



USE OF ADMINISTRATIVE VAT DATA FOR THE SHORT-TERM TURNOVER ESTIMATES IN BOSNIA AND HERZEGOVINA



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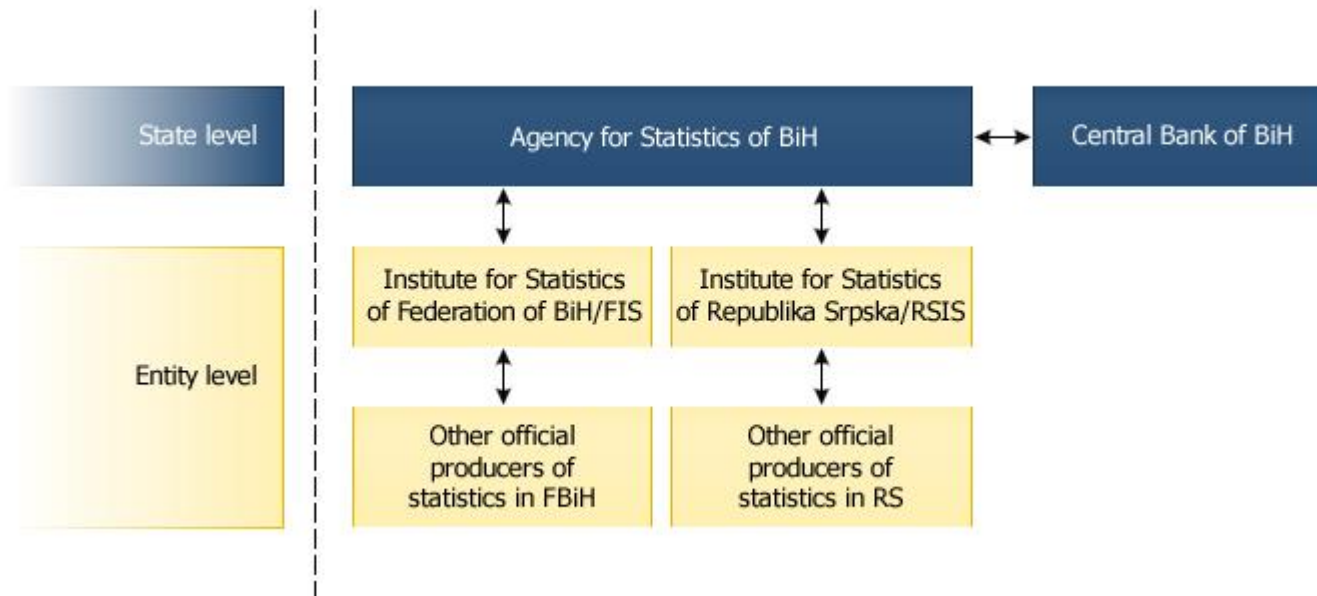
1. INTRODUCTION

- Optimization of statistical production process
- Purpose of administrative data sources
- Characteristics of VAT turnover data in BiH have to be examined
- Partial vs. Total replacement
- Period: January – December 2017

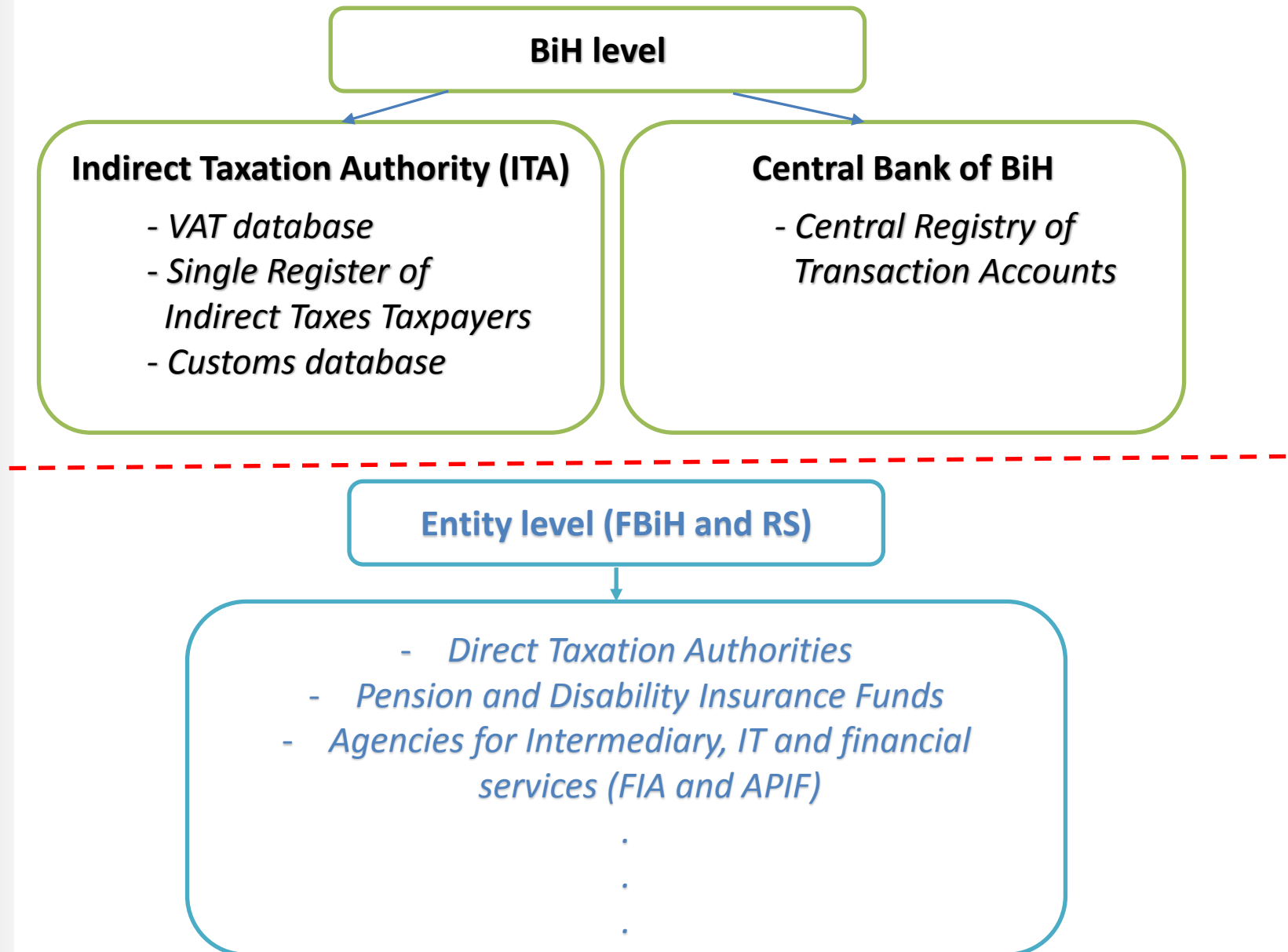


2. ADMINISTRATIVE DATA SOURCES IN BIH AND THEIR USE FOR STATISTICAL PURPOSES

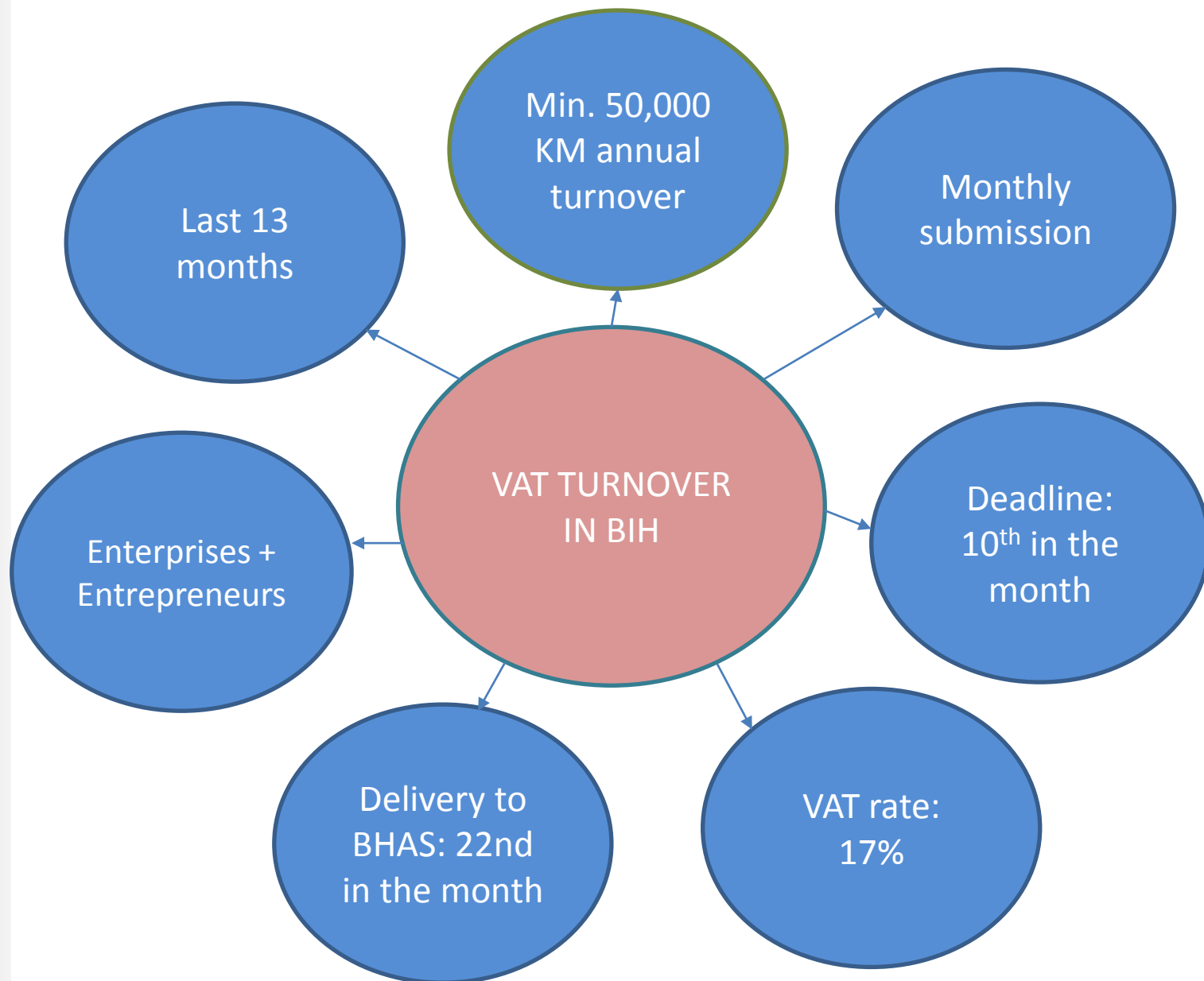
- Admin data sources available on different administrative levels in BiH
- BiH: Decentralisation, methodology, data quality, formats...



2. ADMINISTRATIVE DATA SOURCES IN BIH AND THEIR USE FOR STATISTICAL PURPOSES (2)



3. CHARACTERISTICS OF VAT TURNOVER DATA IN BiH



4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA

- Analysis covers the period January – December 2017
- Comparison of VAT and survey data
- Sections B, C, D, E and G (G471 to G479) according to KD BiH 2010 (EU Nace Rev.2)
- Real ID number replaced with dummy ID
- SBR contains data on turnover as stratification variable in classes, not individual data;
- Data on stratification variables for entrepreneurs are not available in SBR



4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA (2)

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 |

4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA (3)

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 |
| Bosnia and Herzegovina | 2,807 | 2,721 | 93 | 86 | 1,460 | 1,430 | 39 | 30 |

4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA (4)

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% |



4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA (5)

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 | - | 0.00% | 0.00% | - | - | 0.00% | 0.00% | | | | |
| | E | 0.16% | 0.00% | 0.00% | 0.01% | 0.40% | 0.00% | 0.02% | | | | |
| | G (471 - 479) | 0.00% | 0.00% | - | 0.01% | 0.01% | 0.00% | 0.57% | | | | |
| October 2017 | B | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.18% | 0.00% | | | |
| | C | 0.02% | - | 0.00% | - | - | - | 0.03% | 0.32% | | | |
| | D | 0.00% | 0.01% | 0.00% | 0.02% | 0.01% | 0.05% | 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% | - | - | - | - | - | 0.09% | 0.06% | 0.20% | | |
| | D | 0.00% | 0.03% | 0.24% | 0.11% | 0.17% | 0.01% | 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% | - | - | - | - | - | - | - | 0.14% | 0.13% | |
| | D | 0.00% | 0.29% | 0.11% | 0.08% | 0.09% | 0.11% | 0.03% | 0.01% | 0.00% | 1.94% | |
| | E | - | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | - | |
| | G (471 - 479) | 0.12% | 0.09% | 0.02% | 0.01% | 0.00% | 0.01% | 0.00% | 0.01% | 0.00% | 0.08% | |
| January 2018 | B | 0.00% | 0.00% | 0.01% | 0.01% | 0.01% | 0.01% | 0.00% | 0.02% | 0.01% | 0.02% | 0.19% |
| | C | 0.00% | 0.23% | 0.20% | 0.07% | 0.07% | 0.17% | 0.00% | 0.00% | 0.00% | 0.00% | 0.05% |
| | D | 0.00% | 0.00% | 0.01% | 0.04% | 0.00% | 0.02% | 0.00% | 0.02% | 0.00% | 0.00% | 0.00% |
| | E | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.44% | 0.00% |
| | G (471 - 479) | 0.00% | 0.00% | 0.00% | 0.08% | 0.01% | 0.01% | 0.00% | 0.00% | 0.00% | 0.01% | 0.17% |

4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA (6)

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 |
|---------------------------------------|-------|-------|------|-------|-------|------|------|--------|------|-------|-------|
| %SURVEY FRAME - ENTPRN | -1.9% | 24.3% | 5.8% | -1.9% | 1.1% | 8.7% | 7.2% | -14.1% | 3.4% | -8.2% | 11.5% |
| %VAT FRAME - ENTPRN | 2.3% | 19.3% | 6.6% | -2.0% | 2.0% | 8.0% | 6.9% | -12.7% | 4.8% | -7.2% | 10.1% |
| %VAT FRAME + ENTPRN | 2.0% | 19.9% | 6.6% | -1.7% | 1.8% | 8.0% | 6.8% | -12.5% | 4.4% | -7.3% | 10.3% |
| %TOTVAT - ENTPRN | 2.6% | 19.0% | 6.4% | -1.6% | 2.1% | 8.1% | 6.5% | -12.4% | 4.8% | -6.8% | 10.0% |
| %TOTVAT + ENTPRN | 2.2% | 19.5% | 6.4% | -1.4% | 1.8% | 8.0% | 6.4% | -12.2% | 4.5% | -7.0% | 10.2% |
| % VAT ENTPRN | -1.3% | 24.7% | 6.7% | 0.9% | -0.3% | 7.3% | 5.3% | -10.1% | 1.3% | -8.8% | 12.0% |



4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA (7)

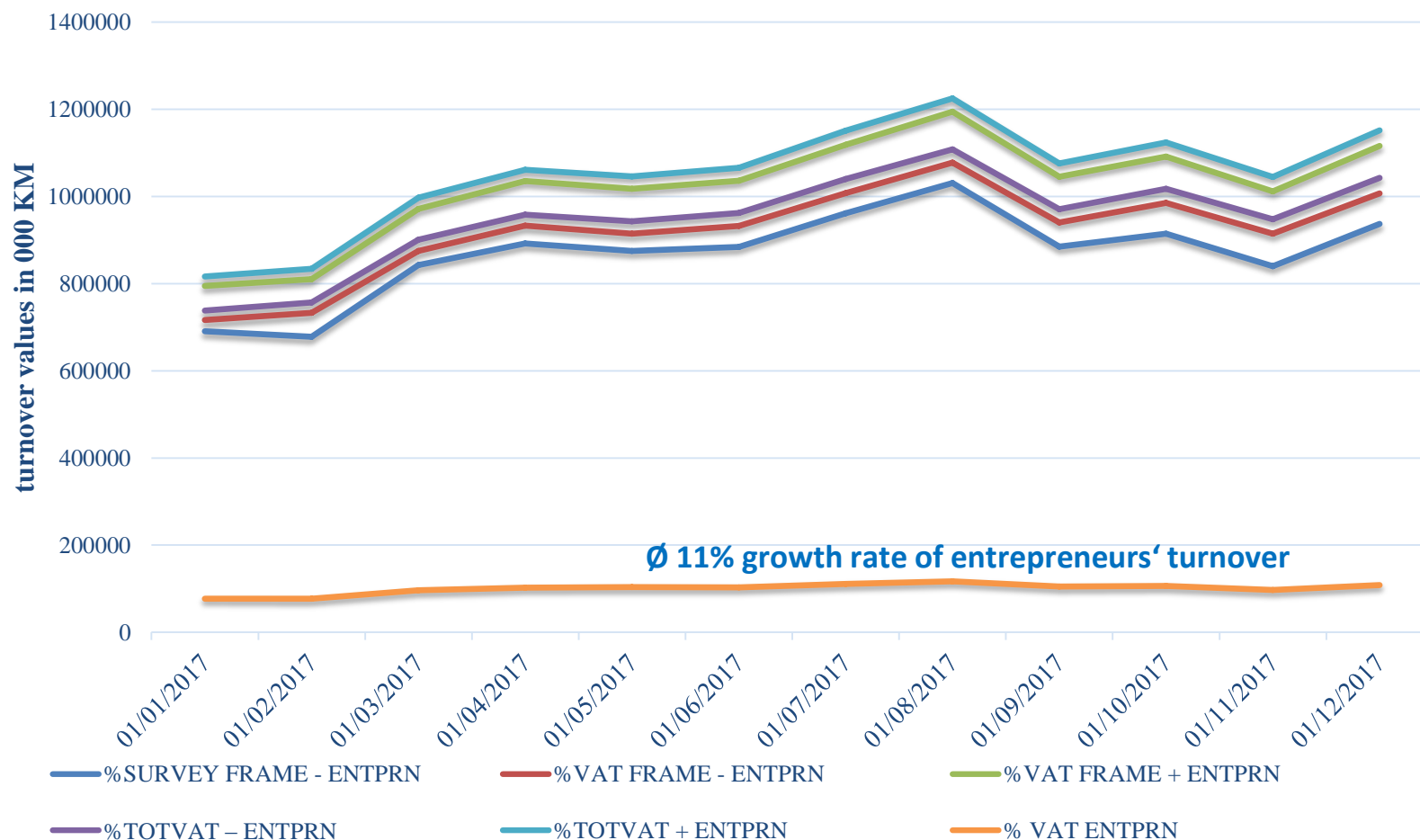
Table 6. Wilcoxon Signed Rank Test of monthly Retail Trade Turnover (G47) growth rates for BiH in 2017

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



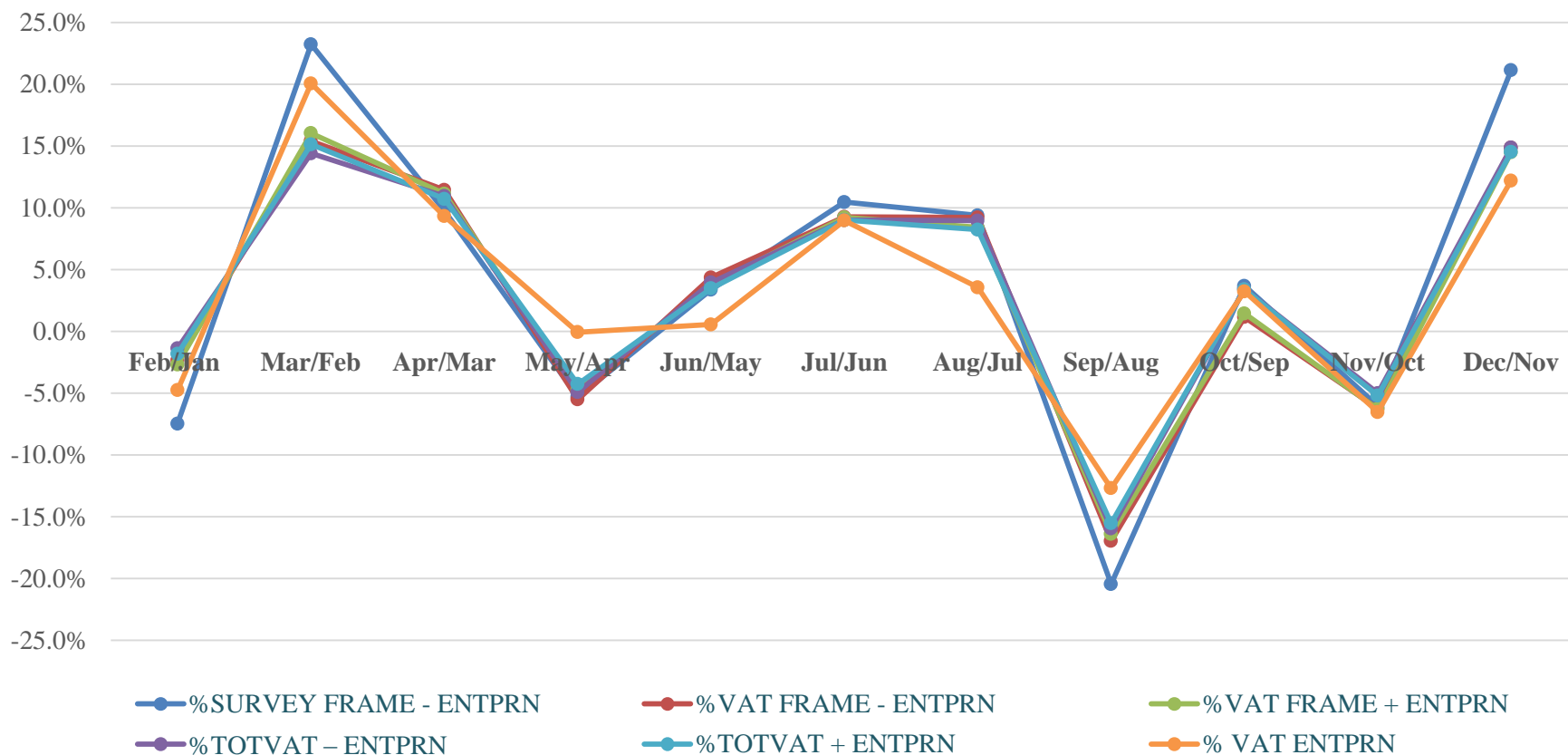
4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA (8)

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



4. DATA ANALYSIS AND COMPARISON OF TURNOVER FROM VAT DATABASE AND SURVEY DATA (9)

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



3. FUTURE STEPS AND PERSPECTIVES IN USING VAT TURNOVER DATA IN BUSINESS STATISTICS OF BIH

Arguments for using VAT data in BiH:

- Periodicity;
- Deadlines;
- Level of details
- Data on entrepreneurs
- Low threshold for VAT registration



3. FUTURE STEPS AND PERSPECTIVES IN USING VAT TURNOVER DATA IN BUSINESS STATISTICS OF BIH

Future steps:

- More detailed analysis of VAT data;
- Verification of analyses by EU experts;
- Defining the methodology for using administrative turnover data in business statistics;
- Redesign of existing short-term business surveys;
- Development of appropriate IT solutions;



QUESTIONS?



THANK YOU FOR YOUR ATTENTION!

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