Twinning Project

Contract: GE 16 ENI ST 06 18

Strengthening the Capacity of the Georgian Statistical System

Component 4: "*Strengthening Social Statistics*"

Sub-component 4.1: "Labour Force Methodologies and Indicators"

MISSION REPORT

Activity: 4.1.D (RS) "Finalizing Imputation and Introduction, recommendation and preparation of seasonal adjusted data"

Mission carried out by
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Version: Final

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1. General comments

This mission report was prepared within the EU Twinning Project "Strengthening the Capacity of Georgian Statistical System". This was the last mission within the sub-component 4.1: "Labour Force Methodologies and Indicators". Due to COVID-19 the mission was carried out as a Remote Session in the period from April 15 to April 22, 2021.

The purpose of the mission was two-fold:

- Follow-up on mission 4.1.B on imputation methods (day 1)
- Introducing methodology and software for seasonal adjustment (days 2-5)

Apart from the follow-up the purposes of the mission were to discuss and to introduce seasonally adjustment, including tools and methodologies, data preparation, test of seasonally adjusted data, methodological documentation and thereby enable Geostat employees to perform seasonal adjustment according to Eurostat Guidelines.

The consultants would like to express their gratitude to the Geostat staff who participated in the mission, for the kind support and valuable information received during the mission.

The views and observations stated in this report are those of the consultants and do not necessarily correspond to the views of the European Union, Geostat, Statistics Denmark, or other statistical institutions involved in the implementation of the project.

2. Assessment and results

Follow-up on imputation

During day 1 (with participation from Aksel Thomsen and Peter Tibert Stoltze) a follow-up on the topics and techniques introduced during activity 4.1.B was conducted. More specifically, during the meeting Geostat presented their work following the initial mission, and Aksel Thomsen presented theory and examples as per the document "Donor based imputation methods with applications in R" (available as supporting document).

The work from Geostat was presented to the consultants by Mrs. Irma Gvilava and it was clear, that the concepts introduced during the first mission were very well understood and applied. Geostat has conducted a thorough analysis of the non-response pattern in the Georgian LFS, and although the overall response rate is very high, the analysis still revealed some areas where imputation might be applicable and add value to the LFS. The analysis was also a very good point of departure for a more targeted discussion on what variables are suitable for imputation, and which are not. The analysis also gave hints to relevant correlations of potential use if Geostat commence to implement imputation in the production of the Geogian LFS.

The presentation by Mr. Aksel Thomsen covered a summary of the theory presented earlier but with an emphasis on doner-based imputation methods, but also practical examples based on a synthetic data set with structure similar to that of the Georgian LFS. Methods covered included mainly variations of nearest neighbour techniques, e.g. KNN and predictive mean matching. The examples focused on a step-wise approach based on an overall strategy whereby viable variables were targeted first. Technically the examples are coded in R relying heavily on the tidyverse-universe. Key functions for simple manipulation and exploration include mutate (with the across selector) and summarise (to apply mean and count). For the imputation we apply the simpuation package, which provide a unified approach to many imputation methods and has a very useful common formula interface for specifying the desired imputation.

Introduction to seasonal adjustment

During days 2 through 5, Georg Paludan-Müller and Signe Hermann conducted a teaching activity on seasonal adjustment which included:

- Introduction to seasonally adjustment
- Recommendations to seasonally adjustment tools/methodologies
- Implementation of seasonally adjustment using the EuroStat software JDemetra+
- Preparation of seasonally adjusted data
- Test of seasonally adjusted data
- Introduction and discussions of methodological documentation
- Preparation of methodological documentation

Further, an extra data activity was set up, in which Geostat's LFS data was seasonally adjusted in order to foster familiarity with the tools and methodology as well as strengthening Social Statistics.

A total of 8 time series of GeoStat's LFS indicators were seasonally adjusted by the participants, who demonstrated a good understanding of the software and resulting seasonally adjusted time series, as well as a good ability to assess the quality and other indicators of the seasonal adjustment.

In our assessment, the participants were well prepared and will be well able to understand and use the methods and theory discussed, as well as implementing it using their own LFS data.

3. Conclusions and follow up

The consultants find that the mission was a success and that the Georgian counterpart took active participation in the activities, and demonstrated a good understanding of the topics discussed. However, as the infrastructure and technology to implement both imputation and seasonal adjustment were not ready for deployment at the time for the mission, the consultants suggest an additional activity when all systems are ready. In this way the uncertainties that will invariably arise during an implementation phase, can be targeted in a very specific manner.

Annex 1. Terms of Reference

EU Twinning Project GE 16 ENI ST 06 18

April 15th – April 22nd 2021

Component 4: Strengthening Social Statistics

Sub-Component 4.1: Labour Force Methodologies and Indicators

Mandatory results and benchmarks for sub-component 4.2

- Improved Labour Force methodologies and indicators

Indicators of Achievement (baseline and targets):

- Availability of current LFS questionnaire
  - **Baseline**: 2019 – LFS methodology (Questionnaire) is outdated
  - **Target**: End of 2020 – Methodology updated and changes ready for implementation in collection instrument according to ILO methodology

- Availability of systematic approach to missing data and non-response at data collection stage
  - **Baseline**: 2019 – No systematic approach to missing data
  - **Target**: November 2020 – Imputation methodologies (handling of missing data) introduced

- Number of staff with sufficient knowledge on imputation methods
  - **Baseline**: 2019 – 0
  - **Target**: November 2020 – At least 3 staff members trained

- Availability of experimentally calculated seasonal adjusted data on LFS
  - **Baseline:** 2019 – Seasonally adjusted data is not available
  - **Target:** June 2021 – Experimental calculation of Seasonally adjusted data prepared

<u>Activity 4.1.d (RS): Finalizing Imputation and Introduction, recommendation and preparation of seasonal adjusted data</u>

1. Purpose of the activity

- Discussions of imputations conducted by Geostat staff during the last three months
- Introduction to seasonally adjustment
- Recommendations to seasonally adjustment tools/methodologies
- Implementation of seasonally adjustment
- Preparation of seasonally adjusted data
- Test of seasonally adjusted data
- Introduction and discussions of methodological documentation
- Preparation of methodological documentation

2. Expected output of the activity

- Imputations performed by Geostat has been discussed and evaluated
- Seasonal adjustment introduced

- Seasonally adjustment methodologies recommended
- Seasonal adjustment data prepared
- Seasonally adjusted data tested
- A plan for the implementation of seasonal adjustment has been set up
- Discussions on and preparation of methodological documentation performed
- Mission report written

Annex 2. Persons met

Geostat
Mr. Vasil Tsakadze, Head of Social Statistics Department
Mrs. Irma Gvilava, Head of Labour Statistics Division
Mr. Zezva Sanikidze, Senior Specialist of Labour Statistics Division
Mr. Tsotne Balakhashvili, Senior Specialist of Labour Statistics Division
Mr. Irakli Guguchia, Senior Specialist of Labour Statistics Division
Ms. Lili Chedia, Senior Specialist of Labour Statistics Division
Mrs. Salome Esadze, Senior Specialist of Labour Statistics Division
Mr. Elizbar Sadradze, Senior Specialist of Labour Statistics Division
A number of other Geostat employees participated in the three meeting course on Seasonal Adjustment

RTA Twinning Team
Mr. Steen Bielefeldt Pedersen, Resident Twinning Advisor
Ms. Eka Lobzhanidze, Resident Twinning Advisor Assistant
Ms. Nino Grdzelishvili, Resident Twinning Advisor Translator