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Making better use of administrative data sources

The use of administrative data in the Swiss Federal Statistical Office: the example of customs data

Abstract

Administrative data have been used for a short time only within the production system of business statistics in the Swiss Federal Statistical Office (FSO). First steps were taken around ten years ago with the integration of social security data, but in absence of a unique enterprise identifier the linking of administrative data to the statistical business register units turned out to be extremely time and resource consuming. Only after 2011, as the national regulation on the unique business identifier came into force, the FSO could go ahead with a widespread and high quality use of administrative data in the production of business statistics, adding first VAT data and finally, since 2015, customs data.

In Switzerland customs data are collected by the Federal Customs Administration (FCA), who is also responsible for the production and dissemination of the foreign trade statistics. Within this process, the FSO matches the information registered in the import and export declarations to the enterprises in the Statistical Business Register (SBR). In this context, great importance is attached to the identification characteristics and the unique enterprise identifier, which permits first the exclusion of private importers and secondly the updating of the SBR.

Apart from this, the SFO has access to the monthly snapshots of the customs database, containing information on all imported and exported goods, their origin, destination, value, weight, means of transport etc. These data are used to complete and improve variables of the SBR.

Customs data are made available to more and more different statistical production units in the FSO, as input for the realisation of such diverse statistics as the “Producers’ and Import Price Indexes”, “Transport of Goods Statistics”, “Cross-Border Goods Transport Statistics”, “Industrial Production, Supply and Turnover Statistics”, substituting data collected through questionnaires or other kinds of direct surveys.

Introduction

The most relevant legal bases for the use of customs administrative data for statistical production is the European regulation (CE) no 250/2009 which states importer/exporter information must be introduced into the SBR. Also the Swiss Federal Statistical Act¹ indicates that Switzerland must promote the use of administrative data, including monetary data.

Since the first of January 2016, the unique business identifier became mandatory regarding the importer and exporter for all imports and exports declarations to or from the Swiss customs territory. The introduction of the unique identifiers enabled to link customs data with the SBR and a mutually beneficial relationship between the two administrations was born. Indeed this link allows FSO to include import and export data among the variables of the SBR and FCA can produce their foreign trade statistics by enterprise characteristics, such as employment class and activity code.

The main advantages of the use of customs data for statistics are the following:

- Single entry point. This makes it a lot easier to coordinate with our data provider and it allows us to have a defined framework (same variables, metadata, etc.).
- Makes it possible to detect potential errors in the coding of units in the business register and therefore increases the quality of the register.
- Decreases the burden on businesses
- Key indicator to measure economic performance and growth as well as information on the structure of the economic landscape.
- Import/export is a new variable in the SBR. 2016 will be the first reference year available in 2017.
- And lastly, it provides a complete coverage of the target population, contrary to surveys.

Customs data are an outstanding source of data. All merchandise passing the border must be declared. This implies that FSO receives exhaustive data of all goods imported and exported in Switzerland and Liechtenstein. It is therefore possible to include in the SBR the total amount of imported and exported commercial merchandises without any limits in terms of weight or value. Not only do customs data cover the full universe, as each item crossing the border must be declared, it also contains all the following information:

- Date of the customs declaration
- Unique identification number of the enterprise (importer or exporter). This identifier allows to link the customs data to the SBR.
- Name/address/zip/town of the Swiss importer or exporter
- Name/country code of the foreign importer or exporter
- Transportation mode
- National product code according to the customs rate (linked to HS)
- Statistical value (price of goods invoiced in CHF at the border)
- Weight (net or gross)
- Code of country of origin of the goods

¹ FStatA art.4 <https://www.admin.ch/opc/en/classified-compilation/19920252/index.html>

Import and export values, similarly to turnover, are inserted in the SBR at the enterprise level, which is the base unit for monetary variables. All enterprises that import or export goods during a reference year is identified as an importer/exporter, whether this enterprise is active (as in has employees) in the SBR or not.

Data production process

The correct use of the identifier when the customs form is filled in has a direct impact on the quality of the statistical data. Therefore customs declarations must be checked in order to spot and correct wrong identifiers. Declarations are often filled in by carriers. FCA informs these carriers of systematic mistakes in the use of the unique business identifiers so that they can correct their client database. The use of customs administrative data includes 3 steps:

1. Data verification and correction

FSO receives every month administrative data at $d + 8$ days after the end of the reference month. FSO links this data with the SBR using the unique business identifier. The data is checked by FSO and then either validated or corrected automatically when possible. This represents a majority of the data. However some data are not coherent and must be manually checked in cooperation with FCA. The FCA also checks and corrects if necessary the postal codes declared in order to improve their regional statistics.

2. Statistical data production

Because differing needs were identified within FSO, 2 data sets are produced:

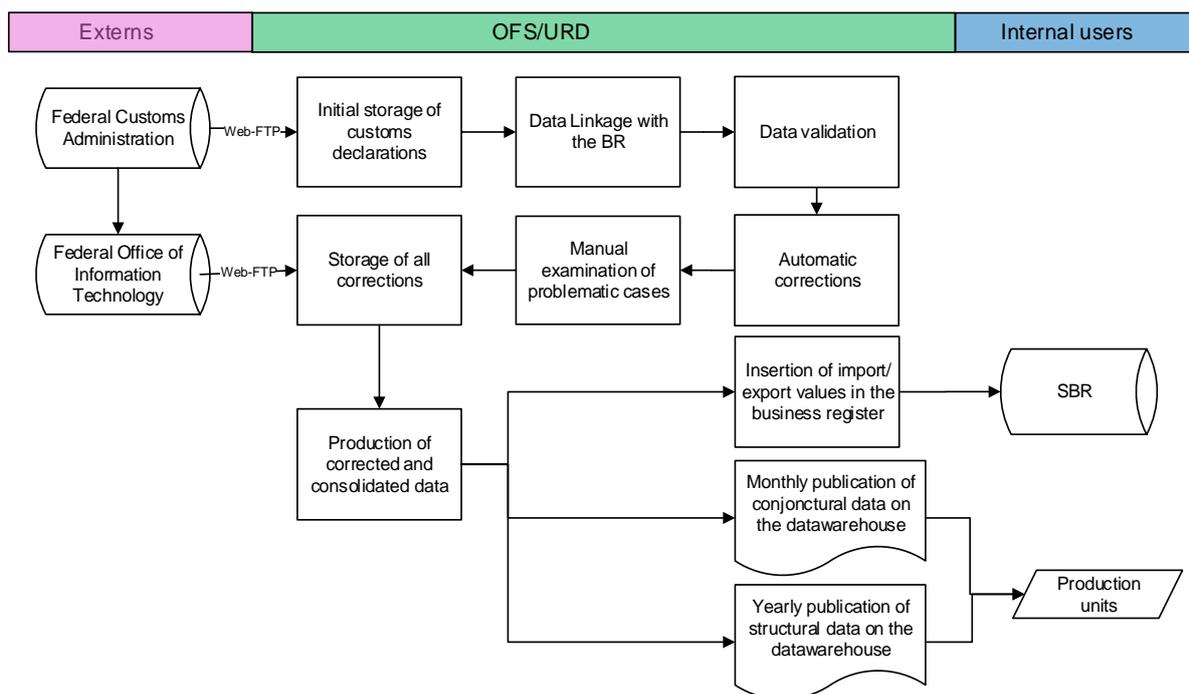
- **Conjunctural data:** FSO receives monthly data from FCA 1 month after the end of the reference month. After application of the corrections, the data is published once a month in the data warehouse to produce short-term economic statistics. They offer a good balance between timeliness and accuracy as only 1-2% of declarations are missing. In this data set, all individual declarations are available, corrections included (no aggregation).
- **Structural data:** FSO receives monthly data from FCA 5 months after the end of the reference month. These data are more complete than the previous one and therefore used for structural statistics. After application of the corrections, they are published once a year in the data warehouse and in the SBR, about 10 months after the end of the reference year. This data is aggregated and annualised to produce the annual value of import/export per enterprise in the SBR. They are also published yearly in the data warehouse.

3. Data publication

All customs data is made available in a data warehouse (see above). The advantages of using a data warehouse are the following:

- Centralised access to data for the analysis and production of economic statistics
- Access managed by individual access rights
- Harmonization and consistency of metadata: the data are linked directly to the FSO central metadata system. A codebook with all the variable descriptions is available to all users.
- Possibility to create own queries and tables and export them to other applications

Below a graph showing the production of customs data at FSO.



Key numbers

Total declarations	20'004'888
Declarations automatically corrected by FSO	1'508'230
Declarations validated by FSO	12'683'942
Declarations that must be manually checked	5'812'716

Total value of the declarations (in CHF)	564.9 billion
Value corrected automatically by FSO	47.1 billion
Value validated by FSO	478.5 mia
Value that must be manually checked	39.3 mia

Number of exporters	19'067
of which are active in the SBR	18'177
Number of importers	71'115
of which are active in the SBR	66'391

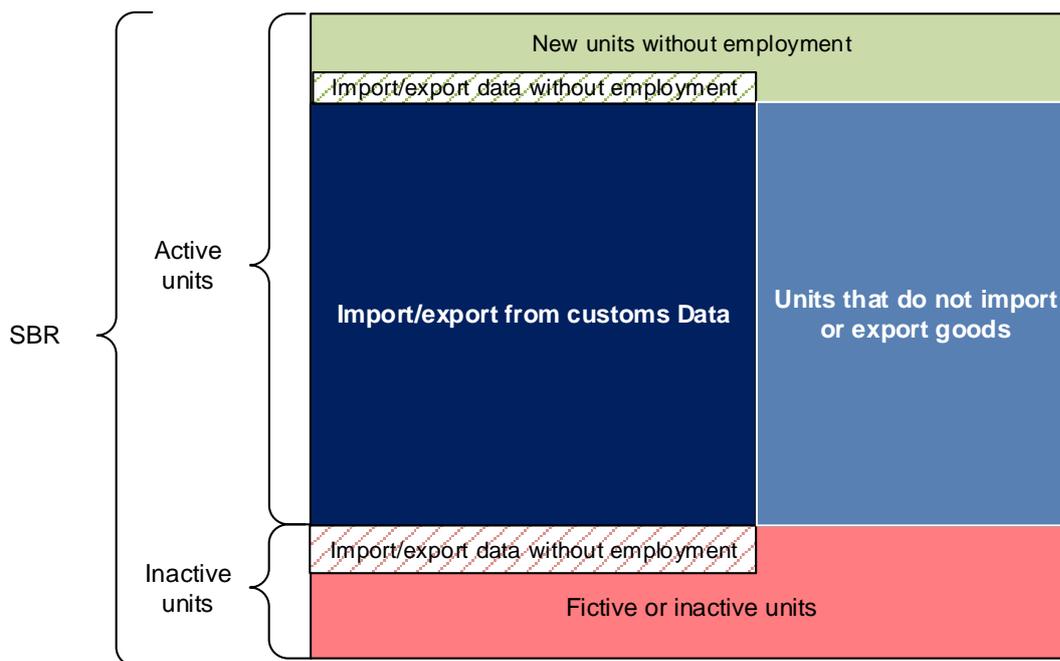
The administrative population versus the business statistics population

As with turnover data, differences between the administrative population and the business statistics population were detected. The business statistics population corresponds to all active units of the business register.

As shown in the following graph (SBR universe), customs data covers active units (the dark blue area in the graph) as well as a small part of inactive units (about 6%) in the SBR. This can be explained in several ways: the company is a Swiss branch of an enterprise domiciled abroad (and therefore has no employment in our SBR); in other cases there is an error in the register and these units must be analysed to see if they should be reactivated; or the enterprise acts for one or more legal units belonging to the same group; or the activity was taken over by another company.

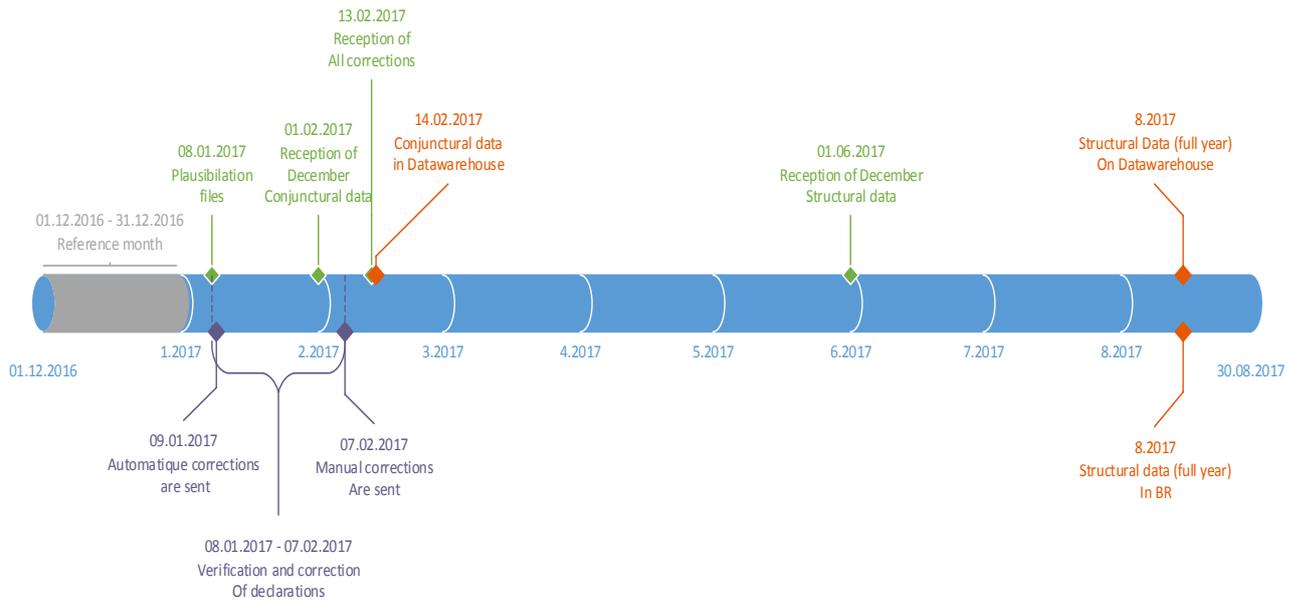
Customs data also covers a part of the new units. In these cases, it means that the enterprise is already active and importing/exporting goods but that it has not yet filled in the new enterprise survey, therefore employment is not known.

Some active units do not do any imports or exports (in light blue).



Lag between the reference year and insertion in the SBR

This timeline shows the chronology of the different events involved in the data production (here December 2016).



Use of customs data

Customs data have two main uses at FSO:

1. Production of a few variables in the SBR
2. Publication of a complete set of customs variables in the data warehouse. These data are then used by the production units for various analyses and statistics, such as price indexes, foreign affiliates statistics, etc.

Although customs data have a wide variety of uses at FSO, the preparation, administration and publication of the foreign trade statistics of Switzerland is under the responsibility of the FCA.

Conclusion

Customs data will be available per enterprise for the first time by the end of 2017 (reference year 2016). This exhaustive data of all goods imported and exported in Switzerland and Liechtenstein is an outstanding source of data. FSO has barely tapped into the potential of these data and many more uses are foreseen for the future.