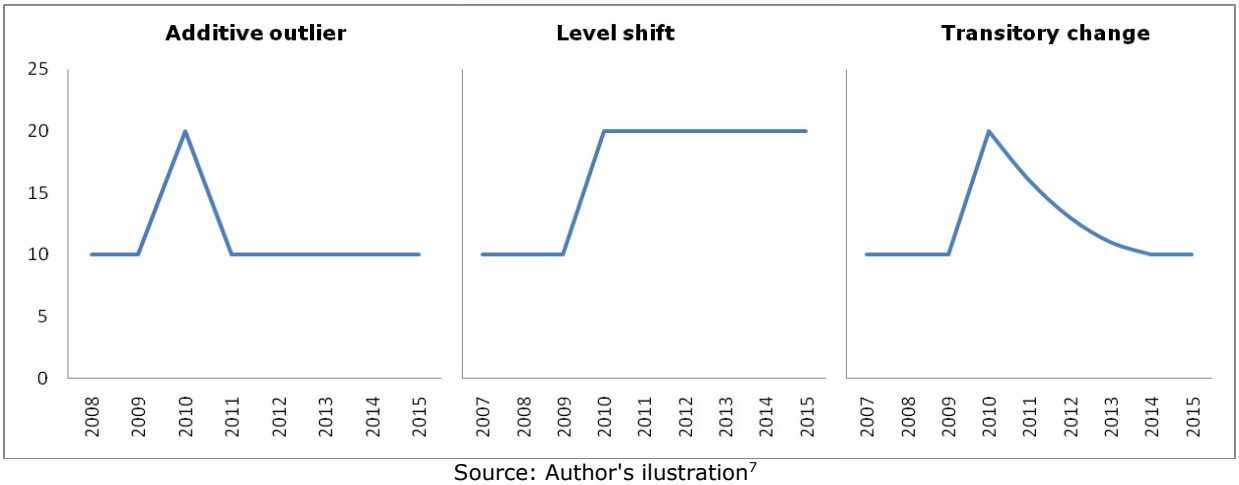
- a different number of working days in the month / quarter,
- the effects of moving holidays,
- the effects of a leap year.

We see that the calendar component consists of the effects on time series of the calendar characteristics which change over time. For example, given that the value of sales for the most of goods is highest on Saturdays, it can be higher in the months counted five Saturdays. Changes in the date of the Easter or the Eid affect the change in pattern of consumption.

4. Irregular component

In addition to these three components, the time series also have a component of irregular behavior. It consists of all the effects that are not contained in the other components. It remains unfiltered in the seasonally adjusted data. It is caused by many factors that are not predictable and are random variations in data series. There are also the effects of legislative changes (e.g. the introduction of new subsidies or taxes). [6] Among other factors, there are the outliers which relate to a single period (additive outliers), those that permanently alter the level of the series (level shift outliers) and those whose effects are reduced with the passage of time (transitory change).

Chart 1



Source: Author's ilustration[7]

[6] Seasonal adjustment methods and practices, Hungarian Central Statistical Office (2007)

[7] Ilustration prepared based on the IMF „Update of the Quarterly National Accounts Manual", Chapter 7. Seasonal Adjustment, draft version

The above is only one of the classifications, which mainly differ on whether trend and cyclical components are separated, and whether the calendar component is separated from seasonal. Some authors decompose the time series on the following components (a) a trend-cyclical, (b) seasonal and (c) irregular component, where calendar component is contained in seasonal.[8] Others make the classification on (a) trend, (b) cyclical, (c) seasonal and (d) irregular component (calendar component also contained in seasonal). [9]

Models of time series

Time series can be expressed through an additive model, when the components are independent of each other or through the multiplicative model, when the components are interdependent. In some cases it is possible a combination of additive and multiplicative form. [10]

Box 1. The components of time series

I	Additive model	$X_t = T_t+S_t+C_t+I_t$
II	Multiplicative model	$X_t = T_t * S_t * C_t * I_t$

Seasonal component of time series

There are three main sub-components of the seasonal component of time series. Those are:

- climatic,
- institutional,
- calendar.[11]

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 phenomena, for example legislation, the usual interruptions of activities in a certain periods and the like. The third component relates to the calendar pattern. For example, because of this factor the sales are lower in February, due to fewer days in the month. In classifications where the calendar component is included in the seasonal, except for the factors that are stable over a longer period of time (number of days in the month, public holidays, etc.) it also includes those with variable effects (effects of moving dates of religious holidays, the number of Saturdays of the month etc.).

Seasonal adjustment

Raw, unadjusted data show what was really going on with the observed phenomena in a certain period, while the seasonally adjusted data show its underlying movements, or the movements of the observed phenomena in conditions when it would not be affected by seasonal factors. The seasonal component is filtered out in adjusted series on the basis of historical pattern of phenomena. The calendar component should also be filtered. In this way one can get a clearer picture of the tendency of phenomena when comparing data of the particular month of the year with the previous one, or with the same month of some earlier year.

[8] Bloem A.M. et al. „Quarterly National Accounts Manual: Concepts, Data Sources, and Compilation", IMF (2001), Chapter VIII „Seasonal Adjustment and Estimation of Trend-Cycles"
[9] Hungarian Central Statistical Office, ibid
[10] Newbold, P. et al. „Statistika za poslovanje i ekonomiju", Mate, Zagreb (2010), Original name: „Statistics for Business and Economics"
[11] Wyman D., "Seasonal adjustment and identifying economic trends", Statistics Canada (2010)

A simple alternative to the seasonal adjustment can be the comparison of a month/quarter to the same month/quarter of some earlier year. However, in this case, seasonal and calendar effects are not completely excluded since the months/quarters may have a different number of working days, Saturdays or moving holidays.

Seasonal adjustment can not eliminate all the seasonal effects, but only "average" seasonal pattern manifested in the previous period. If the changes in seasonal pattern appear (e.g. with the increasing popularity of so-called gift cards a big part of the purchase of gifts before the holidays shifts to the period after the holidays) the effects will not be corrected until being repeated consecutively for a longer period. Also, the dynamics of the time series resulting from extremely strong or low weather effects will not be filtered in the seasonally adjusted data, at the extent to which it differs from the "average".

Deterministic vs. stochastic analysis

Deterministic analysis of time series implies fixed seasonal effects throughout its length. The stochastic analysis has allowed the so-called moving-seasonality scheme or changes of seasonal pattern over time. This methodology has the advantage in ability to reduce excessive correction in adjusted data over time which can be present when using a fixed seasonal scheme.

Seasonal adjustment vs. „smoothing"

Seasonal adjustment should be distinguished from the simple "smoothing" data series. Seasonally adjusted series consists of the trend-cyclical and irregular components. In case of significant irregular component, seasonally adjusted time series will not have "smoothed" trajectory. In order to analyze only the trend-cyclical component, the irregular component should also be filtered, which is much more complex procedure than filtering seasonal and calendar components.

Box 2. Guidelines for the seasonal adjustment of the European Statistical System (ESS)

The issue of best practices in the field of seasonal adjustment has been long discussed at the European level. Seasonal Adjustment Steering Group co-chaired by Eurostat and the ECB has made a key contribution to the compilation of the first edition of the guidelines on seasonal adjustment, published in 2009. The guidelines have been designed to achieve the harmonization and comparability of seasonally adjusted data at EU level. The first edition has been widely accepted. However, taking into account the experience gathered since 2009 and the need to further clarify some specific aspects, in 2012, Seasonal Adjustment Steering Group decided to initiate a revision of the guidelines. The last edition of the guidelines was published in 2015.

The guidelines apply to all phases of the seasonal adjustment of monthly or quarterly data, namely: pre-treatment, seasonal adjustment, revision, quality measurement, and publication.

Three options were given for the each phase of adjustment:

(A) best alternative,
(B) acceptable alternative, and
(C) alternative to be avoided.

The aim of the guidelines is to help users to use alternative (A), while the careful consideration and measures should be taken whenever alternative (C) is in use.

Source: ESS guidelines on seasonal adjustment, Eurostat (2015)

Indirect vs direct adjustment

Adjusting the time series can be indirect or direct. If the time series to be adjusted represents the sum of individual series (for example, total tax revenues are the sum total of individual types of taxes), the adjustment can be made by aggregating the seasonally adjusted data of component series (indirect adjustment), or to make adjustment of aggregates (direct adaptation). The choice of method depends on the type of data and purpose of analysis. Indirect seasonal adjustment should be made when the individual series have different seasonal pattern. On the other hand, the quality of the seasonally adjusted series may be higher if the adjustment is done on an aggregated level in cases where the individual series have similar seasonal pattern and are mutually dependent.

Length of time series

In order to perform seasonal adjustment it is necessary that the data series are sufficiently long. The seasonal pattern and calendar effects can not be filtered out from the short time series. It is recommended for the seasonal adjustment of quarterly national accounts[12] that data series are at least 5 years long (20 quarters). Series less than five years can be seasonally adjusted for internal use, but should not be published.[13] Also, time series should not be too long, because it is more difficult to model the seasonal pattern which is more likely to be variable. Calendar effects will probably be quite different during a very long period of time. For example, the effect of the number of working days in industrial production will not be the same in the current period and in the period 30 years ago, because of significant changes in labor productivity.

Publishing of seasonal adjusted series

The practice of publishing seasonally adjusted data varies among countries. Some countries publish seasonally adjusted quarterly national accounts or their trend-cyclical component. Other published seasonally adjusted estimates for a few main aggregates, and presented them as additional information of the official series.

Softwares for seasonal adjustment

Statistical agencies and international organizations have developed programs to facilitate the preparation process of seasonally adjusted data and their trend-cycle component.

Three most used programs for seasonal adjustment are:

1. X-13-ARIMA-SEATS (U.S. Bureau of the Census),
2. TRAMO and SEATS (Bank of Spain),
3. Demetra+ (National Bank of Belgium in cooperation with Eurostat).[14]

Extracting the seasonal component by using the method of seasonal indices

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 approach is based on an implicit assumption about the stability of seasonal pattern over time, i.e. that the effect of the seasonal behavior for a given month or quarter each year is reflected in the rise or fall in value by the same percentage. 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

[12] *Quarterly national accounts* - QNA
[13] 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
[14] IMF, ibid

averages. [15] Although more complex than this procedure, the official correction procedures are generally based on the moving averages.

Charts 2-5 show the original data of imports and VAT on imports in Bosnia and Herzegovina and the seasonally adjusted data. It should be noted that this is a simplified method of seasonal adjustment, with the assumption of a fixed seasonal scheme throughout the period and that the calendar effects which do not have seasonal character were not excluded.

Based on these charts it is easier to observe the trend component of time series, and for the more detailed analysis of trends it would be necessary to consider also the calendar effects and all the irregular components in the observed period (legislative changes, natural disasters, institutional factors, etc.).

Chart 2

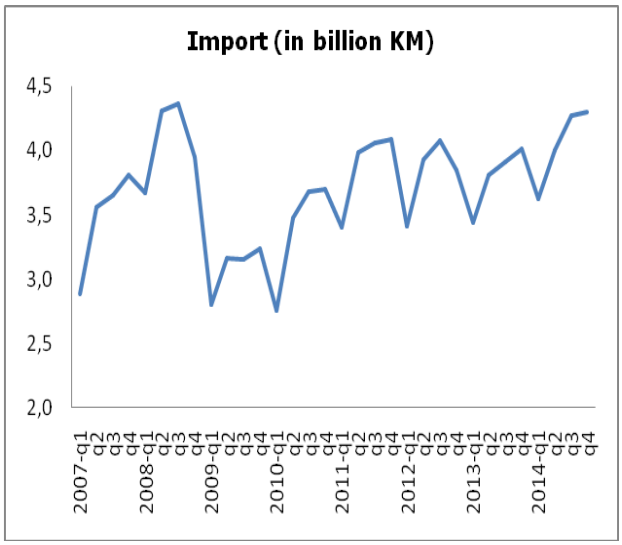


Chart 3

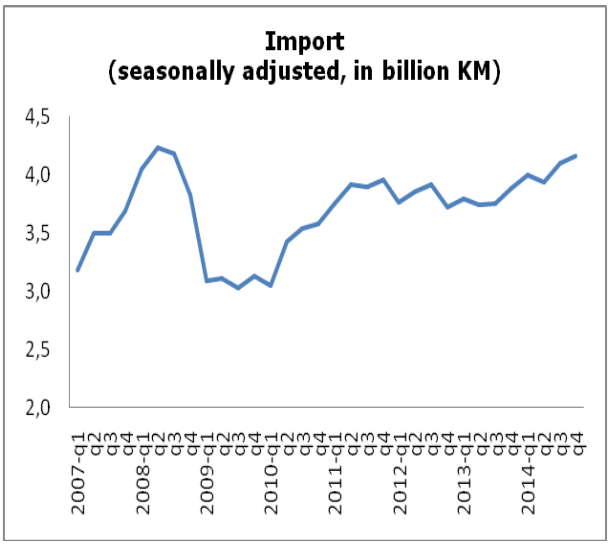


Chart 4

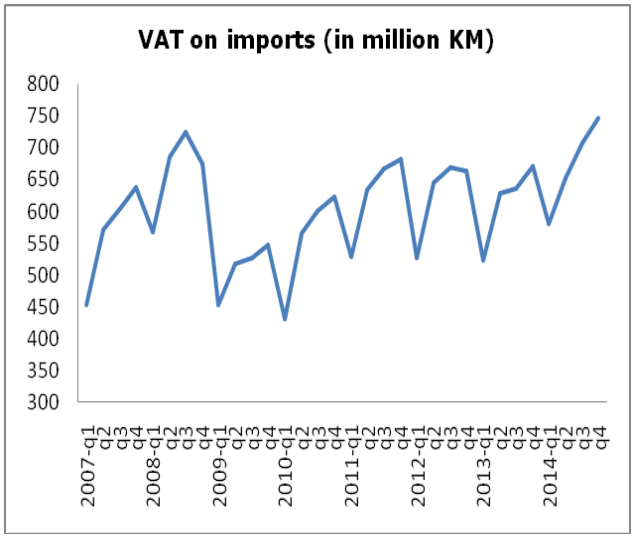
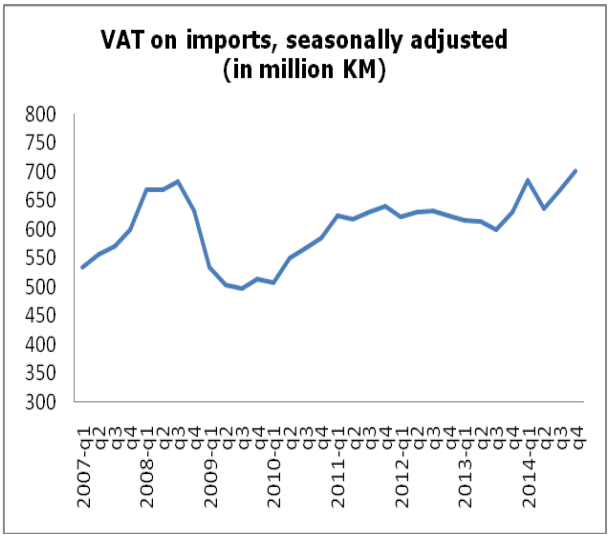


Chart 5



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

Literature

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Consolidated reports

(Author: Aleksandra Regoje)

Table 1 (Consolidated report: B&H institutions, entities, SA)

The preliminary consolidated report includes

- revenues from indirect taxes collected by the Indirect Tax Authority on the Single Account,
- transfers from the ITA Single Account,
- revenues and expenditures of the institutions of Bosnia and Herzegovina,
- revenues and expenditures of the budget of the Federation of Bosnia and Herzegovina,
- revenues and expenditures of the budget of the Republika Srpska.*

Report doesn't include unadjusted revenues collected on ITA SA.

Table 2 (Consolidated report: General Government)

Preliminary consolidated report includes:

- revenues and expenditures of the budget of Institutions of Bosnia and Herzegovina,
- revenues and expenditures of the budget of the Federation of Bosnia and Herzegovina, cantons, cantonal directorates for roads, municipalities and funds in FB&H,
- revenues and expenditures of the budget of the Republika Srpska*, directorates for roads/highways, municipalities and funds,
- revenues and expenditures of the budget of Brčko District and funds in BD

Table 3 (Consolidated report: B&H Institutions, entities, BD)

Preliminary consolidated report includes:

- revenues and expenditures of the budget of Institutions of Bosnia and Herzegovina,
- revenues and expenditures of the budget of the Federation of B&H,
- revenues and expenditures of the budget of the Republika Srpska*,
- revenues and expenditures of the budget of Brčko District.

**Includes: (A) Budget of the Republic and extra-budgetary funds recorded in Treasury General Ledger of the RS, (B) total foreign debt for the projects realized through municipalities and companies, and (C) Budget users who have their own bank accounts (including foreign project implementation units established by ministries)*

Preliminary report: B&H Institutions, entities and SA, I-IX 2015

(in million BAM)	Q1	Q2	Q3	Total
Revenue	1.431,8	1.588,5	1.749,2	4.769,4
Taxes	1.288,1	1.411,8	1.511,2	4.211,1
Direct taxes	95,3	109,0	88,0	292,3
Taxes on income, profits and	91,8	104,4	83,5	279,7
Taxes on property	3,5	4,5	4,6	12,6
Indirect taxes (net)	1.165,4	1.302,1	1.422,7	3.890,2
VAT	726,3	798,5	879,0	2.403,7
Excises	310,8	360,7	387,1	1.058,6
Road fee	66,7	79,2	89,9	235,9
Customs	57,7	59,1	61,6	178,4
Other indirect taxes	4,0	4,7	4,9	13,6
Other taxes	27,4	0,8	0,5	28,6
Social security contributions	17,7	19,2	18,2	55,1
Grants	8,2	4,5	16,4	29,1
Foreign grants	8,0	4,5	14,8	27,3
Transfers	0,2	0,0	1,7	1,9
Other (non-tax) revenue	117,8	152,9	203,4	474,1
Expenditure	1.286,4	1.406,5	1.652,1	4.345,0
Expense	1.271,5	1.392,9	1.609,7	4.274,0
Compensation of employees	391,9	396,8	396,8	1.185,4
Use of goods and services	60,3	77,8	79,2	217,3
Social benefits	157,2	184,5	182,3	524,0
Interest	35,1	59,2	34,8	129,1
Interest payments to non-	23,7	30,2	21,9	75,8
Interest payments to residents	11,4	29,0	13,0	53,3
Subsidies	13,3	16,6	77,5	107,4
Grants, transfers (incl. transfers from	605,6	640,7	801,7	2.047,9
Other expense	8,0	17,4	37,5	62,9
Net acquisition of nonfinancial assets	15,0	13,6	42,5	71,1
Acquisition of nonfinancial assets	20,5	19,8	44,8	85,2
Disposal of nonfinancial assets	5,6	6,2	2,4	14,1
Gross/Net operating balance (revenue minus	160,4	195,6	139,5	495,5
Net lending /borrowing (revenue minus	145,4	182,0	97,0	424,4

Table 1

*** transfers from SA include unconsolidated transfers to BD, cantons, municipalities and road funds*

Preliminary report: General Government, I-IX 2015

(in million BAM)	Q1	Q2	Q3	Total
Revenue	2.724,3	2.997,2	3.175,2	8.896,7
Taxes	1.420,0	1.553,9	1.618,9	4.592,8
Direct taxes	243,1	272,6	229,1	744,8
Taxes on income, profits and capital gains	209,9	236,7	198,6	645,2
Taxes on payroll and workforce	3,4	2,7	3,8	9,9
Taxes on property	29,8	33,3	26,7	89,8
Indirect taxes	1.148,0	1.276,9	1.387,6	3.812,5
Other taxes	28,9	4,5	2,2	35,5
Social security contributions	1.000,8	1.069,8	1.128,1	3.198,8
Grants	11,4	10,0	22,5	44,0
Foreign grants	11,3	7,4	17,5	36,1
Transfers	0,1	2,6	5,1	7,9
Other (non-tax) revenue	292,0	363,5	405,6	1.061,1
Expenditure	2.590,4	2.826,2	2.911,5	8.328,0
Expense	2.547,1	2.717,3	2.789,2	8.053,6
Compensation of employees	818,2	824,5	824,1	2.466,8
Use of goods and services	473,2	494,6	497,6	1.465,5
Social benefits	1.100,1	1.157,2	1.168,9	3.426,2
Interest	47,7	72,0	49,4	169,1
Interest payments to non-residents	25,3	31,4	26,5	83,2
Interest payments to residents	22,4	40,6	23,0	86,0
Subsidies	33,2	53,5	119,1	205,8
Grants, transfers	11,9	22,4	17,7	52,0
Other expense	62,8	93,2	112,4	268,4
Net acquisition of nonfinancial assets	43,3	108,9	122,3	274,4
Acquisition of nonfinancial assets	52,6	122,8	132,6	307,9
Disposal of nonfinancial assets	9,4	13,9	10,3	33,5
Gross/Net operating balance (revenue minus expense)	177,2	279,9	386,0	843,0
Net lending /borrowing (revenue minus expenditures)	133,9	171,0	263,7	568,6

Table 2.

Preliminary report: B&H Institutions, entities and BD, I-IX 2015

(in million BAM)	Q1	Q2	Q3	Total
Revenue	1.014,6	1.121,5	1.192,5	3.328,5
Taxes	867,1	941,8	951,5	2.760,4
Direct taxes	101,6	115,5	93,3	310,4
Taxes on income, profits and capital gains	96,4	108,3	86,3	291,0
Taxes on payroll and workforce	1,5	2,1	2,2	5,7
Taxes on property	3,7	5,1	4,9	13,6
Indirect taxes	737,9	825,3	857,3	2.420,4
Other taxes	27,7	1,0	0,9	29,6
Social security contributions	17,7	19,2	18,2	55,1
Grants	8,3	4,5	16,5	29,2
Foreign grants	8,0	4,5	14,8	27,3
Transfers	0,3	0,0	1,7	2,0
Other (non-tax) revenue	121,4	156,0	206,4	483,8
Expenditure	852,1	941,6	1.097,6	2.891,3
Expense	835,2	925,4	1.050,6	2.811,2
Compensation of employees	407,7	412,5	412,4	1.232,6
Use of goods and services	74,1	84,4	89,6	248,1
Social benefits	162,2	189,6	195,1	546,8
Interest	35,2	59,3	34,9	129,4
Interest payments to non-residents	23,7	30,2	21,9	75,8
Interest payments to residents	11,4	29,1	13,1	53,6
Subsidies	15,4	26,2	82,8	124,4
Grants, transfers	131,5	136,1	198,1	465,8
Other expense	9,1	17,4	37,6	64,1
Net acquisition of nonfinancial assets	16,9	16,2	47,0	80,1
Acquisition of nonfinancial assets	22,5	22,4	49,4	94,2
Disposal of nonfinancial assets	5,6	6,2	2,4	14,1
Gross/Net operating balance (revenue minus expense)	179,4	196,0	141,9	517,3
Net lending /borrowing (revenue minus expenditures)	162,5	179,9	94,9	437,2

Table 3.