

**22nd International Input-Output Conference
Lisbon, Portugal, July 14 – 18, 2014**

Compilation of use tables at basic prices and split to domestic production and imports in Hungary

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Abstract

Hungary has been working on the integration of the SUT compilation into the National Accounts for several years. In the frame of this improvement special attention is made to the compilation of Use table for Imports as well. The aim at this paper is to describe the most recent improvement in this field. That is an integrated approach to constructing the Use table for imported goods and services using the data from different and incomplete sources. The main used data sources are the databases of the import flows of goods at the most detailed level of Combined Nomenclature (CN) and of services by EBOPS nomenclature cross classified with the importing industry and with the different type of transaction (normal flows, subcontracting, re-imports). This basic data comes from the foreign trade statistics.

The first part of this paper gives an overview on the methodological aspects and the data sources.

The second part of this paper focuses on the solutions of problems raised during the allocation of imports by use categories.

As a result of this improvement our Use table at basic prices can be split up into two parts: from domestic production and from Imports. This distinguish is important to compile the SUT/IOT for EU aggregates.

Main feature of the new compilation system

The most recent improvement in the field of SUT integration was the “Integration of SUT/IOT framework into the National Accounts compilation” has been concluded.

The integration of Supply and Use Tables (SUT) /Input-Output Tables (IOT) into the National Accounts (NA) project was one of the strategic elements of NA developments and had got a high priority. This project is aimed at the improving the quality of the National Accounts and reducing processing risk of National Accounts compilation by integrating SUT in a frame of an efficient production process. The integration of SUT into the National Account compilation process has got a lot of methodological and practical advantages. Consistency and coherency for the different approaches are achieved through an integrated supply and use framework.

The best way of the integration is to adopt the up-to-date and tested Norwegian SNA-NT software, System of National Accounts. The main characteristic feature of the SNA-NT system is the detailed product breakdown and the different level of valuations.

In our system there are 820 product groups (in other word commodities), which consist of 492 goods and 328 services. Our SUT is extended with the sector breakdown and in each sector the units are classified based on their main activity into the relevant economic activity groups at two or three digit level of NACE Rev.2. The economic activity classification applied in the system is an aggregated version of NACE Rev.2 with three-digit SNA-NT codes, specifying 242 industries.

In a normal Use table there is only one column for the household final consumption expenditure. For the sake of the expenditure side GDP estimation the final consumption part of the table is extended with the COICOP nomenclature. Final consumption expenditure of households is grouped by COICOP containing 119 headings. Final consumption expenditure of government is divided into three categories: the value of goods and services produced by general government itself other than own-account capital formation and sales; purchases by general government of goods and services produced by market producers that are supplied – without any transformation – to the households (as social transfers in kind); collective consumption expenditure. Final consumption expenditure of NPISHs are subdivided into two groups.

The breakdown of the gross fixed capital formation into groups is similar as the column breakdown in the production account but the activities are aggregated at two digit level of NACE Rev.2 because of the lack of information on the more detailed structure.

The main data sources

The most important sources of the Supply table at current prices:

- a) the data of the structural business statistics survey data of the annual statistical survey of industrial production,
- b) agricultural production data from the Economic Accounts for Agriculture (EAA) and the commodity balances,
- c) data of the annual statistical survey of construction activity,
- d) data of the following activities: telecommunication, tourist accommodations and services, computer and related services, research and development services, cultural activity, sewage and refuse disposal services,
- e) output of the government sector broken down by functional tasks in details,
- f) output of the financial corporations sector,
- g) data of the sector of the non-profit institutions,
- h) estimation of the output of the household sector,
- i) data on imports from database of foreign trade in goods (Extrastat and Intrastat - database by CN code of product and by importer classified to branches), imports of services from the statistical survey by EBOPS,
- j) administrative data sources (tax declarations, profit and loss accounts and VAT statistics).

The most important sources of the Use table at current prices:

- a) input data on the structure of the intermediate consumption from statistical survey,
- b) the structure of the expenditure of government institutions from the budgetary reports,
- c) data collection of branch statistics related to the intermediate consumption structure of the agricultural activity,
- d) statistical questionnaire for the cost structure of the financial corporations (estimation for the cost structure of intermediate consumption of the own-account construction of dwellings by households and for the imputation of the own-account housing services by owner-occupiers,
- e) the energy consumption data from the energy balance,
- f) household consumption in detailed groups of commodities (household final consumption expenditure, the agricultural production for own final use, social transfers in kind, the balance of tourism expenditure),

- g) tourism expenditures of residents abroad and non-residents in Hungary collective consumption at detailed level,
- h) data of the structural investment statistics by main types of assets and by investor activities, data of annual survey of investment structure detailed by product type of assets,
- i) data on the inventory statistics broken down into own produced and purchased goods,
- j) data on exports from database of foreign trade in goods (Extrastat and Intrastat - database by CN code of product and by importer classified to branches), export of services from statistical survey by EBOPS,
- k) data on the needed value added components (compensation of employees, other taxes on production, other subsidies on production, consumption of fixed capital),
- l) internet sites of big enterprises, of supervisory bodies, authorities, professional associations and chambers.

The most important sources of the valuation matrices:

- a) the turnover data on the trade activities, the turnover data of multi-yearly survey according to SBS broken down by the CPA classification of trade at 6 digit level (CPA 45 Wholesale and retail trade of motor vehicles and motorcycles; CPA 46 Wholesale trade services except 45; CPA 47 Retail trade services except 45, retail trade with breakdown by traded goods,
- b) data of the survey on the transport of goods in the field of railway, waterway, pipeline and air transport, in the case of road transport of goods the use of data of the transport performances report in natural terms,
- c) VAT and excise duty rates by the law and items by corresponding commodities, other taxes on products and customs data from administrative sources for the calculation of the matrices of taxes and subsidies on products.

Estimation of the Use table at basic prices

We concentrate only the calculation of Use table because our final aim is estimating the Use table for imports.

STEP 1: The starting point is the Use table at purchaser's price

STEP 2: Calculating the non-deductible VAT table in the use side

STEP 3: Calculating the trade and transport margin tables in the use side

STEP 4: Calculating the Use table at producer's price

STEP 5: Calculating the product subsidies table in the use side

STEP 6: Calculating the product taxes (except VAT) table in the use side

STEP 7: Calculating use table at basic prices

Use table at basic prices split into domestic production and imports

Import has an important role in Hungarian economy. When we compiled the IOT for 2010 special attention was made to allocate the import to users. In the frame of the Eurostat Grant project "Action to support specific improvements in national accounts" Grant we worked out a new method to split the use table at basic prices into domestic production and imports that is a direct approach.

The basic data sources for compilation of use table of imported goods are the foreign trade statistics. This statistics are based on the Intrastat and Extrastat and is adjusted to national accounts concept.

Initial data for the use table for import are compiled separately for imports of goods and for imports of services. The compilation of initial data for imports of goods is started with the matrix of foreign trade data broken down row wise by custom procedure code and Combined Nomenclature code of goods, column wise by NACE Rev.2 code of importers. The data on imported goods of VAT registered non-resident entities (VAT registrations) are included in an extra column.

The allocation of imports of VAT registrations to users

There is a conceptional problem that arises from the activities of a group of distributors called VAT registrations of foreign enterprises. These entities are registered in Hungary only for VAT purposes, they are seated in abroad and do not operate physically in resident economy of Hungary. Consequently they are not resident in national accounts of Hungary. This situation has been described by HCSO in the Annex 9.3 of UN publication "The impact of globalization on national accounts".

Concerning the VAT registrations the problems were detected:

- By the balancing of several product rows of the SUT there was found that the value of export is much higher than it's value in the production side (it can not be

explained by trade margin). The export figures reported by VAT registrations showed a very dynamic increase, but the production statistics did not reflect that growth.

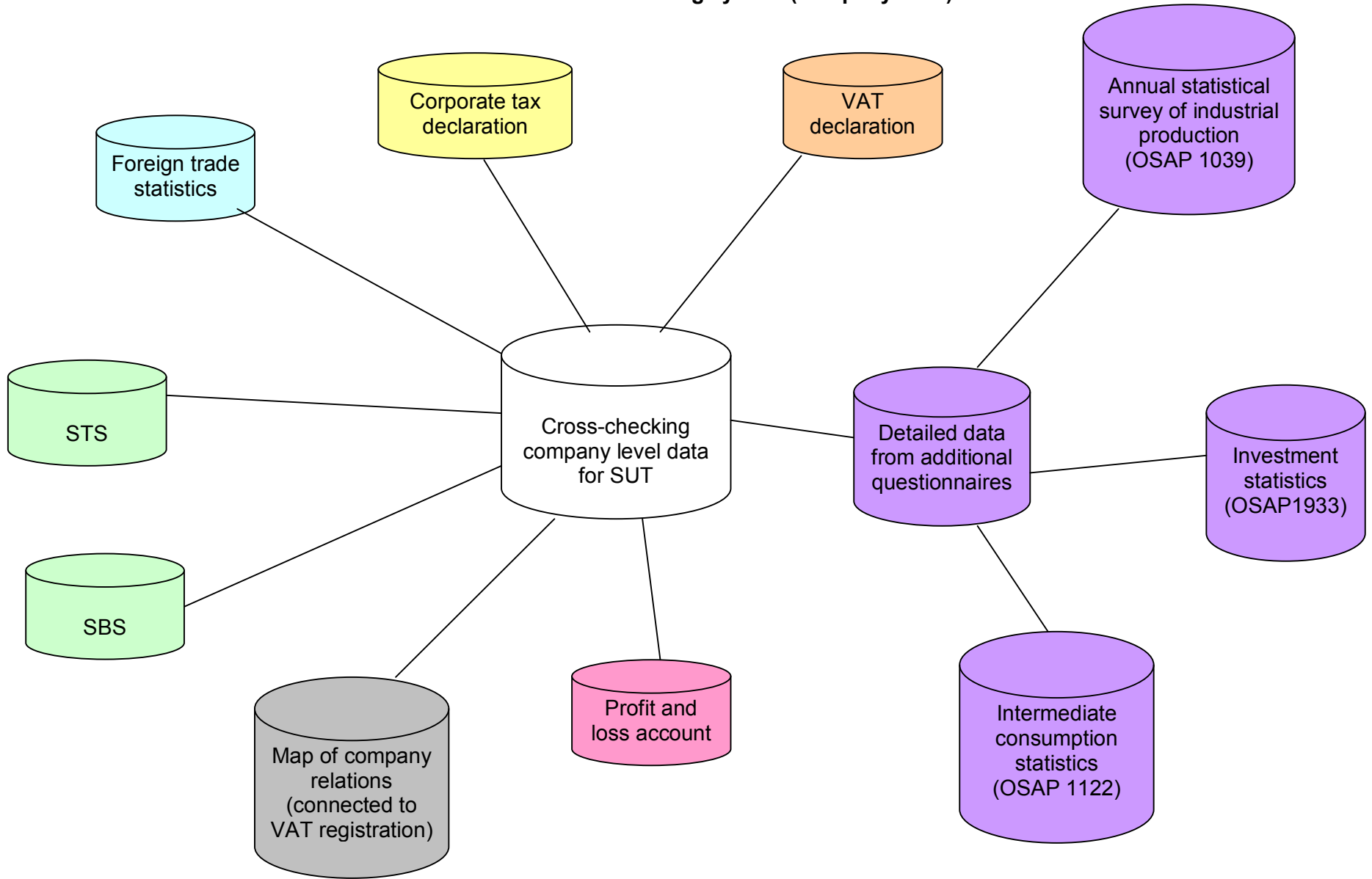
- By calculations of balance of payments (BoP) by the Hungarian National Bank this problem arises regarding consistency of the current and financial account balance.

In order to achieve balance between the foreign trade and production figures, a general correction method was worked out by foreign trade statistics and introduced in 2008 into the national accounts and balance of payments statistics. This correction of VAT registrations meant that the foreign trade transactions of VAT registrations were adjusted by applying an average coefficient and in the case of biggest differences additional individual adjustments were made.

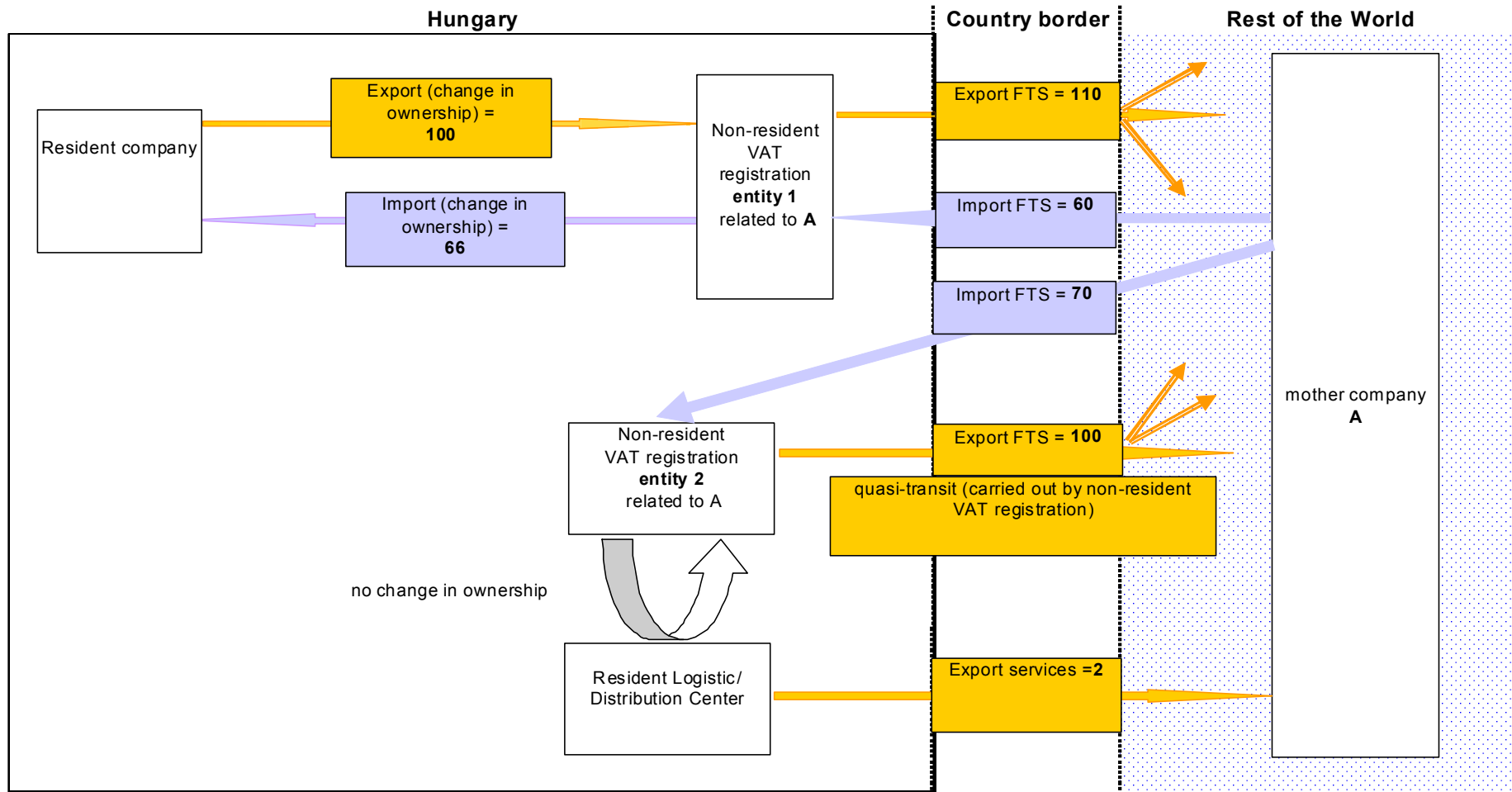
During the balancing process for 2010 further imbalances were found as consequence of detailed investigation at product level. For these purposes the groups of enterprises with connection to VAT registrations were examined at individual level by the most detailed product breakdown. The VAT declaration was also used as additional information to investigate the relationship between the domestic market and non-resident VAT registrations. As a result of the detailed cross-checking there was a further adjustment on imports and exports of goods by VAT registrations. The import of VAT registration is decreased and the export is decreased mainly due to the elimination of quasi-transit trade.

For the detailed SUT examination the following cross-checking system have been worked out. This cross-checking system contains company level data from statistical and administrative sources as well.

Micro-data based cross-checking system (company level)



An example on the SUT investigation and solution concerning in the VAT registrati



NA/BoP concept - goods data	export	100	Balance = 34	Total Gap = 46	because of	quasi-trade	30
	import	66				price gap	16
IMTS reported - goods data	export	210	Balance = 80				
	import	130					

Treatment of the problems

I. The quasi-transit trade - see in example – not to be recorded in NA and BoP, so it was eliminated from the foreign trade data in NA/BoP.

II. Possible solutions to problem of price gap (example on the treatment of export):

1. Imputing branding services is a possible solution (but only at macro level). This imputation in the FTS data causes problems for SUT on product level. In addition the imputation of the branding services in the National Accounts makes it more difficult to compare with the data comes from the company bookkeeping system.
2. Adjusted the export and import figure because of the price gap to reach the change of ownership concept.

Estimation the part of imports that accounted as re-export

Re-exports are defined as goods which have been imported into Hungary and leave the country again after no further processing. These goods are owned by a Hungarian resident that is why it is included in NA imports and exports. The treatment of re-exports can be made with the help of the following additional information:

- there is an extra code for re-exports in foreign trade statistical survey Intrastat;
- experiences of previous years (information about enterprises);
- the investigation of exported goods that can not be produced in Hungary at individual level (synthetic rubber, citruses).

Import goods for processing

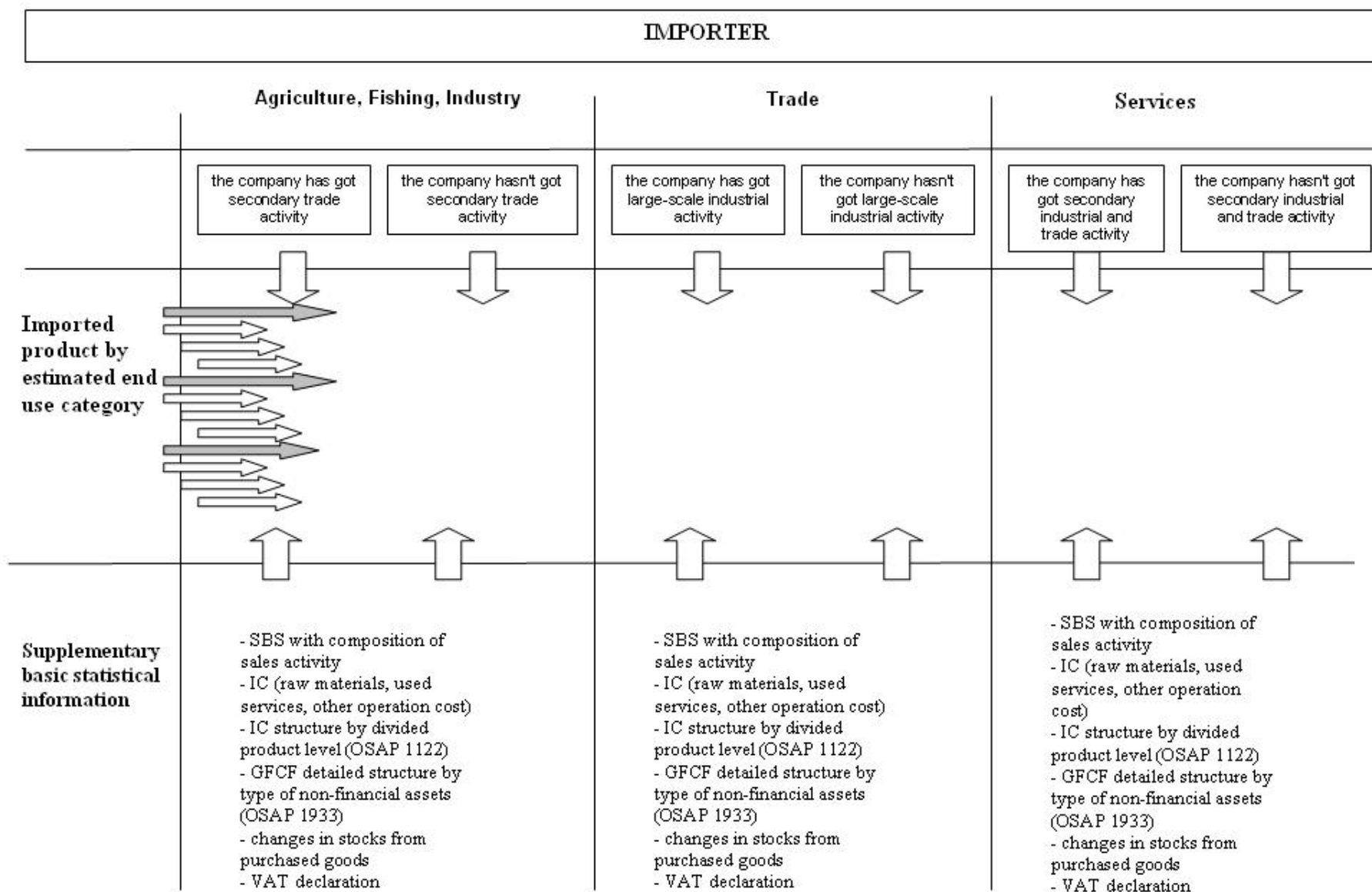
ESA95 recommends that the cross-border movements under major processing arrangements should be recorded as trade in goods, rather than services, and should be treated on gross basis. In business accounting and in profit and loss statements this transaction is recorded on net basis because there is no change of ownership. Sales data coming from the bookkeeping system includes only the processing fees. In order to obtain consistent figures for import, intermediate consumption, exports and output, the intermediate input (IC) and output (O) figures based on the business accounting data are grossed up by imputation. As a result of this adjustment the output and the intermediate consumption are grossed up with the same amount so this imputation has not got impact on the level of GVA.

'Combined direct approach' for the biggest share of imports

For the biggest part of the initial cross-table of imports by product and by importers there is assumed that the uses of the imported goods are depending on the following three factors:

- a.) the economic activity of the importer, especially it has got trade activity or has not got ,
- b.) the main characteristic and the nature of the imported good,
- c.) some variables of the importer enterprise coming from the basic database (SBS, Questionnaire on the structure of IC, Questionnaire on the structure of GFCF) that have got direct or non direct link to the import of the questioned importer.

The following graph contains the main framework for the above mentioned combined direct approach to allocate the imported goods to their users.



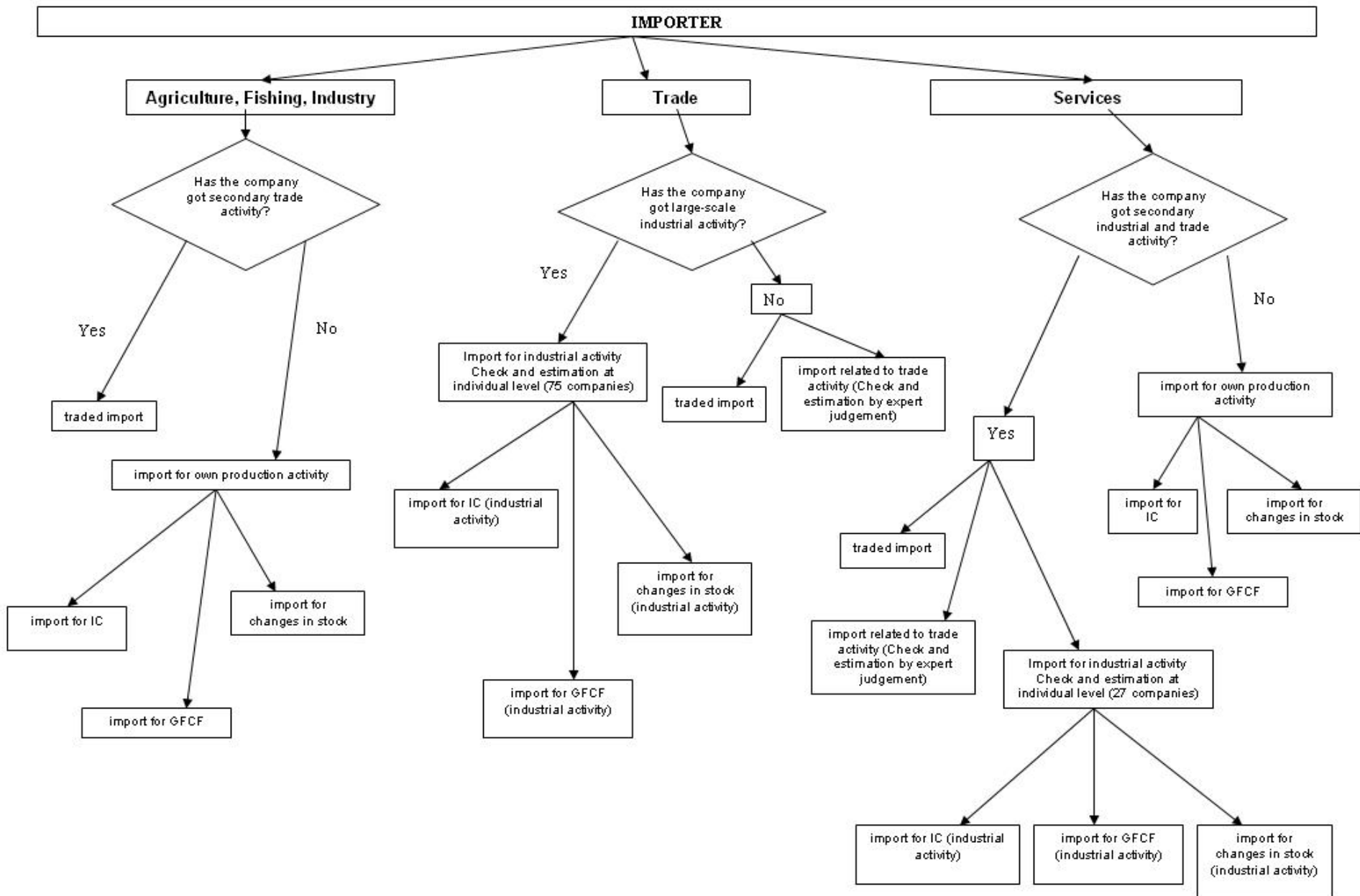
First factor

In this cross-table the importers (column-wise) are broken down by their main activities supplemented with additional information to estimate the trading share of their imports. Firstly the traded imports are collected into one group and the remaining part of the imports could be accounted as IC, GFCF and changes in stock in their importer.

For this purposes the columns (importers) are sub-divided into:

- Companies classified to A,B,C,D (NACE Rev.2 section) based on the main activity; without secondary trade activity
- Companies classified to A,B,C,D (NACE Rev.2 section) based on the main activity; with secondary trade activity
- Companies classified to G (NACE Rev.2 section) based on the main activity; without secondary industrial activity
- Companies classified to G (NACE Rev.2 section) based on the main activity; with secondary industrial activity
- Companies classified to other group based on the main activity; without secondary industrial and trade activity
- Companies classified to other group based on the main activity; with secondary industrial and trade activity

A decision tree is compiled and used to help make a decision about a destination of imports.



Second factor

In this cross-table the goods (row-wise) are broken down by their main characteristic of the product to help to identify the end use category of this good. Three groups are distinguished:

- Goods whose nature makes them usable only for intermediate consumption
- Goods which goes mainly for final consumption
- Goods whose nature makes them usable for GFCF
- Good with multiple uses

This second factor itself is not enough to determine the user of the imports. For example a manufacturing of animal feeding stuff company can import meat - and-bone meat for own use or for resale. If it is taking into account only the nature of the product (meat-and-bone meat - usable for IC) it could be classified into the IC of their importer. Combined this assumption about the usage of the product with the information about the secondary activity of the company it could be classified into the traded import as well and finally used for example in an agricultural company (some agricultural company has got feeding stuffs production as well).

Third factor

These assumptions are supplemented with additional data from other statistical survey and administrative sources of enterprises in order to more clear view of the imported flows:

- statistical sources (SBS, Annual statistical survey of industrial production by PRODCOM, Survey on structure of intermediate consumption, Investment statistics)
- administrative sources (Corporate tax declaration, Profit and loss account, VAT declaration)

The list of investigated variables from statistical sources:

- total net sale
- composition of net sale by activity
- material cost
- cost of used services
- cost of other services
- purchase value of goods for resale
- services purchased for resale
- changes in stocks of purchased goods

- sale of industrial products for domestic market and export with breakdown by PRODCOM codes
- material cost and its structure detailed by CPA
- cost of used services used and their structure detailed by CPA
- cost of other services by type
- GFCF structure detailed by type of non-financial assets
- Structure of machinery and transport equipment investments data detailed by CPA

The list of investigated variables from administrative sources:

- total net sale
- export sale
- material cost
- cost of used services
- cost of other services
- purchase value of goods for resale
- services purchased for resale
- sale for domestic market
- import of goods and services
- total purchase

For the help of these three types of information allocation of the imports are made manually by SUT experts.

The last step in the allocation of the imported goods to their user is to identify the destination of the traded goods. The import of traded goods can be allocated to final consumption, IC, GFCF or changes in stock as well. The allocation of the traded import is based on the character of the good and the additional information on the distribution channel. For example in the case of retailer importer almost the total imports are distributed to the household sector as consumer.

The estimation of the use tables for imported services

There is a survey on the foreign trade services organised by the HCSO (Hungarian Central Statistical Office). The available information for estimating the use table for imported services is a matrix broken down row-wise the services by EBOPS code and column-wise by the NACE Rev.2 of the importers. It was possible to reach these data at individual reported unit level as well. The translation key was worked out to make a link

between the EBOPS codes and the CPA codes. Allocation of import services to users is not as complicated as the allocation of imported goods. Firstly there is not important the trade of imported services, secondly there is no changes in stock from services and thirdly almost the total imported services are treated as intermediate consumption of the importers. There are only some exceptions: expenses for international passenger transport services by households; the import of FISIM; and the imports of computer services that are partially allocated to GFCF.