

TWINNING CONTRACT

BA 17 IPA ST 01 20



Further Support to the Reform of Statistics System in Bosnia and Herzegovina



MISSION REPORT

Activity 1.3.1 E- Index of Production in Construction V Component 1.3.1 - Index of Production in Construction

Mission carried out by
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List of Abbreviations

| | |
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| BHAS | Agency for Statistics of Bosnia and Herzegovina |
| BiH | Bosnia and Herzegovina |
| CBBH | Central Bank of Bosnia and Herzegovina |
| EC | European Commission |
| EU | European Union |
| FBiH | Federation of Bosnia and Herzegovina |
| FIS | Institute for Statistics of Federation of Bosnia and Herzegovina |
| MS | EU Member State |
| RSIS | Institute for Statistics of Republika Srpska |
| RTA | Resident Twinning Adviser |
| ToR | Terms of Reference |

1. General comments

This mission report was prepared within the EU Twinning Project "Further Support to the Reform of the Statistics System in Bosnia and Herzegovina". It was the fifth mission to be devoted to the Index of Production in Construction Subcomponent of the Project.

The purposes of the mission were:

- Follow up on the actions agreed on last mission (D)
- Detailed STS micro data analyses on hours worked
- Preliminary assessment on the methodology able to manage both the missing data and the panel of the target population
- Comparing the performance of the index based on the hours worked and the one related to the value of production
- Looking at the similarity/dissimilarity of the short-term profile of the indicators at the entity level
- Timeliness of the required data for the methodology based on the deflated value of production and their implication for a revision policy
- Timeliness for the implementation of the new IPC based on the deflated value of production
- Dissemination of IPC within a broader set of STS indicators by a monthly report on BiH economy
- Preparation of ToR for next activity

The consultants would like to express their thanks to all officials and individuals from Bosnia and Herzegovina met for the kind support and valuable information, which highly facilitated the work of the consultants.

The views and observations stated in this report are those of the consultant and do not necessarily correspond to the views of EU, BHAS, FIS, RSIS, CBBH, Statistics Denmark, Statistics Finland, Statistics Sweden and The Italian National Institute of Statistics.

2. Assessment and results

The mission agenda was defined as follows:

1. Analysis of coherence between STS, SBS and National Accounts at macro level.
2. Comparison between SBS and STS micro data by using the link to unit and checking for presence of outliers.
3. Analysis for STS variables on balanced and unbalanced panel data set for 3 years.
4. Presentation of Roberta De Santis on dissemination of STS indicators for economic analysis.
5. Outline for methodological paper on IPC calculation and construction statistics.
6. Future activities on R training for IPC calculation and seasonal adjustment (RJDemetra).

7. Agenda for the activities for 2023 regarding IPC calculation both from experts and statistician with deadlines.
8. Deflation of value of performed works (F41 quarterly and F42 annual data): temporal disaggregation or constant deflator for the whole year?
9. Backcasting, rebasing, seasonal adjustments and revision policy.

The expert discussed the coherence of Index of Production in Construction (IPC) using other macro indicators on construction sector. Data were downloaded from Eurostat database for Bosnia-Herzegovina, France, Germany, Italy and Spain using Structural Business Statistics (SBS) data on the variables Number of Enterprises, Value Added, Value of Production and Turnover for the period 2005- 2019 (for BiH from 2011) and National Account (NA) data on the variables Value Added Chained Linked and Current Prices in Construction Sector for the period from Q1-2005 to Q3-2021.

For all the countries in terms of annual growth rate IPC has the highest correlation with value added from National Account: for BiH the correlation is around 0.7 while for Italy is almost 1. This is, however, due to fact that in Italy the IPC is the main input to measure the value added in the construction sector. In all the countries the IPC correlation with SBS value added is lower.

For BiH, considering the quarterly IPC growth rate, the magnitude of the correlation with value added from National Account decreases and notably from 2015 it is very low. It would be important to discuss the reasons behind this evidence with some experts from national account.

Experts, afterwards, in order to investigate further the differences in IPC measurement between the two BiH entities showed the results of some analysis using microdata from SBS and STS run with a R program code. The code and the output will be provided to the BiH representatives.

In particular, using microdata from SBS the correlation between value of production, cost of raw materials and hours worked was measured for each entity and for each available year. Using the same variables separately for each entity a Cobb-Douglas production function was estimated. The coefficients proved to be different for each year in the time span (entity 1 from 2017 to 2019, entity 2 from 2018 to 2020).

These results suggest that the estimate might be biased by outlier presence and thus the analysis has to be deepened further.

Experts then compared for the two entities using microdata from STS the hours worked on site, workers on site and value of production the quarterly growth rates. As a result value of production series showed for both entities more volatility.

In order to understand the effects of editing and imputing technique on STS data a panel of firms for both entities and for value of production, hours worked and workers on site was created only for residential building (41). Therefore the sum of each variable was calculated i) using all the observations, ii) removing the observations of firms with at least one missing value, iii) removing the observations of firms with at least one missing values or zero .

The following evidences emerged:

- i) In entity 2 there is less difference due to the effect of missing values;
- ii) In both entities there is similar behaviour for all the variable even if value of production shows higher variability;
- iii) There is presence of seasonality in entity 1 for value of production and hours worked while for entity 2 only after 2020.

Experts presented a proposal to disseminate the IPC statistics also within a monthly report on the BiH economy. The Istat experience of the monthly report on Italian economy was shared and discussed. The expert underlined that adding some economic analysis to the evolution of construction sector indicators within a broader set of short term statistics proved to be more appealing and comprehensible for media and people.

3. Conclusions and recommendations

It would be appropriate to devote more analysis to understand the difference between missing value and zero value and how to deal with them. To this end before the next mission the representatives should provide the experts with updated microdata for the two entities.

Along the mission, it has been presented the outline of the methodological paper that will complement the new methodology of IPC calculation which is structured as following:

1. Introduction
2. The organisation of the statistical agency (entities)
3. Main characteristics of the methodology on IPC from the Eurostat's guidelines
4. Macro data: comparison among quarterly VA and IPC for main European countries and Bosnia-Herzegovina and entities
5. Micro data for entity: differences in the distribution of hours worked, employees and value of production for entity and F41 and F42
6. Treatment for zero production and missing observations: characteristics of the panel
7. Characteristics of the seasonal behaviour
8. Comparison with SBS data
9. Proposal for a new estimator
 - a. Hours worked vs value of production (deflated)
 - b. As the previous point a with different treatment of missing/zero data

4. What to do before the next missions for the BC Counterpart

| Action | Deadline | Responsible person |
|---|---|-----------------------------|
| Update of SBS (2019-2021) and STS (2019- 2022) microdata for entity with a specification for the treatment of zeroes NA | Before the mission in March | FIS, RSIS, BHAS |
| Preparation of annual and quarterly deflator for construction sector | Before the mission in March | FIS, RSIS, BHAS |
| Comparison of quarterly VA and IPC for entities | Before the mission in March | MS Experts |
| Meeting with NA and SBS experts | Before the mission in March | FIS, RSIS, BHAS |
| Completion of the R code for the comparison of different methodologies for IPC | Before the mission in March | MS Experts |
| Completion of the R code for the comparison of STS and SBS micro data | Before the mission in March | MS Experts |
| Preliminary version of the program for introduction to R for IPC | Before the mission in January | MS Experts, BHAS |
| Preliminary version of the methodological paper | Before the mission in March | MS Experts, FIS, RSIS, BHAS |
| Preparation of the proposal for the new IPC considering a backcasting methodology | Before the 2 nd mission on IPC | MS Experts, FIS, RSIS, BHAS |
| Preliminary activities for rebasing procedure | Before the 2 nd mission on IPC | MS Experts, FIS, RSIS, BHAS |
| Preliminary analysis for seasonal-adjustment | Before the 2 nd mission on IPC | MS Experts, FIS, RSIS, BHAS |
| Preliminary version of the program for advanced R for IPC calculation and seasonal adjustment | Before the 3 rd mission on IPC | MS Experts, BHAS |

Annex 1. Terms of Reference for the current mission

Terms of Reference

EU Twinning Project BA 17 IPA ST 01 20

Component 1.3.1. E - Index of Production in Construction (IPC)

Tuesday 13th- Friday 16th December 2022

On-site meeting

Venue: Republika Srpska Institute of Statistics, Vladike Platona bb, Banja Luka.

Activity 1.3.1.E: Index for Production in Construction V

1. Mandatory results

IPC produced according to the FRIBS (current EU regulation STS No 1165/98)

New methodology for calculation of Index of Production in Construction / IPC developed (by using value data and CPPI as deflator)

IPC produced and delivered to Eurostat (Non-Adjusted (NSA), Working-Day Adjusted (WDA) and Working-Day and Seasonally Adjusted (SA))

Indicator / Relevant Milestones / Internal deadlines:

Indicators for IPC published and delivered to Eurostat

2. Purpose of the activity

- Follow up on the actions agreed on last mission (D)
- Detailed STS micro data analyses on hours worked
- Preliminary assessment on the methodology able to manage both the missing data and the panel of the target population
- Comparing the performance of the index based on the hours worked and the one related to the value of production
- Looking at the similarity/dissimilarity of the short-term profile of the indicators at the entity level
- Timeliness of the required data for the methodology based on the deflated value of production and their implication for a revision policy
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- Dissemination of IPC within a broader set of STS indicators by a monthly report on BiH economy.
- Preparation of ToR for next activity

3. Expected output of the activity

- The items described under *Purpose of the activity* started
- Mission report prepared
- Updated road map/work plan for the component
- ToR for the next mission/activity

Annex 2. Topics for the next mission

R training for IPC calculation: 16th-18th (noon) January 2023 (Banja Luka)
IPC methodology : 20th-22nd (noon) March 2023 (Sarajevo)

Annex 3. Persons met

BHAS:

Fahir Kanlić, Head of Department for Industry and Construction Statistics

Anita Brković, Senior Advisor for Construction Statistics

FIS:

Nusreta Imamović, Head of the Department for Industry, Construction and Energy Statistics

Edina Dulić, Senior Advisor for Construction Statistics

RSIS:

Biljana Djukic, Head of Production Statistics Department

Želimir Radišić, Senior Officer for Construction Statistics

Danica Babić, Senior Officer for Structural Business Statistics

RTA Team:

Niels Madsen, RTA

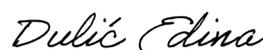
Biljana Strika, Interpreter

Signatures

For the approval of the contents of this report, representatives from BHAS, FIS and RSIS as well as MS experts and the RTA sign here:



Component leader, BHAS



Component leader, FIS



Component leader, RSIS



RTA



MS Expert



MS Expert



MS Expert