

## **Use of administrative VAT data for the short-term turnover estimates in Bosnia and Herzegovina**

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### ***Abstract***

The Agency for statistics of Bosnia and Herzegovina (BHAS) is the state statistical institution which is responsible for production of official statistical data for Bosnia and Herzegovina. Together with two statistical offices at the entity level and Central Bank of Bosnia and Herzegovina, which is responsible for production of monetary and fiscal statistics, consist of statistical system in Bosnia and Herzegovina. Currently, most of the statistical surveys are conducted in a traditional way by using paper questionnaires (PAPI), except for household surveys for which the combination of CAPI and PAPI method has been used. The usage of administrative data sources in official statistics in Bosnia and Herzegovina is currently very limited. Regarding Short-Term Statistics (STS) indicators on financial turnover, there are no available other administrative data sources except VAT data on financial turnover available in short-term (monthly/quarterly) periodicity which could be used for data checking or for replacement of survey data (mixed mode - partial or full replacement).

BHAS received monthly VAT database in May 2017 for the first time with financial turnover data on enterprises and entrepreneurs. VAT data are matched with data from Statistical Business Register (SBR) and first analysis of data and comparisons with available data from STS surveys have been done. Analyses showed that VAT data are suitable and considered to be used in regular production of STS indicators for Bosnia and Herzegovina, at least for small and medium-sized enterprises. Impact of data on entrepreneurs is also calculated. The aim of this paper is to present our experiences in analysis, matching and replacing statistical survey data with administrative data for financial turnover variables for production of STS turnover indicators in Bosnia and Herzegovina.

# **Use of administrative VAT data for the short-term turnover estimates in Bosnia and Herzegovina**

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## **1. Introduction**

The development of official statistics in the last few decades requires monitoring the development of modern technological and software solutions. These solutions consequently contribute to improving the workflow in official statistics through improving the quality of individual survey phases, primarily the data collection process. Beside conducting regular surveys, official statistical institutions are striving to use other data sources in order to be able to reduce the burden on reporting units as well as to reduce the costs of conducting the survey. Concept of „Big Data“ as well as the use of administrative data sources for statistical purposes is getting more and more popular.

The use of administrative data sources has significant benefits for statistical purposes. However, it should be kept in mind that the primary objective of administrative data sources is not to meet the statistical needs but the needs of the administrative source as such. Consequently, administrative data sources require detailed analysis and verification of several basic (conceptual) issues: the definition of variables, the availability of micro data, timeliness of administrative data sources, the periodicity (e.g. monthly, quarterly, etc.). In that respect, there is a question to which extent to use the administrative data sources: whether to check the accuracy of the data collected through statistical surveys or for the partial or total replacement of survey data with administrative data. Additionally, the quality of administrative data sources has to comply with the principles of the Quality Assessment Framework (QAF) based on the EU Code of Practice (EU CoP): relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability and coherence. Developed statistics of the EU countries as well as other countries in the world have been using administrative data sources for statistical purposes. They are mostly using it for partial replacement of statistical data with the administrative data (usually for small and medium sized enterprises in business statistics, while for the large enterprises the data are collected through statistical surveys). Also, those countries have developed IT solutions for the purpose of automatizing this process to the final stage (data dissemination). The official statistics of Bosnia and Herzegovina (BiH) is in early stage of development accompanied by various problems and difficulties. Use of administrative data sources for statistical purposes in BiH gains in importance.

Focus of this paper will be on analysis of administrative data source – VAT database on financial turnover as well as the plans for using them in business statistics for production of short – term business statistics indicators in BiH.

## **2. Administrative data sources in BiH and their use for statistical purposes**

There are numerous administrative data sources in BiH available on different administrative levels as a consequence of complex administrative structure of the country (state, entity, cantonal/municipal levels). Their main characteristics is decentralization, partially non harmonized methodology on data collection for particular administrative levels, almost no or minimal control of data quality, inaccessibility in appropriate forms and formats that would be usable for statistical purposes. In line with administrative organisation of BiH, a statistical system is also set up in that way, resulting in the existence of the: state Agency for Statistics of BiH (BHAS) responsible for production of official statistics for BiH as well as production of data for the Brčko District BiH through the Branch Office (BD BiH) and international relationships and promotion of BiH statistics; two statistical institutions at the entity level: Federal Institute for Statistics of FBiH (FIS FBiH) and Republic of Srpska Institute

for Statistics (RSIS) that produce data for their territory and submit it to BHAS in order to produce the data for BiH level. Their work and mutual relations, rights and obligations, and the way of using administrative data sources, are defined by the laws on statistics at the state and entity levels. Also, BHAS has adopted the set of documents (Decision, Rulebook and Guidelines for taking over and use of administrative data sources in the Agency). In that respect, certain issues are arising regarding data accessibility and availability for the state level, especially in case if they are available at the entity or lower levels. From the stand point of business statistics, the two most important institutions at the state level that possess valuable data are the Indirect Taxation Authority of BiH (ITA BiH) with “The Single Register of Indirect Taxes Taxpayers” (BiH ITT), BiH Value Added Tax Register (VAT Register) and BiH customs database (ASYCUDA Register) and Central Bank of BiH (CBBH) with the database “The Central Registry of Transaction Accounts in Bosnia and Herzegovina” (CRTA in BiH). At the entity level, very important administrative data sources are Taxation Authorities of the FBiH and RS with FBiH System for Registration, Control and Collection of Contributions (ELMO database), Pension and Disability Insurance Fund of FBiH and RS, Financial – Intelligence Agency of FBiH and Agency for Intermediary, IT and financial services of RS (APIF) with the “Single Register of Financial Reports” and other data sources. So far, administrative data sources in business statistics have mostly been used to update the Statistical Business Register (SBR) and to control data collected through statistical surveys. Since 2013, business statistics in BiH have started with rapid development, resulting in an increase in the number of new statistical surveys. A large number of statistical indicators have been produced and an overview of potential administrative data sources of importance for business statistics and cooperation with some of them has been made. In mid of 2017, BHAS has signed MoU with ITA BiH and has officially started with receiving VAT database on turnover in monthly periodicity as well as the data from Single Register of Taxpayers in quarterly periodicity. Further down, basic characteristics of VAT database on turnover in BiH are presented.

## **2.1. Characteristics of VAT financial turnover data in BiH**

ITA BiH collects the data on the realized financial turnover as well as the corresponding amount of VAT in the monthly periodicity throughout VAT form "P VAT" from all business entities registered as VAT taxpayers. VAT forms are submitted to ITA BiH by 10<sup>th</sup> of the current month for the previous (reference) month. VAT taxpayers are, according to the Law on VAT in BiH<sup>1</sup>, all business units which have annual revenue more than 50,000 KM. Also, VAT taxpayers are business units registered for performing foreign trade, international forwarding business units and manufacturers of excisable products in Bosnia and Herzegovina. Unlike some other EU countries or wider, a unique VAT rate in BiH of 17% is applied. In addition to data on enterprises, the VAT turnover database contains the data on entrepreneurs as well as other entities (natural persons) who import certain goods and pay VAT and customs duties on imports. In order to use VAT data on turnover for statistical purposes and considering required deadlines for publication of turnover indicators in short-term business statistics that are in accordance with EU Regulation 1165/98, it has been agreed that VAT database on turnover has to be delivered to the Agency for statistics of BiH on the 22<sup>nd</sup> of the current month for the previous (reference) month. Also, data for the previous 12 months are delivered to the Agency every month in order to monitor eventual changes in the data that would affect the data revision in official statistics. Variable 120 - The turnover is clearly defined by the EU Regulations and Short-term statistics (STS) definitions<sup>2</sup> for each statistical domain (Annexes A to D) and refers to the invoiced amount which represents the sales value of goods or services. Also, data from the Single Registry of Taxpayers that BHAS receives from the ITA BiH in the quarterly periodicity are greatly contributing to updating the

<sup>1</sup> [http://www.uino.gov.ba/download/Dokumenti/Dokumenti/bos/Porezi/PDV/Zakon\\_o\\_PDV.pdf](http://www.uino.gov.ba/download/Dokumenti/Dokumenti/bos/Porezi/PDV/Zakon_o_PDV.pdf)

<sup>2</sup> <https://eur-lex.europa.eu/legal-content/EN/TEXT/PDF/?uri=CELEX:32006R1503&from=EN>

SBR. The SBR of BiH is fully compliant with the SPR in the entities statistical institutions in sense of form and content. The only difference, but very important, is that BHAS does not have individual data on two key stratification variables (turnover and number of employees). Individual data for the entities are available in the entity statistical institutions. Consequently, data control is not possible at the BiH level. By including VAT data on turnover into the SBR of BiH, its quality would be significantly improved, especially because of characteristics of this data source. This would also enable the SBR of BiH to get the turnover data on individual level. Considering the fact that BHAS is given limited access to micro data from the entity statistical institutions, the most of indicators for the state level are produced by using aggregated data from the entities. Therefore, the most of data analysis in this paper has been conducted by using aggregated data. Since the Agency for statistics of BiH possess the individual data for the Brcko District, the most detailed level analysis on industrial turnover (Sections B and C according to EU STS Regulation 1165/98, Annex A) and retail trade turnover (Sections G, group G471 to 474 according to EU STS Regulation 1165/98, Annex C) has been conducted. For the purposes of protection of data confidentiality, the original 13-digit ID numbers are replaced with dummy 13-digit ID numbers.

## **2.2. Data analysis on turnover from VAT database and comparison with survey data**

Data analysis on turnover from the VAT database and survey data covers the period of 12 months 2017. Data have been analysed for the Industry activity – sections B, C, D, E and Retail Trade activity – Section G, groups G471 to G479 according to Classification of Activities of BiH 2010 (KD BiH 2010) that corresponds to the EU NACE Rev.2. The limiting factor in this analysis is certainly the lack of individual survey data for the entities. According to artificially created identification numbers (dummy), turnover data from the VAT database and SBR are matched. This has insured data protection whereby subject matter statistician is not able to see the real ID number, except the statisticians from SBR and IT experts responsible for SBR and VAT data. As mentioned above, SBR of BiH doesn't possess the data on stratification variables for entrepreneurs (except identification data) while the VAT database contains individual data for turnover stratification variable. Firstly, enterprises from SBR are matched with the enterprises from VAT database based on the status of activity: (activity status in SBR „active“, newly established with activity status in SBR of BiH „newly born“), submitted the report for 2016 and other characteristics that should have been met.

The SBR status as of 31.12.2016 was taken as this condition was used to define the sample frame and sample for short-term business survey in 2017. Based on figures presented in Table 1, the total number of enterprises in the VAT database that are matched with data from SPR (active in SPR) for Industry section is 4,695 (most of them are placed in section C - Manufacturing), while for the Retail Trade (G471 - G479), the total number of active enterprises is 3,635. A total of 141 enterprises for section Industry were identified in the VAT database and matched with data from the SBR, whose status of activity in the SBR is "not active", "dormant" or "unknown". For Retail Trade, that number was 62. A total of 35 enterprises were found in the VAT database for sections Industry and Retail Trade which were not identified in the SBR. That is the consequence of business demography characteristics (newly established in 2017).

Table 1. Number of enterprises and entrepreneurs in VAT database\* for **Industry and Retail trade** for BiH, 2017 (Authors' own work)

Region and activity	Section of activity	Total no. of enterprises	Out of which:			No. of entrepreneurs
			active enterprises in SBR	other status in SBR (inactive)	out of scope of SBR	
Federation of BiH, total		5,761	5,680	70	11	2,982
Industry	Section B	88	85	3	0	0
	Section C	2,775	2,736	33	6	1,077
	Section D	82	77	5	0	4
	Section E	185	184	1	0	1
Retail Trade	Section G, G471 - G479	2,631	2,598	28	5	1,900
Republika Srpska, total		2,474	2,343	119	12	2,859
Industry	Section B	70	62	7	1	0
	Section C	1,354	1,268	79	7	883
	Section D	55	50	5	0	0
	Section E	123	120	3	0	8
Retail Trade	Section G, G471 - G479	872	843	25	4	1,968
Brcko District BiH, total		333	307	14	12	258
Industry	Section B	2	2	0	0	0
	Section C	108	101	5	2	61
	Section D	2	2	0	0	0
	Section E	9	8	0	1	0
Retail Trade	Section G, G471 - G479	212	194	9	9	197
Bosnia and Herzegovina, total		8,567	8,330	203	35	6,099
Industry	Section B	160	149	10	1	0
	Section C	4,237	4,105	117	15	2,021
	Section D	139	129	10	0	4
	Section E	317	312	4	1	9
Retail Trade	Section G, G471 - G479	3,714	3,635	62	18	4,065

\* taxpayers with turnover higher than 50,000 KM

Also, for the purpose of the analysis in this paper, we have matched the enterprises selected into the sample frame and sample with the data from the VAT database for the mentioned sections of activity. Below is shown an overview of the matched sample frame and sample for Retail Trade:

Table 2. Number of units in sample frame, sample and VAT database for Retail trade survey for BiH, 2017

Region	No. of enterprises - sample frame**				No. of enterprises - sample			
	Number of enterprises in SBR	Paired with VAT data		Unpaired	Number of enterprises in SBR	Paired with VAT data		Unpaired
		VAT turnover value > 0	Out of which no. of enterprises, VAT turnover value = 0			VAT turnover value > 0	Out of which no. of enterprises, VAT turnover value = 0	
Federation of BiH	1,944	1,887	64	57	874	864	17	10
Republika Srpska	734	711	24	23	457	443	17	14
Brcko District BiH	129	123	5	6	129	123	5	6
<b>Bosnia and Herzegovina</b>	<b>2,807</b>	<b>2,721</b>	<b>93</b>	<b>86</b>	<b>1,460</b>	<b>1,430</b>	<b>39</b>	<b>30</b>

\*\* criteria: turnover higher than 100,000 KM

A certain number of enterprises were identified in the VAT database whose turnover value was 0, while a smaller number of them remained unmatched, which is related to the characteristics of business demography. The next segment of analysis of VAT data is the analysis of identified negative turnover values in the VAT database and the analysis of data revision degree in VAT database. Below is given an overview of data with negative turnover values by sections of activities during the 12 months of 2017:

*Table 3. Negative Turnover values in VAT return forms, by months of 2017*

Month	Activity code, KD BiH 2010 (EU NACE Rev.2)									
	B		C		D		E		G (471 to 479)	
	Number	%	Number	%	Number	%	Number	%	Number	%
1	0	0.000%	20	0.134%	0	0.000%	1	0.054%	4	0.011%
2	0	0.000%	13	0.037%	1	1.423%	0	0.000%	3	0.042%
3	0	0.000%	7	0.026%	1	2.400%	0	0.000%	1	0.001%
4	0	0.000%	7	0.079%	1	0.481%	1	0.000%	1	0.000%
5	1	0.037%	7	0.015%	0	0.000%	0	0.000%	2	0.023%
6	0	0.000%	7	0.022%	0	0.000%	0	0.000%	0	0.000%
7	0	0.000%	6	0.011%	1	0.001%	2	0.068%	2	0.000%
8	1	0.000%	8	0.099%	0	0.000%	0	0.000%	2	0.000%
9	0	0.000%	12	0.022%	0	0.000%	0	0.000%	3	0.003%
10	0	0.000%	10	0.036%	1	0.001%	1	0.000%	2	0.001%
11	0	0.000%	7	0.003%	1	0.110%	1	0.000%	1	0.001%
12	1	0.065%	14	0.084%	2	2.160%	0	0.000%	4	0.000%

In general, the number and share of negative VAT turnover values is very low. For section B, a total of 3 negative turnover data were recorded, while for the section C, this number was 118. Given the relative share of negative turnover values in relation to total turnover for each section, their share ranges from 0% to maximum 2.4% in section D, which is negligible for the total phenomenon. Those negative turnover values are treated in the further processing as zero. Given that BHAS receives data from ITA BIH for the past 13 months, we analyzed the data revision degree by section of activity and measured the impact of data revision on the total turnover data in VAT database:

Table 4. The degree of data revision in VAT database by months of 2017

VAT database delivery in	Section	Reference month, 2017										
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
September 2017	B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.07%				
	C	0.00%	0.01%	-0.01%	0.07%	0.01%	0.00%	0.41%				
	D	-0.16%	0.00%	0.00%	-0.01%	-0.40%	0.00%	0.00%				
	E	0.00%	0.00%	0.00%	0.00%	-0.01%	0.00%	0.02%				
	G (471 - 479)	0.00%	0.00%	-0.11%	0.01%	0.00%	0.03%	0.57%				
October 2017	B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.18%	0.00%			
	C	0.02%	-0.01%	0.00%	-0.02%	-0.01%	-0.05%	0.03%	0.32%			
	D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.01%	0.00%			
	E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.52%	0.97%			
	G (471 - 479)	0.00%	0.00%	0.01%	0.01%	0.01%	0.07%	0.03%	0.02%			
November 2017	B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
	C	0.08%	-0.03%	-0.24%	-0.11%	0.17%	-0.01%	0.09%	-0.06%	0.20%		
	D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
	E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.36%		
	G (471 - 479)	0.00%	0.00%	0.00%	0.00%	0.04%	0.01%	0.01%	0.00%	0.04%		
December 2017	B	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.18%	
	C	0.12%	-0.29%	-0.11%	-0.08%	-0.09%	-0.11%	-0.03%	-0.01%	0.14%	0.13%	
	D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.94%	
	E	-0.12%	-0.09%	0.02%	0.01%	0.00%	0.01%	0.00%	0.01%	0.00%	-0.08%	
	G (471 - 479)	0.00%	0.00%	0.01%	0.01%	0.01%	-0.01%	0.00%	0.02%	0.04%	0.25%	
January 2018	B	0.00%	-0.23%	-0.20%	-0.07%	-0.07%	-0.17%	0.00%	0.00%	0.00%	0.00%	0.00%
	C	0.00%	0.00%	0.01%	-0.04%	0.00%	0.02%	0.00%	0.02%	0.01%	0.02%	0.19%
	D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.05%
	E	0.00%	0.00%	0.00%	-0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.44%	0.00%
	G (471 - 479)	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.17%

Based on conducted analysis, the minimum level of data revisions for sections of activities by months of 2017 has been detected. The data revision ratio, calculated to the total turnover value, is ranged from -0.29% to + 2.52%. This level of revision is negligible and has no significant impact on the total turnover value. In order to analyze the data on turnover from the VAT database and data collected through statistical surveys for the period January - December 2017, the matching of turnover data on Retail Trade (Groups G471 to G479 according to KD BiH 2010) from these two data sources was done. Given that Retail Trade turnover data for BiH is available at the level of the stratum, where each stratum is broken down by classes of turnover and where identification data for the enterprises selected into the sample are available, we made the matching of VAT turnover data by months with data from the monthly survey on Retail Trade turnover (M KPS TRG 01). For practical reasons, beside the absolute figures on turnover, we also calculated chain growth rates. The following cases are taken into consideration:

1. Turnover data for Retail Trade activity (division G47 according to KD BiH 2010) estimated to the total number of enterprises defined in the *sample frame* (%SURVEY FRAME - ENTPRN) for which the data are collected through *monthly survey on Retail Trade turnover* (M KPS TRG 01). *Entrepreneurs are excluded.*
2. Turnover data for Retail Trade activity (division G47 according to KD BiH 2010) calculated to the total number of enterprises defined in the *sample frame* by using the data from *VAT database* (%VAT FRAME - ENTPRN). *Entrepreneurs are excluded.*



3. Turnover data for Retail Trade activity (division G47 according to KD BiH 2010) calculated to the total number of enterprises defined in the *sample frame* by using the data from VAT database ( $\%VAT\ FRAME + ENTPRN$ ). *Entrepreneurs are included..*
4. Turnover data for Retail Trade activity (division G47 according to KD BiH 2010) calculated to the total number of enterprises contained in VAT database ( $\%TOTVAT - ENTPRN$ ). *Entrepreneurs are excluded.*
5. Turnover data for Retail Trade activity (division G47 according to KD BiH 2010) calculated to the total number of enterprises contained in VAT database ( $\%TOTVAT + ENTPRN$ ). *Entrepreneurs are included.*
6. Turnover data for Retail Trade activity (division G47 according to KD BiH 2010) calculated to the total number of *entrepreneurs* contained in VAT database ( $\% VAT ENTPRN$ ).

Growth rates for turnover data in 2017. are shown in the following table:

Table 5. Growth rates of turnover on Retail trade in Bosnia and Herzegovina - G47 according to KD BiH 2010, 2017 (%)

Description	2/1	3/2	4/3	5/4	6/5	7/6	8/7	9/8	10/9	11/10	12/11
<b>%SURVEY FRAME - ENTPRN</b>	-1.9%	24.3%	5.8%	-1.9%	1.1%	8.7%	7.2%	-14.1%	3.4%	-8.2%	11.5%
<b>%VAT FRAME - ENTPRN</b>	2.3%	19.3%	6.6%	-2.0%	2.0%	8.0%	6.9%	-12.7%	4.8%	-7.2%	10.1%
<b>%VAT FRAME + ENTPRN</b>	2.0%	19.9%	6.6%	-1.7%	1.8%	8.0%	6.8%	-12.5%	4.4%	-7.3%	10.3%
<b>%TOTVAT - ENTPRN</b>	2.6%	19.0%	6.4%	-1.6%	2.1%	8.1%	6.5%	-12.4%	4.8%	-6.8%	10.0%
<b>%TOTVAT + ENTPRN</b>	2.2%	19.5%	6.4%	-1.4%	1.8%	8.0%	6.4%	-12.2%	4.5%	-7.0%	10.2%
<b>% VAT ENTPRN</b>	-1.3%	24.7%	6.7%	0.9%	-0.3%	7.3%	5.3%	-10.1%	1.3%	-8.8%	12.0%

Growth rates for above mentioned cases are calculated by using absolute values of turnover.

Due to fact that the Agency for statistics of BiH has no available data on entrepreneurs in the SBR of BiH nor in the surveys, simulations were also made by taking into consideration their data from VAT database. Except the difference in the value of turnover because of including/excluding data for entrepreneurs, presented growth rates show very similar trend of turnover data from VAT database and survey data. In order to test the differences in growth rates, we calculated the Wilcoxon Signed Ranks Test at the significance level 95% ( $\alpha=0.05$ ). For this test we matched the following cases: Case 1 and Case 2; Case 1 and Case 3; Case 1 and Case 4; Case 1 and Case 5. The results are shown in table below:

Table 6. Wilcoxon Signed Rank Test of monthly Retail Trade Turnover (G47) growth rates for BiH in 2017

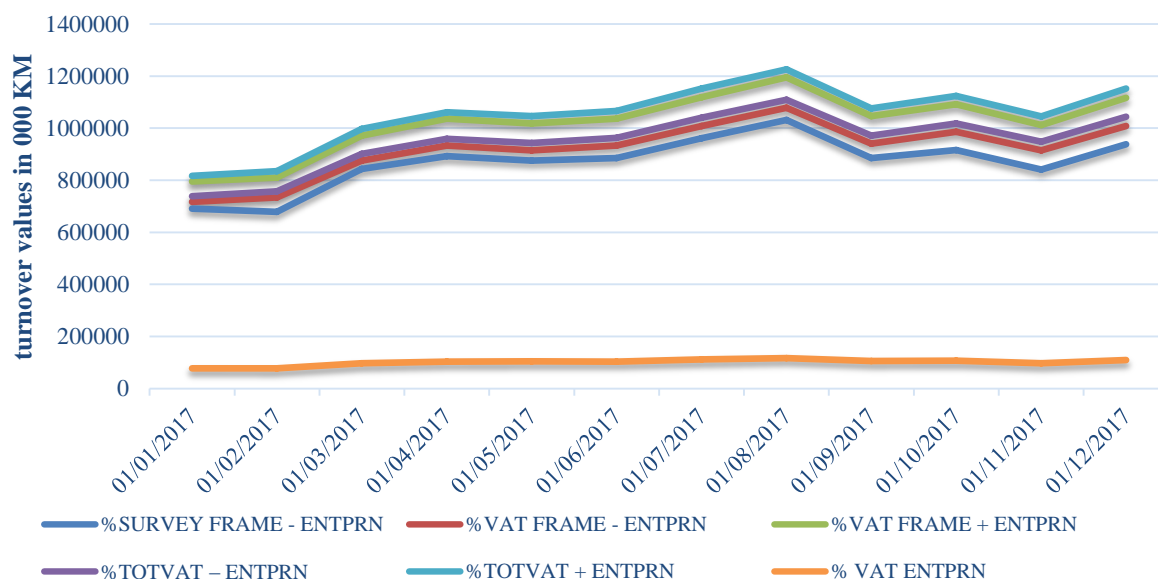
	<b>%SURVEY FRAME - ENTPRN and %VAT FRAME - ENTPRN</b>	<b>%SURVEY FRAME - ENTPRN and %VAT FRAME + ENTPRN</b>	<b>%SURVEY FRAME - ENTPRN and %TOTVAT - ENTPRN</b>	<b>%SURVEY FRAME - ENTPRN and %TOTVAT + ENTPRN</b>
Z	- .711	- .711	- .622	- .622
Asymp. Sig. (2-tailed) - p value	.477	.477	.534	.534

P values are higher than 0.05, so this test shows that there is no statistically significant difference in growth rates of Retail Trade turnover calculated by using the data from VAT database and survey data



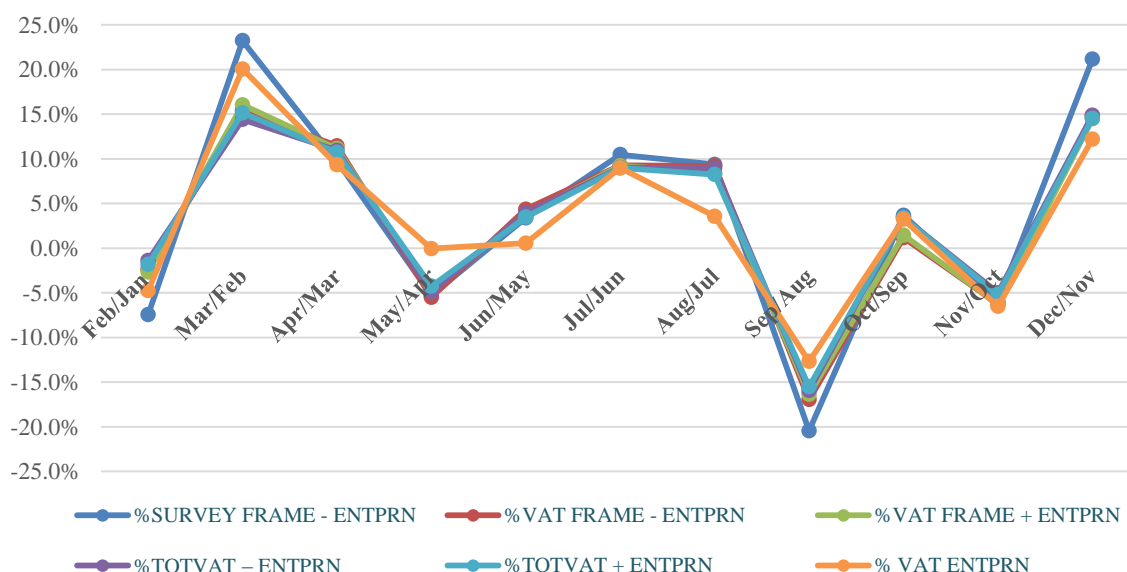
for the period January – December 2017 ( $\alpha=0.05$ ). For 12 months of 2017 we were calculated: the share of turnover data for entrepreneurs (taken from VAT database) in total turnover values for Retail Trade in BiH (Cases 1 to 5). Average share of Retail Trade turnover data for entrepreneurs in BiH is approximately 11%. Also, Retail Trade turnover data don't show the seasonal pattern (influence), as it is the case for Retail Trade turnover data for enterprises from VAT database and survey data. The following graphs show the movement of Retail Trade turnover data in BiH during 2017 for six cases abovementioned.

**Graph 1. Retail Trade Turnover Values (G47) in BiH in 000 KM, 2017**



The share of Group G471 - Retail sale of non-specialized stores in total Retail Trade turnover value for BiH (G47) is approximately 40%. So, the next graph shows G471 series for six cases:

**Graph 2. Monthly growth rates of Retail trade turnover for BiH, G471, 2017**



Also, we were tested the data on monthly industrial turnover for 2017. Analysis showed that the differences in results, obtained from the data taken from VAT database and survey data (M KPS IND

– 1), are higher than for Retail Trade. In this paper is shown the example of differences in results for Industrial turnover (Sections B and C according to KD BiH 2010) obtained from two data sources.

*Table 7. Industrial turnover data for BiH from survey and VAT database (000 KM), May 2018*

Section of activity, KD BiH 2010 (NACE Rev.2)	Survey data, M KPS IND - 1, May 2018				VAT data, May 2018				Growth rate
	FBIH	RS	BD BiH	BiH	FBIH	RS	BD BiH	BiH	
<b>Total B i C</b>	<b>786,723</b>	<b>416,627</b>	<b>34,947</b>	<b>1,238,297</b>	<b>1,034,135</b>	<b>500,635</b>	<b>39,670</b>	<b>1,574,440</b>	<b>27.1%</b>
B	44,697	19,567	0	64,264	55,593	20,715	46	76,354	18.8%
C	742,026	397,060	34,947	1,174,033	978,541	479,920	39,625	1,498,086	27.6%

The difference in results for May 2018 was 27.1%. Having in mind the fact that the Agency do not possess the individual data for the entities, we performed analysis on the reporting unit level for Brcko District BiH. Matching the data and their analysis showed that the main differences were due to differences in the definition of turnover as well as in the level of reporting. Data on industrial turnover (sales of industrial products), realized by industrial enterprises (KAU), are collected through statistical survey while VAT database contains the data on the enterprise level (prevailing activity). Also, data on KAU are not available in SBR of BiH so that could be one of the reasons for those differences. Therefore, beside the data on enterprises available from SBR of BiH, we also use annual PRODCOM and SBS data in order to select the units for monthly survey on industry.

### **3. Future steps and perspectives in using VAT turnover data in business statistics in BiH**

Performed data analysis is the first and very important step towards more intensive work on the introduction of VAT turnover data in production of short-term business statistics indicators in BiH. Arguments supporting the beginning of the use of VAT turnover data for statistical purposes are: periodicity of VAT data collection by the UINO BiH (monthly), the deadlines in which the VAT data is available for official statistics (22<sup>nd</sup> in the month for the previous month), the level details for which the data are available (ID, activity code, address data, turnover structure), availability of data for entrepreneurs who are VAT payers, low threshold for registration as VAT payer (50,000 KM), which represents a very large coverage of business entities, etc. The current situation in the statistical system as well as the degree of development of BiH statistics requires intensive work on the development of all segments of statistics including appropriate IT support. The main difficulties are the inaccessibility of individual survey data in SBR at the level of BiH, as well as the lack of human and resources (primarily IT experts). Future steps planned for the start of using VAT data in production of turnover indicators in BiH are: a more detailed analysis of VAT data from the VAT database and short-term statistical surveys of industry, construction, trade and other services, their matching, verification of analyzes by EU experts, defining the methodology for using administrative turnover data for statistical purposes, development of appropriate IT solutions that will be supported through existing IT applications for STS and redesign of existing short-term business surveys (probably partial replacement of survey data with administrative sources) in order to reduce the burden on reporting units, reduce the cost of carrying out surveys, and enable the subject matter statisticians to devote more time to data analysis.