

TWINNING CONTRACT

BA 15 IPA SR 01 17

Support to the reform of the statistics system in Bosnia and Herzegovina



MISSION REPORT

**Activity 2.1.8:
IT upgrade of SBR II**

**Component 2: Business Statistics
Sub-component 2.1: Statistical Business Register**

Mission carried out by
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List of Abbreviations

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 "Support to the reform of the statistics system in Bosnia and Herzegovina". It was last mission to be devoted to Creation of Enterprise Groups in SBR as part of Component 2.1 Statistical Business Register of the project.

The purposes of the mission were:

- Finalize the model for creation of Enterprise Groups from administrative data and inclusion of those in SBR,

The consultant would like to express his thanks to all officials and individuals met for the kind support and valuable information which he received during the stay in Bosnia-Herzegovina and which highly facilitated the work of the consultant.

The consultant has been involved in the development of SBR since 2006 and would like this opportunity to thank all staff being involved in SBR projects over the years. It has been my pleasure to work with a group of dedicated persons and I believe everyone that has been involved can be proud of the results achieved.

This 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, INSEE, Statistics Finland and Croatian Bureau of Statistics.

2. Assessment and results

During this mission the model for the creation and maintenance of Enterprise Groups (EG) in SBR that was produced in the previous mission, was reviewed and modified and expanded taking the experience gathered by BHAS, FIS and RSIS since last mission.

The basic approach of the model is unchanged and the goal of creating a model that requires a minimum of resources has been achieved.

All the data that is used for this task can be obtained from public registers (on the internet) so there is no need to consider data confidentially as data is exchanged between the statistical institutions as part of the process.

It was agreed, because an Enterprise Group may contain Enterprises from more than 1 entity BHAS will be responsible for this part of the system, but the Entities will still have the responsibility for Enterprises, Local Units, Legal Units and Local Legal Units.

This is possible because changes to Enterprise Groups never leads to changes in any of the other units.

The issue of 'real' Enterprises (that is an enterprise with more than one legal unit) was discussed and the need for manual inspection in relation to update of EGs was kept at a bare minimum.

The issue of assigning Activity code to EGs is still not finally solved. The approach given in the recommendation's manual cannot be used as the required data (Value added) is not available. Since BHAS has been assigned the task of responsibility for EGs it was agreed that BHAS will be responsible for the task of creating the algorithm for assigning activity code. It will not be possible to make an algorithm covering all EGs, the goal is to cover at least 80 % in the first attempt.

3. Missing data

During the preceding missions regarding this topic, starting in October 2016, it has been assumed that it would be possible to obtain data about all relations of (partly) ownership between legal units and information about the share of ownership where there is more than 1 founder for a legal unit.

During this mission it became clear, that in the case of Federation and District of Brčko that in the case there is more than 1 founding body the data obtained from administrative source only contains 1 of the relations, in most cases for the 'majority' owner, and no information about the share.

It will still be possible in this circumstance to build enterprise groups however it was demonstrated during the mission that this will in some cases lead to errors. Some legal units will be falsely assigned as members of an EG and others belonging to a group may not be recognized. It is difficult with the data available to estimate the number of EGs that may be affected.

The information needed is available in registers that can be searched on the internet. Consequently, the information is both present and it is not confidential information. However, getting this information for more than 1 unit browsing the internet would be so time consuming that it should not be considered.

It seems that this information exists in registers on the state level. It is strongly recommended that BHAS do make another attempt to get a data set containing all relations (including the capital invested by each founding unit).

It is noted that according to the law establishing BHAS, BHAS is entitled to receive such data from other public organisations.

4. Conclusions and recommendations

BHAS, FIS and RSIS should complete the work of introducing EGs in SBR based on the proposed model (with minor corrections as needed) and as soon as the issue with missing data has been resolved.

Annex 1. Terms of Reference

Terms of Reference

EU Twinning Project BA 15 IPA ST 01 17

Component 2: Business Statistics

Sub-component 2.1: Statistical Business Register

02 - 06 December 2019

**Hosting Institution: Institute for Statistics of Republika Srpska,
Veljka Mladenovića 12d, Banja Luka**

Activity 2.1.8: IT upgrade of SBR II

1. Mandatory result and benchmarks for the component

Mandatory result:

- Volume of characteristics in the Statistical Business Register increased and quality of data improved in line with EU standards by 8th project quarter

Benchmarks:

- 5-year development plan for the statistical business register updated and adopted by 2nd project quarter
- Staff trained in profiling methods by 5th project quarter
- First test profiling created by 5th project quarter
- 5-year development plan for the statistical business register updated and adopted by 8th project quarter
- Enterprise groups data integrated into the statistical business register by 8th project quarter
- Plan developed for updating the statistical business register data model by 8th project quarter

2. Purpose of the activity

- Upgrading of IT application in the SBR
 - Follow up from the previous Mission (2.1.7)
 - Realisation tasks from the time table (Annex 5, Mission Report 2.1.7)
 - Finalizing of the procedures for creation and updating of EGs in SBR
 - Review of the model, procedures and rules for creation and updating of EGs in SBR
 - Any other issues that may occur during implementation

3. Expected output of the activity

- Plan developed for updating the SBR data model
- Adjustment to the SBR made

4. Participants

Agency for Statistics of BiH (BHAS)

- Dzenita Mustafic, SBR Coordinator
- Mevlija Odobasic, SBR
- Ivana Tavra Colo, SBR
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Annex 2. Persons met

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Annex 3. Draft model for creation of EGs and updating of SBR.

The results of the work done, and experiences gathered since last mission was discussed during the mission. Based on that discussion the model has been updated.

It should be noted, that this is a second draft of the processing and may need further considerations and refinements.

The purpose of the task described is to create and update Enterprise Groups (EGs) in SBR based data from administrative sources on the structure of ownership between legal units.

The work is split up in the 9 steps

1. Normalise and standardise input from sources to a common format and using standard classifications.
2. Update of (creation of) register of Foreign Legal Units
3. Filter out relations not meeting the criteria for further processing
4. Check for circular references
5. Assign Share of ownership (manual or(semi)- automatic)
6. Use the algorithm to create Enterprise Groups.
7. Create transactions to update SBR
8. Process the transactions
9. Activity codes and status

Data about relation between two domestic legal units can be found in APIF(RS) and Tax-register (FS,DB). The registers contain data about child units in the respective entity.

Due to the problems of obtaining all relevant data from the Tax-register (see missing data in the main text), an alternative seems to access a state level register holding all the data needed for all of BiH (domestic units). If this data can be obtained (by BHAS), then it seems natural not to split the process as proposed between the three institutes as BHAS will then have all the necessary data to run the whole process.

Data from Central Bank (CBBH) is selected as the source for data on relations between domestic legal units (partly) owned by foreign units, as it covers all of BiH.

APIF does contain the same information regarding for units in RS and has the benefit of adding ID numbers to foreign units. However, it was decided, that the benefit of these ID numbers could not justify the extra complexity involved in using two (or more) different sources.

As mentioned in the previous report, it is not anticipated that BiH will be partner in the EEG for a foreseeable future. At present focus will be on domestic EGs, but also truncated EGs where the head of the group is a foreign (legal) units.

It has currently not been possible to find a source for foreign units controlled by domestic unit, so the SBR will not contain any information regarding such units. However, it seems that CBBH is about to collect that such data and when available they may be processed.

All the data that is used for this task is can be obtained from public registers (on the internet) so there is no need to consider data confidentially as data is exchanged between the statistical institutions as part of the process.

Step 1a. Check data from APIF and Tax regarding domestic unit

This step is carried out on Entity level. (see note above).

It should be noted, that relations where one (or both) units is a natural person, public sector or a foreign unit are not processed (filtered out). Only relations between domestic legal units is considered.

It should be checked that the ID of Parent and Child units are valid IDs (For process Tax_ID will be used by FIS, DB and RS)

If an ID number has no match, the record is removed. The supplier may be given a list of these relations with information about whether parent and/or child ID is invalid.

The following transactions are created

- Parent Unit identified by Tax_ID.
- Child unit identified in the same way

Step 1b. Normalise and standardise data from CBBH

This process is carried out by BHAS.

The relations to foreign unit will hold the ID of the domestic unit. The foreign unit is identified by country code and the name of the unit. The foreign unit is the parent (owner) and the child must be a domestic legal unit.

Some of the ID numbers received from CBBH are invalid, that is there is no match in SBR legal units. The first subtask is to validate the ID numbers. If an ID number has no match, the record from CBBH is removed. CBBH may be given a list of these relations with information about whether parent and/or child ID is invalid.

CBBH has their own classification for country codes. However, it seems that the data received may contain codes that are not in the classification. Similar to above such records are removed and CBBH may be given feedback.

Since this operation is in fact done by a lookup in a table of valid code, the opportunity should be taken to transform valid codes into the standard used by Eurostat (based on ISO).

The following transactions are created

- FLE_SBR_ID (to be added in step 2)
- Country code of Foreign unit (ISO)
- Name of the foreign unit
- Child Unit identified by Tax_ID

Step 2. Update (or Create) register of foreign units

This step is also carried out by BHAS to complete the set of transactions created in step 1b.

ID for foreign units is added to the transactions.

Central in this process is the register (table) of Foreign Legal Units (FLE).

It contains

- *FE_SBR_ID*
- Country Code
- Name of Unit
- Year entered in register
- Year of cessation (not mentioned in any relation)
- ID of Foreign unit (not yet available)

Transactions is matched by country code and name.

If match, the ID from FLE (*FE_SBR_ID*) is inserted in the transaction.

If there is no match in FLE, a new unit is created in FLE. The *FE_SBR_ID* is created using the same procedure as is used for Enterprise ID in SBR, but first digit is set to 4. The ID of the new unit is then transferred to the transaction.

It should be noted, that FLE is likely to contain ‘duplicates’ as the name may be spelled with slight differences. If ID number would be added at some future day, they should be used instead of Name, hoping that this (at least partly) will solve the problem. However, there will not be any way to automatically validate the ID of foreign units, by Name and ID.

As a result, for EGs with a foreign head in some case there may be several EG’s established in cases where there ideally should only be one.

Step 3. Filter out relations not meeting the criteria for further processing

The transactions created in step 1a and step 1b need to be transferred to a single data set for further processing.

Because this step requires that all transaction for BiH is processed it is carried out by BHAS.

Because data on share of ownership is not easily available, it is decided only to process units with an employment above a certain threshold (And any unit related directly or indirectly to such units) and units that is already part of an Enterprise Group is SBR.

The first step is for each transaction to determine, by consulting SBR, if any domestic unit (parent or child) is having an employment above the threshold. The threshold is defined as employment class size ≥ 4 .

Step 3a

All Domestic IDs (both child and parent) for transactions with employment above or equal the threshold are added to a table of IDs (if not already there).

Step 3b

To this table is then, from SBR, added to IDs of Legal Units (Tax_ID or RS_ABR_ID as relevant) that is part of any existing Enterprise group (active or inactive).

Step 3c

Now transactions need to be processed again. If one (only one) of the IDs is in the table of ID's, the other ID is added to the table.

This step is repeated as long as any ID as added to the table.

Step 3d

A new set of transaction is containing transactions where parent or child is in the list of IDs
The new set of transaction is input to step 4.

Step 4. Check for Circular references

Before proceeding, it should be checked that the material does not contain circular references, both directly and indirectly. I.e. 1 is parent of 2, 2 is parent of 3 and 3 is parent of 1.

If this is the case, the reason for this should be examined and corrected.

Step 5. Assign Share of ownership (semi- automatic)

This process is taken its offset from the Child units. It is carried out on the level of the entities based on the entity of the child. Agency will transfer relevant transactions to each entity. (see note above)

A prerequisite for this step is, that all relations between child and parents are known, or at least all relations where child and parent is legal units.

In this step information about share of ownership should be added to the transactions.

This information may potentially be obtained from APIF, Tax authority or Court registration or (in case of foreign units) from CBBH.

It still must be further examined to what extent it may be possible to obtain this information in electronic form, potentially by sending a list of requests listing the relations where the information is needed.

If the information about amount of invested capital can be found for all parents (founders), then the data is simply added to each relation and then converted to % and this step is completed.

If for some reason not all data can be obtained, the following procedure is may be carried out.

The information at this stage is obtained in absolute values (KM).

It could be expected, that for a (large) number of the child units there is actually only 1 parent. In this case there is no need to obtain data about the contribution, as the result anyway will be 100% ownership in the end.

After the first year, data from previous year is also a potential source (also in absolute value). But data older than previous year will not be useful, so there is no reason to have a register that is updated, just a simple table with data from previous year.

Based on this the following table is constructed (using all sources available in electronic format)

Child_ID
Parent_ID
Share
Source 1
Source 2
Source 3

...

Data from the different sources are put into Source 1, 2 etc.

The order of sources indicates the priority of the source

Now

CASE data is available from Source 1, this is copied to Share

CASE data is available from Source 2, this is copied to Share

Etc

This table is now converted to an Excel spreadsheet for manual inspection and correction. Most important is to handle relations where there is no share (that is no sources gives any information). Such rows could be highlighted in the spreadsheet.

It should be noted, that in the case values from previous year is used, if the structure of ownership has changed (some units is no longer parents), the assumption will be that the relative part of ownership between remaining partners is unchanged.

In the case where there is data for only some of the parents, the whole structure should be re-examined.

When the spreadsheet is completed it is converted to a table. Data is absolute values are saved (for use in next year) and share is then converted to %.

Data set aside above (1 parent only) is then added to the table with share as 100 (%).

If this step is carried out at Entity level, all data should now be combined into a single register for further processing.

Step 6. Use algorithm to create EG

Using the algorithm in annex 6 of the previous report the Enterprise groups are created. (Taken from the mission report on 2.1.5 17-26 October 2016 (from previous twinning project) the Enterprise groups are created.

Note that the input to that process is the transactions created in step 5.

The output from this process is

Relations

RootID (Tax_ID or RS_ABR_ID or FE_SBR_ID)

ChildID (Tax_ID or RS_ABR_ID)

Type Of Control (Direct or indirect)

RootIDs is the same as enterprise ID.

Step 7 Create transactions to update SBR

In order to update SBR, transactions are created by comparing the relations created in step 6 with the existing relations between Enterprises and EnterpriseGroups.

First, in the relations, Tax_ID is converted to Enterprise_ID

The root may be domestic or Foreign. Any relations where child is a Foreign Unit is not processed.

The table in SBR contains fk_.. as UID, make a copy where these are replaced by Enterprise_ID and EG_ID.

Remove duplicates.

Now by comparing this three types of transactions may be constructed

1. New relation (does not exist in SBR)
2. Continuation (exist in SBR and relations)
3. Discontinued relation (exists only in SBR)

The transactions should contain EG_ID (parent), Enterprise_ID (child) and type of control. If parent is a foreign unit, the name, address etc. as needed to build/update an EG should be included as well.

Step 8 Update SBR

For new relations (type1), it must first be examined if the relation is a relation to an existing EG. If this is not the case, a new EG should be build and the relation to root is that is a domestic unit.

Next the relation between child Enterprise and EG should be established.

For continuation (type 2) if should be examined, if the old relation is terminated. If that is the case, a new relation should be build.

Type of control (direct/indirect), if changed, Terminate and create new

For discontinued relations (type 3), the relation in SBR is closed.

For transactions of type 1 and 3, a new transaction, check activity code, should be created.

The transaction contains the EG_ID.

These transactions are processed (in step 10) when all transactions of type 1 and 3 has been processed.

Step 9. Activity code and status

Activity code

It was decided, that activity code for the EG only will be updated in relation to the yearly update of EGs and will be left unchanged until next update.

The transactions created in step 8 reflects EGs that is either new or where the structure has changed.

However, in the period between two updates, some enterprises may change their activity code. EGs related to such Enterprises should also have their activity code examined.

To find those EGs you may either

- 1) Scan SBR for Enterprises (being part of an EG) that has changed activity code since last update of EGs
- 2) As part of the update of SBR (from administrative sources or online) perform a test
IF the Enterprise is part of an EG and the 2-digit activity code is changed THEN
 Save the ID of the EG in a new table EGs_to_test_for_activity_code.
END IF
If this approach is used, the table is cleared after step 10 is performed.

The two set of transactions are merge and duplicates are removed.

The activity code of an Enterprise is a 2-digit NACE-code. The rules for updating this code needs to be established.

A starting point may be to examine the activity code (first 2 digits) of all active Enterprises with an active relation. If all enterprises as the same code, then this should be the code of the EG.

This will lead to some unfinished transactions that must be dealt with manually.

However, if the number of unfinished transactions becomes large, further refinement could be considered.

It may be considered to establish a rule, that activity codes in chapter C to F (10-39) has priority, so if they are all the same (or there is only 1), this code is used. It would handle cases, where there is 1 unit in Manufacture and other units is wholesale, administration or holding companies etc. In such cases it may be natural to see the EG as Manufacture.

Status

For all EGs the activity status should be updated.

If the EG have 1 or more active relations to an active Enterprise, the EG is active,
else if the EG have 1 or more active relations to dormant units, the EG is dormant,
else the EG is inactive (as all relations will be to inactive units).

Enterprises and Enterprise groups

Currently the status of SBR is, that an Enterprise is just connected to a single Legal Unit. However, this may change over time and the Enterprise Group may be a starting point to examine if 'real' Enterprises should be constructed. As the Enterprise in many of the EU regulations is seen as the observation unit (where data regarding turnover, value added etc is obtained) this leads to the conclusion, that Enterprises should consist only of legal units within a single entity as (most) surveys are done and will be done at the level of Entity.

The Enterprise Group may consist of units from more than one Entity.

The approach taken now is, that EGs are constructed as described in the process outlined above.

Enterprises, Local Units, Legal Units and Local Legal Units in SBR are handled (is the responsibility) of the Entities and this should not be changed.

For the EG however, it seems appropriate that they are handled by BHAS, whether the actual EG is a multi-entity EG or not.

This is possible, because there will be no automated update from EG to Enterprise and (except for Name and activity status) from Enterprise to EG.

Because EGs are established based in relations between Legal Units, in the case where 'real' Enterprises is established, not all the 'Legal Units' of the Enterprise will be part of Enterprise group (as established in Step 7) after an update of Enterprise Groups.

However, to follow the rules of responsibility, this cannot be handled in an automated way, as the responsibility for this is at the level of Enterprises.

It is suggested, that after the EGs has been revised, a test is performed (reusing the transactions on the level of Legal Units) to identify and examine such Enterprise to consider if they should be split or not. This task must be carried out on the Entity Level.

Content of SBR

In SBR two new tables are added.

Enterprise Group

UID

EG-Id (ID of root unit, Enterprise or FLE)

Multi-national (Foreign head, Foreign children, both, fully domestic)

Multi-Entity (All (Active) domestic units in same Entity, mixed)

Name

Activity Code

Activity Status (active, dormant, inactive)

EG_Enterprise_relation

Fk_EG

FK_Enterprise

Relation start (date when relation is established)

Relation termination (date when relation is terminated)

Relation type (direct or indirect control)

(Head of group ?)

It should be noted, that start/termination is only updated when relations are processed and does not reflect if the EG of Enterprise is active, dormant or inactive.

Annex 4. Changes to existing SBR system

Update of SBR, consequences

If the activity code of an Enterprise (that is part of an Enterprise group) is changed the activity code of the EG may need to be changed (using the same rules as above).

As described in Annex 3, it was decided to do this as part of the yearly update of EGs.

As described under process 9, the ID of Enterprises with changes may be saved.

If the name of an Enterprise changes, and the enterprise is Head of group, it should be considered to automatically update the name of the group (that by definition is the same).

If an Enterprise that is part of an Enterprise Group becomes active, dormant and inactive the activity status of the Enterprise should be examined (using the rules in process 9) and updated as needed.

Online system

A new window needs to be added to the only system holding information about EG.

Similar to the way used for Enterprises (and other units), the top part of the window will display information about the EG. The bottom part will list all relations to enterprises with ID of Enterprise, name, date of start of relation and date of termination of relation, date of cessation of enterprise.

In the Enterprise window, the ID Enterprise Group should be added and in the lower part a list of all relations to EGs (actual and historical) should be added as a new tab.