

## Twinning Project

Contract: GE 16 ENI ST 06 18

# Strengthening the Capacity of the Georgian Statistical System

### Component 1: Development of External Sector Statistics

#### Sub-component 1.3: “Foreign trade (Export - Import) Unit Value Indices in IMTS”

## MISSION REPORT

### Activity: 1.3.A “Introduction to current situation and to UVI in general”

Mission carried out by  
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Dawit S. Temere, Statistics Denmark

November 26<sup>th</sup> – November 28<sup>th</sup> 2019

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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 first mission within the sub-component 1.3: "Foreign trade (Export - Import) Unit Value Indices in IMTS" and was mainly devoted to introduction to current situations and UVI in general. The mission focused on data preparations and the theoretical and practical aspects of constructing unit value indices.

The purposes of the mission were twofold:

- To discuss general situations concerning data
  - Historical data coverage
  - Special considerations to Georgia
- To discuss methodological aspects of unit value construction, such as
  - Outlier detection and filtering
  - Introduction to different index formulas
  - Index theory concerning fixed and chain-linked prices
  - Level of aggregation and frequency

The consultants would like to express their gratitude to all officials and individuals met for the kind support and valuable information which they received during the stay in Georgia and which highly facilitated the work of the consultant.

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

The mission started with an introduction to the current situations in Geostat in International Merchandise Trade Statistics (IMTS) in general and unit value index (UVI) in particular. The external trade division gave a detailed introduction to the different data sources that make up the external trade database, the data collection techniques, data validation process and other related matters.

As it is essential that the trade data is stored and regularly updated in a way that is conducive for the development of unit indices, we have set out a plan to gather the different data sources and create one micro database in Oracle (or similar) until the next mission. It should contain the five necessary keys import/export, HS-code, Firm, Country and period as well as the three variables value, quantity and supplementary unit.

This is to be done in cooperation with Geostat's IT department. The voluminous and complexity of trade data requires constant IT support, that is why we recommend IT's involvement in the process from the start.

Geostat has previously tried twice to construct unit value indices. Accordingly, it was necessary to spend a couple of hours discussing why it never materialized and draw lessons for the present project. We discussed the different aspects of the previous attempts, such as the input data, level of aggregation and frequency used, the methodology applied, the base year, the type of indices calculated. It was mentioned that the previous projects largely failed due to resource constraints, lack of adequate data sources, and software issues.

We spent some time discussing the importance of knowing users of the UVI. It will be helpful in deciding the type of classification, level of dissemination and frequency. We have agreed that for the next mission there should be a session with some potential users like the National accounts, Georgian National Bank, relevant

ministries and universities. From the discussions on this mission, and the current understanding of the users' need, Geostat have decided to construct quarterly unit value indices disseminated at HS-section level.

We have also agreed that Geostat will investigate whether it is necessary to make unit value indices for certain products separately that will otherwise be hidden under HS-section. One good example is cars. Import and export of cars makes up quite a large component of Georgian foreign trade. Hence, it might be necessary to consider cars independently, to add value for the users of the UVI.

We spent most of the time on hands-on experience sessions. Trade prices based on unit values rely on outlier detection and filtering. Using one of the most applied outlier filtering techniques (Tukey's law), we constructed a unit value index in excel using a simulated and actual data for a product. As part of the process, we also dug deep into the index theory and discussed the pros and cons of the most frequently used index types - Laspeyres, Paasche and Fisher index. The first two indices have the classical upward and downward biases, respectively. Consequently, we have agreed to use Fisher index. We also discussed fixed base and chain-linked indices, and constructed chain-linked indices as it has become most customary to use chain prices in many national and international institutions. Hence the recommendation of the experts is to produce chained Fisher indices.

One of the most important aspects of the current project is to construct unit values using firm-level microdata. The assumption is that no two firms are identical, nor are two destination/origin markets. That is, a single firm can charge different prices for its export in different markets, and a firm could also buy similar products from two different partners at different prices. Therefore, treating different markets or firms as if they were homogenous can be a naïve and misleading assumption. That is why in this project, we want to construct unit values using a bottom-up approach. We start first by constructing unit value index for a firm aggregating over different markets, then we move one step up and construct unit values at the most detailed HS-classification by aggregating over the different firms trading that product. Finally, Then the detailed HS unit values are aggregated to form section prices.

While working on a very simple example in excel, the necessity of using a more flexible statistical software was very apparent. For instance, different criteria have to be tested, such as which firms and markets to include, number of observation available, the outlier filtering criteria, and more. These will quickly cumulate into a non-reproducible program in excel. The experts have demonstrated constructing unit values in the statistical package R. The external trade division will decide on IT solutions together with the IT department before the next study visit in February/March 2020.

One of the interesting discussions toward the end focused on data revision policy and the recalculation of unit value indices using revised data. What is the appropriate length of period to go back in time to include revised data? In Statistics Denmark the external trade department follows the revisions policy of the National Accounts. That is, data can be revised over a two year period. This is communicated to the users of the UVI's on the website of Statistics Denmark. The experts recommend that Geostat should decide on the length of the revision period, keeping in mind that, the shorter the revision period is the lower the amount of recalculation is in each quarter.

The experts were very impressed with the enthusiasm and interest showed by Geostat during the mission, and would definitely say that this first mission on component 1.3 was successful.

### 3. Conclusions and recommendations

- Before next mission, it is expected that input data for index calculation is gathered from the different data sources and stored into one table in Oracle/SQL, in the format agreed upon.
- The external trade division tries to construct a unit value index for one of the sections in the HS, based on actual data.
- The external trade division familiarizes itself with the theoretical and practical components of index calculation. The experts will share relevant materials.
- The external trade division should consider involving the IT department from the start. In cooperation with the IT department, the external trade division works on building a workflow process that bridges the initial data to the final indices.
- The external trade division should investigate alternative trade prices, such as the ones compiled by Geostat's consumer price index unit. The alternative prices can be used to validate the UVI.
- The construction of UVI is theoretically and practically demanding, the experts recommend that there should be a clear division of tasks among the employees in the external trade division, so as to achieve the goals within the project's timeframe.
- The timespan for including data revisions in the index calculations should be relatively short, since the indices must be recalculated when the input data is changed. Therefore the experts recommend deciding on a timespan for inclusion of revisions that should be communicated to the users of the disseminated UVI's.

Actions needed for moving forward:

Action	Deadline	Responsible person
Send relevant materials on index theory	Mid. December 2019	Mr. Dawit S. Temere
Send R program and excel example	Mid. December 2019	Mr. Dawit S. Temere
Prepare UVI database – version 1	Study visit	Geostat
Example section UVI: Borjomi and wine	Study visit	Geostat
Prepare UVI database – version 2	Mission 2 in May	Geostat
Read materials on index theory	Mission 2 in May	Geostat

## Annex 1. Terms of Reference

### Terms of Reference

**EU Twinning Project GE 16 ENI ST 06 18**

**November 26<sup>th</sup> – November 28<sup>th</sup> 2019**

### Component 1: Development of External Sector Statistics

#### Sub-component 1.3: Foreign trade (Export - Import) Unit Value Indices in IMTS

#### Mandatory results and benchmarks for sub-component 1.3:

- Foreign trade (Export-Import) Unit Value Indices in IMTS calculated

#### Indicators of Achievement (baseline and targets):

- Availability of Unit Value Indices (UVI) as a statistical product
  - **Baseline:** 2019 – UVI in IMTS is not produced
  - **Target:** January 2021 – UVI in IMTS available
- Number of staff capable of producing UVI
  - **Baseline:** 2019 – 0
  - **Target:** March 2021 – At least 3 staff members trained and capable of producing UVI

#### Activity 1.3.A: Introduction to current situation and to UVI in general

##### 1. Purpose of the activity

To discuss and work on the below mentioned subjects:

- Introduction to current situation in the field of IMTS
- Introduction to methodology and techniques of unit value indices (UVI)
- Discussions on frequency (monthly, quarterly, annually), classifications used and level of detail of classifications applied
- Discussion on frequency of updating of list of products for calculation of UVI and other relevant methodological issues
- To advise on methodological issues and provide practical assistance on implementation of Export UVI and Import UVI in statistical environment of the GEOSTAT

##### 2. Expected output of the activity

- Current situation in the field of IMTS is observed
- Relevant methodology and UVI calculation techniques are introduced
- Classifications, frequency and other methodological and technical issues are discussed and agreed
- Mission Report is written
- ToR for next activity is prepared



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## Annex 2. Persons met

### **Geostat:**

Ms. Lia Dzebisauri, Deputy Executive Director

Ms. Nino Maisuradze, Acting Head of External Trade and Foreign Investments Statistics Department

Mr. Otar Bunturi, Acting head of External Trade Statistics Division

Mr. Bachuk Bokuchava, Senior Specialist External Trade Statistics Division

Mr. Beka Benidze, Senior Specialist External Trade Statistics Division

Mr. Giorgi Tetrauli, Head of Price Statistics Department

Mr. Giorgi Kartvelishvili, IT specialist

### **RTA Team:**

Steen Bielefeldt Pedersen, RTA

Ekaterina Lobzhanidze, RTA - Assistant