INSTITUTO NACIONAL DE ESTADISTICA

Survey on International Trade in Services and Other International Operations (ITSS)

Methodology

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I Introduction

As regards the need for this statistical operation, it should be pointed out that, firstly, this is not exclusive to the countries of the Eurozone, but rather is determined by the expiry of the central banks' cash systems (a system habitually used to estimate a large part of the Balance of Payments headings, including "Other services") in the context of the economic and financial internationalisation that began several decades ago.

Although the European process of economic and monetary integration undoubtedly greatly accelerated the search for new information sources, almost all countries that compiled Balance of Payments statistics using information systems based on the declaration of external receipts and payments (cash systems) were forced, to a greater or lesser extent, to progressively replace them with surveys, or, in some cases, to complement them with other sources.

These circumstances, together with the very demanding statistical information requirements of the European Regulation on Community Statistics on Balance of Payments, International Trade in Services and Foreign Direct Investment, were the most important reasons for the search for an alternative statistical source for the estimation of the "Other Services" heading of the current account of the Balance of Payments compiled by the Bank of Spain (BdE).

The expiry of the cash systems for the compilation of Balance of Payments data was generally due to the following causes:

– The increased complexity of corporate cash management, which made it difficult to capture and assess transactions and allocate them geographically.

– The growing demand for information from international bodies, which is contained in various regulations, directives, guidelines and manuals.

– The demand from European multinational companies to report their operations according to harmonised criteria that are more similar to accounting principles.

Moreover, within the context of Economic and Monetary Union, the following difficulties were compounded to the factors above:

– The integration of international payment systems, which made it more difficult to identify residents and non-residents in bank transfers, and also the nature of the transaction that generated them, as it could not be distinguished whether it was a transaction involving trade in goods, services, income, etc. Also, the inclusion of net payments as a consequence of "netting" operations, instead of gross entries, as the cash system follows cash basis accounting, as opposed to the accrual principle. Finally, it is worth mentioning the establishment of the *Single Euro Payments Area* (SEPA) in the Eurozone, which played a decisive role in the expiry of the cash systems used by the central banks of countries in the Eurozone.

– The raising of the reporting threshold in the cash system used by the Bank of Spain (BdE)—from EUR 12,500 to EUR 50,000 in 2008—above which Payment Service Providers (PSPs) or resident financial institutions officially registered and authorised by the BdE to provide these payment services (banks, savings banks, credit cooperatives and other financial intermediaries) were required to report in full detail to the BdE eurotransfers between credit institutions resident in the Economic and Monetary Union, both for transactions on behalf of their customers and for their own transactions.

– Although the expiry of the BdE's cash registry or system began in 2008 with the aforementioned increase in the exemption threshold, from 2014 onwards it ceased to record the nature of the transactions giving rise to the international payment or collection between resident and non-resident accounts, which prevented it from knowing whether these transfers were for service transactions or of another nature[1].

– Another factor, albeit much earlier, was the introduction of euro banknotes, which made it impossible to use foreign exchange transactions as an indicator of transactions between residents and non-residents within the Eurozone and greatly distorted their usefulness for the estimation of transactions with residents of non-euro countries.

In this respect, and once the limitations of the information systems based on the declaration of external receipts and payments had been highlighted, in 2005 it was agreed with the Bank of Spain (BdE) that it would be advisable to progressively replace its system for estimating "Other services" in the Balance of Payments with a survey system, mainly limiting the role of the Cash Register and the population of BdE informants in this register to the initial design of the directory of companies that would constitute the survey's target population.

To this end, the Bank of Spain, acting similarly to other countries, considered a collaboration agreement with the Spanish National Statistics Institute (INE) for an estimate of international trade in "Other services" (and starting in 2013, of other international transactions of the balance of payments not considered as services), through a quarterly survey prepared and conducted by the INE, thus adapting to: legislative changes, changes in international payment settlement systems and, above all, the expiry of the cash systems of the central banks of the Eurozone.

This survey was presented for the first time for the opinion of the High Council on Statistics (CSE) in the session of its Standing Committee held on 6 October 2005 and obtained the favourable opinion of the CSE in its session of 22 March 2006.

For all these reasons, and taking advantage of the change from the *Fifth Balance of Payments Manual of the International Monetary Fund (BPM5)* to the *Sixth Balance of Payments and International Investment Position Manual (BPM6)*, the Bank of Spain decided to change its traditional source of information on Balance of Payments information based on the cash registry system to data from the International Trade in Services Survey (ITSS) which were incorporated as the main input in the Balance of Payments for "Other services".

Thus, as appears in the document *"Changes in the methodology and information system of the Balance of Payments statistics in 2014"* presented by the BdE for the opinion of the High Council on Statistics in February 2014, the full incorporation of the results of the International Trade in Services Survey as a source of information in the Balance of Payments, revising levels and linking time series, coincided with the implementation of the BPM6 in September 2014.

[1] See Article 5 (Balance of payments reporting obligations) of European Parliament and Council Regulation (EC) No. 924/2009 of 16/09/2009 on cross-border payments in the Community, which repealed Regulation (EC) No 2560/2001, and which seeks to limit to a minimum (only to information that can be captured automatically) the reporting obligations of payment service providers with respect to their customers' cross-border declarations of payments and receipts for balance of payments purposes.

On the other hand, from 2008 to 2014, the INE published the so-called Foreign Trade in Services Indices (FTSI)[1], which were calculated as a by-product of the survey, based on a panel of companies from the ITSS sample, selected in the base year of the index (2007).

With the publication of the Foreign Trade in Services Indices (FTSI), the INE aimed to reconcile two objectives: on the one hand, to disseminate information that the INE was requesting from companies, and, on the other, to avoid the dissemination of figures on service import and export levels that could conflict with the figures estimated and published by the BdE in its Balance of Payments through its own cash system.

Once the data from the International Trade in Services Survey was included in 2014 as a source of information for estimating the "Other Services" heading of the Balance of Payments, the differences existing in the data in levels between both sources were exclusively due to the necessary and duly documented adjustments (adjustments by threshold, CIF/FOB adjustments for the correct estimation of the international goods transport service, valuation of the insurance service, etc.), in order to transform the basic statistical data collected directly from companies in ITSS, into the macroeconomic synthesis data subject to the Balance of Payments.

For this reason, the INE also considered a change in the dissemination of the results of the International Trade in Services Survey for the year 2015, publishing the service import and export data in levels and rates, replacing the FTSI, and clearly explaining to users in each press release the origin of the differences between the ITSS and Balance of Payments data, as mentioned in the previous paragraph.

At the meeting of the Standing Committee of the High Statistical Council (HSC) on 30 October 2014, the INE submitted for opinion the draft methodological changes for adapting the survey to the BPM6, the inclusion in the survey of a question on the predominant mode of supply of the service and four new non-services headings pertaining to the primary income and capital account of the balance at the request of the BdE, and lastly, the new dissemination plan on the statistical operation Survey on International Trade in Services and Other International Operations (ITSS 2015). This project was approved by the HSC Standing Committee at its meeting on 17 March.

This new form of data dissemination also made it possible to meet the information needs of other users, which also had already been put forth and were reflected in the opinion of the High Statistical Council on this operation: *"Nevertheless, and given the information that the survey could obtain, it is considered that the objectives set fall somewhat short and that a greater itemisation, both in the service entries and in geographical detail, could help to obtain better knowledge of the foreign sector in general and of international services transactions in particular, and it would therefore be desirable to broaden the range of objectives of the project".*

From 2015 to 2022, the INE and the BdE published in parallel national quarterly and annual data at the ITSS level[2] and for the Balance of Payments of "Other services",

[1] Link to FTSI in INEbase:
https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736174702&menu=enlaces&idp=1254735576778

[2] Link to the ITSS on INEbase:
https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736174702&menu=ultiDatos&idp=1254735576778

respectively, explaining the differences to users. Both statistics have been compiled in strict accordance with the international standards in force in this subject, such as the aforementioned BPM6 and the *Manual on Statistics of International Trade in Services (MSITS 2010)* of the United Nations et al., which is perfectly aligned with the IMF's BPM6, developing international services transactions in greater depth.

At the international level, and in the field of international trade in services, only the Balance of Payments data for "Other services" have been disseminated to international organisations (IO).

From the year 2022 onwards, the ITSS has undergone quite a profound reform, mainly as a consequence of the two new statistical requirements included in the EBS (European Business Statistics) community regulation in the field of international trade in services: Services Trade by Enterprise Characteristics (STEC) and international service provisions by mode of supply (MoS). However, the reform is being used to revamp many aspects of the survey.

In the meeting of the Standing Commission of the High Council on Statistics on 19 October 2022, the National Statistics Institute (INE) presented the draft of the Reform of the Survey on International Trade in Services and Other International Operations (ITSS), from the point of view of its timeliness and technical quality. The Standing Commission of the High Council on Statistics, meeting on 8 March 2023, unanimously agreed to issue a favourable opinion on the draft of the Reform of the Survey on International Trade in Services and Other International Operations (ITSS), under the responsibility of the Subdirectorate General for Short-term Statistics (SGEC) of the INE.

This report covers all methodological features of the new ITSS.

II What is new from the 2022 and 2023 reference years

The main novelties were:

– Change of main sample frame and new survey design.

– A new statistical unit is implemented: The "statistical enterprise" (SE) which will coexist with the Legal Unit (LU).

– Changes in the survey's imputation methods.

– A new estimation method is implemented: Indirect estimation that will coexist with the previous one, based on stratified expansion estimators.

– Change in the survey dissemination policy.

– Adaptation of the survey to serve as input for new statistical operations required on a European level in the field of International Trade in Services.

The main source of the developments lies in the European requirement to provide data on Services Trade by Enterprise Characteristics (STEC[1]) from the 2022 reference year, and by Services by Modes of Supply (MoS[2]) from the 2023 reference year.

These new European requirements are set out in the following European regulations:

– EUROPEAN PARLIAMENT AND COUNCIL REGULATION (EU) 2019/2152 of 27 November 2019 concerning European business statistics, which repealed ten legal acts in the field of business statistics, referred to as the EBS Regulation (EBS-R[3]).

– COMMISSION IMPLEMENTING REGULATION (EU) 2020/1197 of 30 July 2020, which lays down technical specifications and modalities under European Parliament and Council Regulation (EU) 2019/2152 on European business statistics, which repealed ten legal acts in the field of business statistics.

Annex I to this Regulation (Data elements to be transmitted for detailed subject) contains the detailed technical specifications for STEC and MoS in the following tables:

– **Table 17.** National business statistics on services trade by enterprise characteristics (STEC). Annual data.

  STEC is where the statistical unit is required to be the market-producing "statistical enterprise" (SE), and not the simple "legal unit" identified by a TIN.

– **Table 38.** Statistics on international activities. International provision of services by Mode of Supply (MoS). Annual data

Similarly, the ITSS needs to continue as one of the main "inputs" for the Balance of Payments statistics of the Spanish economy, in the field of import and export estimates of non-tourist services.

In particular, these ITSS estimates serve the Bank of Spain (BdE) to fulfil the following European requirement:

– EUROPEAN COMMISSION REGULATION (EU) 555/2012 of 22 June 2012, which amended European Parliament and Council Regulation (EC) 184/2005 on

[1] Services Trade by Enterprise Characteristics (STEC)

[2] International Supply of Services by Modes of Supply (MoS)

[3] European Business Statistics Regulation (EBS-R)

Community statistics concerning balance of payments, international trade in services and foreign direct investment, referred to as the BoP Regulation (BoP-R[1]).

On the other hand, the ITSS also serves as an input for the National Accounts statistics of the Spanish economy, in particular for the estimates of imports and exports of non-tourist services, perfectly aligned with those of the balance of payments, which are added to the Rest of the World Account (RWA) of the national accounts.

In addition, and in this same area of national accounts, the ITSS is used for the estimation, within the functional accounting framework represented by the Source-Destination Tables/Input-Output Tables, of the activity-output relationships of service imports and exports.

In particular, these ITSS estimates serve the Bank of INE (National Accounts Department) to fulfil the following European requirement:

– European Parliament and of the Council Regulation (EU) No 549/2013 of 21 May 2013 on the European system of national and regional accounts in the European Union, referred to as ESA[2]-2010.

In this context of fulfilling various objectives, it was felt necessary to undertake a reform of the ITSS in order to meet the new European requirements (STEC and MoS), and to be more efficient in meeting the current demands in determining balance of payments and national accounts.

The year 2022 was considered as the opportune year for this reform of the ITSS as:

– EBS-R required STEC 2022 to be sent to Eurostat in June 2024, with 2022 being the first reference year of the STEC series.

– EBS-R required that STEC use "enterprise" as a statistical unit, not the legal unit (LU) or TIN. It became necessary for the ITSS to implement the "statistical enterprise" concept[3] for STEC from 2022, in line with European guidelines.

– The next "*Benchmark Revision*" of the Balance of Payments, focusing on revisions of the series due to purely statistical changes, was slated for September 2024, which included a multi-year review of 2021-2023. For this review, the BdE needed to have at least one common year of ITSS data in the new and old methodology in order to be able to link the balance series, with 2022 being the year of choice.

– Because of all these changes, the ITSS is taking advantage of the year 2022 to also change its framework and sample design for efficiency purposes. Other changes are undertaken due to the implementation of the "statistical enterprise", such as new imputation and estimation methods.

The reform of the ITSS improves upon previous proportionality criteria, as not only does it not increase the burden on respondents, but, due to a more efficient design, the sample size decreased significantly (by about 27.2%) as of 2023[4].

[1] Balance of Payments Regulation (BoP-R)

[2] European System of Accounts (ESA)

[3] The concept of "statistical enterprise" is defined in section 4.1

[4] As mentioned above, the ITSS data required for 2022 used both the old and new methodology, which has made the total sample in 2022 around 18.2% larger than in previous years.

In addition, the implementation of the "statistical enterprise" (SE) unit makes it impossible to survey all the LUs that make up each sample "statistical enterprise" for budgetary reasons. Only sample LUs are surveyed, and the rest is imputed, thus reducing the statistical burden.

On the other hand, the new STEC and MoS operations do not have any impact on the statistical burden on respondents compared to the previous situation, as:

– Of the three STEC characteristics that determine enterprises trading services internationally, the main economic activity and the number of employees have always been included in the ITSS survey; and the third characteristic, the control/ownership of the enterprise, is obtained by "micro-data linking" techniques by cross-checking the ITSS with the INE'S Central Business Directory (CBD).

– The predominant mode of supply (MoS) for each international service transaction reported in the survey has also been asked in the survey since 2014. Respondents are required to tick only the predominant mode without in any case being required to provide gross figures or percentages of imports and exports by mode, when more than one mode is involved.

III Survey on International Trade in Services and Other International Operations (ITSS)

1 Objectives

The Survey on International Trade in Services and Other International Transactions (ITSS) collects quarterly information referring to the value of imports and exports of non-tourist services, as well as payments and receipts of other international transactions linked to the income and capital account of the balance of payments, carried out by institutional units residing in Spain (companies and other entities) with non-residents.

The main objective of the ITSS is to serve as a basic statistical source for the Bank of Spain (BdE) and INE itself in the compilation of Balance of Payments and National Accounts statistics for the Spanish economy, in compliance with the European regulations mentioned in the previous section: BoP-R and ESA-2010.

To this end, the ITSS is aligned with the international statistical manuals currently applied in this field: *Manual on Statistics of International Trade in Services 2010 of the United Nations et al. (MSITS 2010)* and the *International Monetary Fund's Sixth Balance of Payments and International Investment Position Manual (BPM6)* in that the services covered follow the *2010 Extended Balance of Payments Classification of Services (EBOPS 2010)* and its definitions, which are included in both manuals.

There are two other key objectives of this operation following the adoption of the European regulation EBS-R mentioned in the previous section. Contribute to the production and dissemination of the two new operations linked to international trade in services at national and international level:

– **STEC*:** This operation aims to characterise enterprises that trade internationally in services with respect to those that are limited to the domestic market, according to three characteristics: the enterprise's main economic activity, its size range measured by number of employees, and control/ownership of the enterprise (domestic/foreign).

  The characterisation of companies trading internationally in services aims to provide more (and more atomised) information on global value chains ("Global Value Chains-GVC"), allowing for a better understanding of where and who generates the value added along the chain. In this respect, the STECs of each country will provide valuable input to ongoing OECD projects such as: the “Trade in Value Added (TiVA)”, a project that measures international trade in terms of value added rather than gross values, and the “Inter-Country Input Output Tables (ICIO)”. As for its EU counterpart, the so-called FIGARO Project ("Full International and Global Accounts for Research in Input-Output analysis"), is known as the European "EU inter-country Supply-Use and Input-Output tables (EU IC-SUIOTs)".

* View STEC in the INEbase: https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736177112&menu=ultiDatos&idp=1254735576778

– **MoS[*]:** This operation aims to provide information on the international trade in services from a global perspective[†], based on the four modes of supply of services recognised in the *General Agreement on Trade in Services (GATS)* of the *World Trade Organisation (WTO).* It aims to serve as an instrument for assessing trade policy and multilateral negotiations on the trade in services under the Agreement.

2 Type of Operation

The International Trade in Services and Other Operations Survey (ITSS) is primarily a sample statistic that uses direct data collection to measure gross levels.

However, it could also be considered a mixed type operation, as it combines direct collection with the use of administrative data (tax data, in the case of ITSS) that are available simultaneously with the data collected via questionnaire.

The legal units (LUs) initially selected from the framework (sample LUs) contribute by delineating the CBD units ("Profiling") in order to identify and select the sample "statistical enterprises" (SEs), which are the object of the statistics.

In order to reduce the burden on reporting units, only a direct data collection via questionnaire is conducted for the initially selected sample LUs. The information from the remaining LUs (non-sample LUs) for each sample "statistical enterprise" (SE) is imputed, based on the tax information available on these LUs and the data collected directly from the rest of the units.

3 Content of the statistical operation

3.1 POPULATION UNDER STUDY

Given that the purpose of the International Trade in Services Survey is to study the phenomenon of international trade in non-tourist services or the "trade of non-tourist services with non-residents", as well as to investigate other international operations included in the questionnaire, the population universe will refer to the set of entities (companies or other institutions) that have residency status in Spain - *including Spanish delegations abroad (embassies, consulates, etc.)* - that conduct international trade in services transactions and other international operations included in the questionnaire.

In terms of population exclusions, all units that are non-resident from a statistical point of view (their centre of economic interest is located outside Spain) are excluded, regardless of whether or not they are non-resident from a taxation point of view. There are units with a non-resident TIN from a tax standpoint, but their permanent

[*] View MoS in INEbase:
https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736177111&menu=ultiDatos&idp=1254735576778

[†] The MoS takes a global perspective of international trade in services, as it captures services transactions between residents and non-residents included in Balance of Payments statistics, such as service transactions that occur through commercial presence between residents of an economic territory and subsidiaries/branches of foreign companies, whose centre of economic interest is in that territory (and thus are resident thereof).

establishment is in Spain, so for statistical purposes they are residents and therefore subject to study.

Natural persons, even if they are resident in Spain, are generally excluded from the scope of the survey due to their limited influence on international trade in services, although for the first time they are included if they have at least two employees and accumulate a volume of trade of considerable value.

Finally, embassies, consulates, military bases and other foreign governmental bodies, as well as international organisations located in Spain, are excluded from the population scope, as they are considered non-residents.

3.2 GEOGRAPHICAL OR TERRITORIAL SCOPE

All statistical units residing in the Spanish economic territory (enterprises and other entities) that are within the population scope constitute the object of research.

3.3 DATA REFERENCE PERIOD(S)

The ITSS reference period is a calendar quarter, as it is a short-term operation.

3.4 STUDY AND CLASSIFICATION VARIABLES

3.4.1 STUDY VARIABLES

The ITSS collects information on **imports/exports of non-tourism services**, defined as the trade of services between residents and non-residents, provided/received either directly or outsourced to other enterprises, whether resident or non-resident. The provision of services through resident subsidiaries or branches that the provider may have in the same country as the recipient of the service is generally excluded. The recording of these transactions should be at the time of accrual*, in euro units and excluding VAT.

Since 2013 the ITSS questionnaire, at the request of the Bank of Spain, contains new balance of payment items not included in services. These *Other international transactions* referred to in the name of the survey correspond to certain **current international transfers** and some of the **international capital transactions** among the many that may be undertaken by enterprises or other entities. Current transfers in the ITSS coincide with those under the *Miscellaneous current transfers* heading (secondary income account) in the BPM6, and international capital transactions coincide with the headings: *Acquisitions/disposals of non-produced non-financial assets* (excluding natural resources), taxes (payments only) and *other capital transfers*, all of which are part of the capital account in the BPM6. All payments and receipts for these other international operations, whether current or capital, will follow the cash basis accounting.

* Except for imports and exports of **insurance and pension services**, where payments and receipts for gross premiums and claims should be recorded in the questionnaire on a cash basis rather than on an accrual basis, that is, recorded at the time when these payments and receipts become due.

3.4.2 CLASSIFICATION VARIABLES

The survey has two types of classification variables: some refer to the characteristics of the units that conduct foreign trade in services and others refer to the characteristics of the operations they conduct.

The **unit characteristics** correspond to the stratification variables: the main economic activity according to CNAE [National Classification of Economic Activities Code] groupings and by size, according to the number of employees. In addition, there are other variables to characterise companies that are available in the CBD and will also be used as classification variables: whether or not they belong to a group of companies and, in the latter case, whether the control corresponds to a Spanish or foreign company. There is also a sub-stratification variable linked to the value declared as the taxable amount for intra-EU supplies and acquisitions of services.

As far as the **characteristics of the external transactions** are concerned, the imports and exports that are requested in the questionnaire are itemised by:

– **Type of service** according to the Expanded Balance of Payments Classification for Services (EBOPS-2010) as contained in the United Nations Manual of Statistics on International Trade in Services (MSITS-2010) et al. and the IMF's Sixth Balance of Payments and International Investment Position Manual (BPM6). The main services of the EBOPS are:

  - Services for the processing of goods without transfer of ownership
  - Maintenance and repair services
  - Transport services
  - Construction services
  - Insurance and pension services
  - Financial services
  - Intellectual property services
  - Telecommunications, computer and information services
  - Other business services: Research and development; professional and management consultancy services; technical services, trade-related services and other business services.
  - Personal, cultural and recreational services
  - Government services.

  The information requested in the ITSS questionnaire is disaggregated by 62[*] types of service from the EBOPS-2010.

– **Country of origin or counterpart destination** of each transaction.

[*] In fact, the questionnaire includes within services an additional heading called *Triangular operations and international arbitration of goods (Merchanting)* which does not appear in the new EBOPS 2010 because it has changed from being a heading of services to a heading to be included in the balance of trade in goods. However, given the nature of the heading where goods under *Merchanting* do not cross the Spanish border and, therefore, are not included in the foreign trade in goods statistics, the BdE and the INE agreed to keep it in the ITS questionnaire as a source of information for the goods account.

– **Main mode of supply or receipt of the service in** accordance with the four modes set out in the *General Agreement on Trade in Services (GATS) of the World Trade Organisation (WTO)*:

- **Mode 1 or cross-border supply,** where the service provider is in one country and the consumer is in another and therefore the service crosses the border
- **Mode 2 or consumption abroad,** where the consumer or the goods owned by the consumer move to the country where the service is provided.
- **Mode 3 or commercial presence,** where the service is provided through a delegation of a foreign company that is established in the country, whether resident or non-resident.
- **Mode 4 or presence of natural persons,** where a natural person acting as a sole trader or independent entrepreneur, or an employee of a company moves to another country to supply the service

Although all four modes of supply are requested in the ITSS, mode 1 (cross-border supply) and mode 4 (presence of natural persons) are the ones collected to the greatest extent given the characteristics of the survey. Mode 2, although mostly found in the provision of tourism services, which are outside the scope of the survey, can occur in goods processing services without transfer of ownership and in maintenance and repair services, where it is the goods to be processed or repaired that are moved to the country where the service is provided. Mode 3, although mostly outside the scope of the ITSS, can occur in some specific construction services.

4 Characteristics of the statistical operation

4.1 STATISTICAL AND OBSERVATION UNITS TO WHICH THE PRIMARY DATA REFER

4.1.1 STATISTICAL UNIT

The statistical unit (or unit that the data the ITSS is compiled with refer to) will be either the "statistical enterprise" (SE), also called the Enterprise Statistical Unit (ESU), or the Legal Unit (LU), depending on the purposes of the ITSS.

In the case of the "statistical enterprise" (SE), "enterprises" resident in Spain, whatever their main economic activity and size, shall be considered as the statistical unit. The same applies to natural persons engaged in the economic activities indicated within the target population.

The definition of a "statistical enterprise" (SE) or ESU is laid down in COUNCIL REGULATION (EEC) No 696/93 of 15 March 1993 on the statistical units for the observation and analysis of the production system in the Community (known as SU-R).

An ESU or SE is the smallest combination of legal units which constitutes an organisational unit producing goods or services and which has a certain degree of autonomy in decision-making, especially with regard to the allocation of its current resources.

It is necessary to clarify that the concept of a "statistical enterprise" or ESU is defined in the SU-R (1993), although it is not developed in depth. Nor is this concept very explicitly detailed in the EBS-R. Prior to the entry into force of the EBS-R in 2019, in 2015 Eurostat made an in-depth interpretation and development of the statistical concept of enterprise included in the SU-R, which must be applied as a statistical unit in most business statistics, and even more compulsory after the entry into force of the EBS-R.

This detailed interpretation is included in "*Annex 2 to the Notice of intention of the Business Statistics Directors Groups and the Directors of Macroeconomic Statistics on the consistent implementation of Council Regulation (EC) No. 696/93 on statistical units (2015)",* which includes:

– *Definition of Statistical Units as in CR 696/93, Annex Section III and IV: Statistical Units definitions (which defines all possible statistical units in the various business, trade and summary statistics).*

– *Operational rules for its implementation as developed by the Task Force Statistical Units (with operational rules for the practical implementation of these units in the various economic statistics).*

The "Notice of intention" drafted by the Eurostat Task Force "Statistical Units" and adopted by the ESS Directors of Business Statistics (BSDG) and Macroeconomic Statistics (DMES) is available at the following link.

https://ec.europa.eu/eurostat/documents/54610/7779382/Notice-of-Intention-Statistical-Units-FINAL-and-ADOPTED.pdf

According to this statistical concept of Enterprise (ESUE), an 'enterprise' can be:

– An independent Legal Unit (LU) that is not part of the company group, meaning that it should have decision-making autonomy.

– A company group formed by one or more Legal Units.

– A subset of one or more Legal Units of a company group.

This change in the treatment of companies, which has also been implemented in the Statistical Exploitation of the Central Business Directory (CBD), was announced by the INE in a press release on 17 December 2019:

https://www.ine.es/prensa/nueva_definicion_empresa.pdf

It should be noted that most “statistical enterprises” are independent Legal Units, so the Enterprise=Legal Unit identity remains valid. The change will only affect Legal Units that are part of company groups (about 3.1% of the total). However, the latter units are quite important in economic and employment terms, meaning that the ITSS data series prepared under the new Statistical Enterprise (ESU) approach will not be strictly comparable to that of previous years, prepared under the traditional criteria based on Legal Units.

The majority of the statistical units covered by the ITSS survey will be the ESUs, although there are other institutional units or resident entities which, without being strictly "enterprises" from either an economic or statistical point of view, may conduct international transactions in services (administrative bodies, non-profit institutions, associations, sports federations, etc.).

In short, the new ITSS will use two types of statistical units:

– **The SE or ESU:** To compile STEC data, MoS, serve as a balance of payment input, and thus also in the RWA of the national accounts.

– **The LU:** Previously, the ITSS only used the LU (or TIN) as the statistical and reporting unit. From 2022 onwards, the ITSS will also continue to use the LU as a statistical unit, to provide the necessary input for the compilation of the Origin-Destination Tables of the national accounts, which requires a statistical unit more similar to the LU than to the ESU.

4.1.2 REPORTING OR OBSERVATION UNIT

In the ITSS, the reporting or observation units will continue to be the resident LU (or TIN) that make up the different ESU, since, as they are perfectly defined, located (also legally constituted), and have the accounting and employment data, they are the most qualified informants to provide the required information in a standardised manner.

LUs can be legal entities (commercial companies or otherwise) or natural persons engaged in an economic activity (sole proprietors).

The collection of basic information from the Legal Units comes either from direct collection (through completion of the ITSS questionnaire by the sample LU), or from the use of administrative data (tax data that are "similar" or "equivalent" to the ITSS study variables and some of their classification variables), for the non-sample LUs that are also part of the ESU.

Thus:

– Using the LU as a statistical unit approach, information is obtained from each LU in the sample, and the statistic is compiled under that statistical unit, which in turn coincides with the reporting or observation unit.

– Using the ESU as a statistical unit approach, information is obtained from each LU that make up the ESU (statistical unit). The ITSS will be compiled by grouping, and where necessary consolidating the variables of all the LUs that make up the ESU, either from direct questionnaire data (from the sample LUs), or from the imputation of data from the non-sample LUs, via tax information.

The concept of **residency** of reporting units (LU) is crucial to the measurement of transactions between residents and non-residents. This is not based on nationality or legal criteria, but rather on the ***centre of economic interests*** of each party in the transaction. Moreover, as territorial borders recognised for political purposes may not always be convenient for economic purposes, the *economic territory* of each country is used as the relevant geographical area for the application of the concept of residence. An institutional unit is a resident of a country or an economy when it has its centre of economic interest in the economic territory of a country.

An enterprise has its centre of economic interest, and thus its residence, in a country when it engages and intends to continue to engage in economic activities on a significant scale, either indefinitely or over an extended period of time, from one or more locations, not necessarily fixed, within the economic territory of that country. **A one-year time limit is suggested as a guideline for determining residency, without this rule being inflexible.**

The production carried out outside an enterprise's economic territory by the personnel, plant and equipment of that enterprise which is located in a second country is considered to be part of the production of the country where the production takes place. The company is considered to have established a subsidiary or branch in that country if the above conditions are met. In addition, the subsidiary or branch must maintain complete and separate accounting for local activities (i.e. income statement, balance sheet and transactions with the parent company), pay income taxes in the host country, have a significant physical presence, receive funds for the company's activity on the company's account, and so on. If these conditions are met, the subsidiary or branch established abroad is considered to be a resident of the country where it is located.

These considerations also apply to the specific case of construction activities carried out abroad by a resident producer. Particular mention should be made of the construction of certain major works (bridges, dams, power generation plants, etc.), which often take several years to complete and are carried out and managed by non-resident companies through local, unincorporated offices. In most cases, local offices meet the criteria prescribing that their output be considered (as would be the case for a branch or subsidiary) as the output of a resident unit of the host country and as part of the host country's production, rather than as an export of services to that country. In general, construction services relating to works with a period of execution of less than one year and carried out without establishing a subsidiary or branch (although a small temporary establishment or office may be set up on the construction site for the duration of the works, which is always less than one year) are considered to be included in the scope of the survey.

Services provided by an agent to the company he/she represents should be attributed to the country where the agent is a resident.

Civil servants (including diplomats) and military personnel employed abroad in government enclaves continue to have their centre of economic interest in their home country provided they work in these enclaves, however long as this lasts, and they remain residents of their home country, even if they occupy housing outside these enclaves.

Throughout their studies abroad, students should be treated as residents of their home country, as long as they remain part of family units in those countries. In such cases their centre of economic interest remains in the country of origin and not in the country of study.

Patients receiving medical treatment abroad are also treated as residents of their home country, even if their stay is one year or more, provided they remain part of family units in their home country.

For any other person who moves to another country and stays, or expects to stay, for one year or more, he or she is considered to have changed his or her centre of economic interest, i.e. he or she is considered to be an immigrant.

4.2 DATA COLLECTION METHODOLOGY

The basic data required for this statistical operation (value of imports and exports of services for different classification variables) is not entirely available in administrative or tax registers that can be used directly. The only way to obtain this information is to

request it directly from the reporting units and, for this purpose, the data are collected from a representative sample of the population under study.

However, since the SE or ESU is the new statistical unit and it is not possible to collect information directly via questionnaire from all the LUs that make up each ESU, it has been stipulated that:

– The information from the sample LUs, which are those LUs initially selected from the framework and which make up a representative sample to provide information on the population when the statistical unit is the LU, will be collected directly via a questionnaire.

– The information from the non-sample LUs—which are those LUs not initially selected from the framework and which make up, together with the sample LUs, the set of sample LUs that are sufficiently representative to provide information on the population when the statistical unit is the LU—shall be collected from tax sources for the "equivalent" study and classification variables in the ITSS, with the information for the rest being imputed.

4.3 SAMPLE DESIGN

A distinction is made between the sample design based on the sample of Legal Units (LU) and that of the sample of Statistical Enterprises (SE or ESU). The first has been carried out regularly and uses stratified sampling. A simple random sample is obtained in each stratum, except for the stratum formed by the exhaustive LUs that are sampled in a certain way.

For the SE sample, indirect sampling is used in order to produce results per SE based on the LU sample. This is based on the methodology detailed by *Lavallée and Labelle-Blanchet* in their article: *"Indirect Sampling applied to Skewed Population", Survey Methodology, June 2013, Vol. 39, Statistics Canada.*

Each of the LU sample design stages is detailed below. In the sections on estimators, a distinction is made between LU-based estimators and SE-based estimators.

4.3.1 SAMPLING FRAMEWORK

From 2022 onwards, the ITSS will use as the main sample framework the annual summarised returns for intra-community transactions collected by the Spanish Tax Administration Agency (AEAT) and the Regional Council of Navarra through VAT Form 349, corresponding to the year prior to the reference year.

Since 2023, and in order to have a complete framework from the territorial scope point of view, the data from Form 349 of the three Basque provincial councils (Álava, Vizcaya and Guipúzcoa) have also been collected.

Although in the case of the AEAT information is available for all intra-EU transactions included in form 349 (goods, services and others), the ITSS sample framework is made up only of those that conduct intra-EU service transactions, i.e. with a transaction code: S=Provisions of services; I=Procurement of services; T=Triangular operations (assimilated to Merchanting). The data sent by the provincial councils refer exclusively to intra-community service transactions.

Each year t, the main sampling frame is formed with all the LUs from Form 349 that have carried out transactions I, T and S in year t-1, and that are active in the current Central Business Directory (CBD). In addition, in the case of natural persons, only those with more than 2 employees are covered.

This framework is cross-referenced with the CBD's SE Delineation File (Profiling), which contains the SE information used in the design.

The main framework resulting from Form 349 is complemented by:

– LUs reporting *exclusively* non-EU foreign payments/receivables to the Bank of Spain's (BdE) Register of Foreign Payments/Receivables Reporting Entities (Registro de Caja). This Register is used to cover any potential service operator who only trades with non-EU countries.

– LUs from a Customs file containing foreign trade operators (and their operations) in goods whose transaction codes pertain only to processing (transformation or processing of the goods) or repair transactions. This file is used to earmark in the main frame those units that may perform transformation services without change of ownership or maintenance and repair services which are collected in the ITSS as main headings of the EBOPS-2010, in order to keep track of their representation in the sample. The main operators in this Customs file are comprehensively considered in the sample in terms of the statistical value of their goods.

– LUs from the CBD, identified by their Tax Identification Number (TIN) as Non-Profit Institutions for the Service of Households (NPISH), Associations or Foundations. The purpose of this addition is due to the fact that the ITSS questionnaire also covers other international transactions that are not services (see 3.4.1), so it is necessary to find a framework corresponding to operators of this type of transactions in order not to underestimate them.

– LUs from the CBD, identified by TIN as Congregations and Religious Institutions. This addition is due to their special participation in current transfer payments, especially in the area of donations, which are also recorded as other international transactions in the ITSS questionnaire (transfers).

LUs with most additions to the main frame are studied exhaustively, are sampled with probability 1 and therefore only represent themselves. A stratified random sample is drawn from Congregations and Religious Institutions.

4.3.2 STRATIFICATION

The population under study, contained in the main LU framework, is divided into homogeneous and disjointed groups with respect to what is intended to be studied, called strata. Each stratum constitutes an independent population for sampling purposes.

The strata are formed by cross matching the following stratification variables:

– ***ACTI (activity branch):*** Main Economic Activity of the LU, according to the 11 CNAE-2009 sections considered for the STEC.

- **A+B** (Agriculture, forestry and fishing + Mining and quarrying industries)
- **C** (Manufacturing industry)

- **D+E** (Supply of electricity, gas, steam and air conditioning + Water supply, sewerage, waste management and remediation activities)
- **F** (Construction)
- **G** (Wholesale and retail trade; Repair of motor vehicles and motorcycles)
- **H** (Transport and storage)
- **J** (Information and communication)
- **K** (Financial and insurance activities)
- **M** (Professional, scientific and technical activities)
- **N** (Administrative and support services activities)
- **I+L+O+P+Q+R+S+T+U** (Hospitality + Real estate activities + Public administration and defence; Compulsory social security + Education + Health and social services activities + Artistic, recreational, and entertainment activities + Other services + Activities of households as employers of domestic personnel; activities of households as producers of goods and services for own use + Activities of extraterritorial organizations and bodies)

– ***TAME (establishment size)***: LU size ranges, by number of wage earners:

TAME	Number of wage earners
1	0-9
2	10-49
3	50-199
4	200-499
5	500 or over

– ***GROUP*****:** Type of group exercising control over the LU (according to the 4 dimensions of STEC control):

- Entirely domestic group.
- Spanish-controlled multinational group.
- Foreign-controlled multinational group.
- Independent LU that does not belong to any business group.

– **BRACKET_TI:** ELUs are classified into 2 brackets according to the adjusted Taxable Income (TI) contained in form 349. If there are more than 40 LUs in the set formed by the cross of **ACTI x TAME x GROUP,** this is divided in 2, where in the first section are the ones with the lowest TI. In order to calculate the cut-off point, the rule of the cumulative square root of the frequency distribution is applied (Cochran: Sampling Techniques, 1980, p. 169). The BRACKET_TI variable takes the following values:

- **BRACKET_TI=0** (not subdivided because the number of LU in ACTI x TAME x GROUP is less than 40)

- **BRACKET_TI=1** (LUs with total adjusted TI * <= *Limit*[†])
- **BRACKET_TI=2** (LUs with total adjusted TI[‡] >*Limit*[§])

In short, stratum h is formed by the cross-calculation of the variables:

ACTI x TAME x GROUP x BRACKET_TI

4.3.3 EXHAUSTIVE UNITS

The exhaustive units are sampled with certainty, that is, with a probability of 1, and are as follows:

1. By size according to number of wage earners: those with TAME=5, 500 or more employees.
2. By Total adjusted TI according to TAME:
   - TAME=0 and Total TI>=€ 5M,
   - 1<TAME<=9 and Total TI>=€ 10M
   - 10<TAME<=49 and Total TI>=€ 30M
   - 50<TAME<=499 and Total TI>=€ 50M
3. Units of the supplementary frameworks reporting only services transactions with non-EU countries, and other non-services transactions mentioned in point 4.3.1.

4.3.4 SAMPLE SIZE: OPTIMAL ALLOCATION

Within each stratum, the sample size is calculated by *optimal allocation*. This consists of calculating sample sizes per stratum (n_h) so that the overall sample size *(n)* is minimum, subject to the sampling error of the estimator of the total of a given variable being equal to or less than a pre-allocated error. The result of this allocation is given by the following expression:

$$n_h = \frac{N_h S_h \sum_h N_h S_h}{V + \sum_h N_h S_h^2}$$

Where:

N_h = *Number of framework units in stratum h*

S_h = *Standard deviation of the variable under consideration, in stratum h*

* *The value of the total TI, per LU, includes the sum of the "adjusted" TI of the Form 349 transactions with code S (Intra-EU service provision), I (Intra-EU service acquisition) and T (Triangular transactions).*

† *The Limit value is determined using the aforementioned rule of the cumulative square root of the frequency distribution.*

‡ The value of the total TI, per LU, includes the sum of the "adjusted" TI of the Form 349 transactions with code S (Intra-EU service provision), I (Intra-EU service acquisition) and T (Triangular transactions).

§ The Limit value is determined using the aforementioned rule of the cumulative square root of the frequency distribution.

V = Square of the pre-allocated absolute sampling error: $V = (e_r.X)^2$ where e_r. is the pre-allocated relative sampling error and X is the total of the variable under consideration.

The relative sampling errors or variation coefficients of the total TI estimators, aggregating transactions S+T+I, of the total TI of transaction I and the total TI of transaction S, are pre-allocated by activity branch (ACTI) with the following values, in percentage:

ACTI	S+T+I PRE-ALLOCATED ERRORS (%)	I and S PRE-ALLOCATED ERRORS (%)
Total	2	3
5.7	3	5
2,6,9	3.5	6
8,10,11	4	6.5
1,3,4	5	7.5

The pre-allocated errors vary according to the weight of the branch with respect to the TI of the S+T+I aggregate. In the end, the sample size per stratum is the maximum of each size attained from the optimal allocation by complying with each restriction imposed.

These sizes are adjusted upwards so that there are a minimum of 5 or 6 units per stratum and that the elevation factors (ratio of frame size to sample size in stratum h, N_h/n_h) do not exceed the following values: 200 in TAME 1, 100 in TAME 2, 50 in TAME 3 and 10 in TAME 4.

4.3.5 SAMPLE SELECTION AND ROTATION METHOD

The sample is randomly drawn in each stratum, using negative co-ordination techniques (burden function and the Permanent Random Number Technique), which allow the statistical burden of the units to be distributed. The aim is to reduce the number of surveys that a CBD unit conducts during the year.

On the other hand, a random sample rotation of approximately 25% per year of the non-exhaustive LUs in the ITSS sample is conducted to avoid "burn-out" of statistical units and refresh the sample.

The sample at the SE level is formed from the LU sample: An SE belongs to the SE sample if any of its LUs has been selected in the corresponding LU sample.

4.3.6 ESTIMATORS USED

– **Estimators at the Legal Unit (LU) level**

ESTIMATOR OF THE TOTAL:

The estimators obtained from the LU sample are simple expansion estimators (Horvitz-Thompson, 1952), which are associated with stratified random sampling.

The estimator of the total of variable *X* (imports or exports) for any quarter is given by the following general expression:

$$\hat{X} = \sum_{h} \sum_{i=1}^{n_{hf}} F_{hi}^{f} x_{hi} \qquad (1)$$

Where:

$\hat{X}$= *Estimated value of total exports (or imports) based on the LU.*

n_{hf} =*Number of sample LUs with valid response* in stratum h.*

F_{hi}^{f} =*Final elevation factor associated with the LU i in stratum h.*

x_{hi}= *Value of exports (or imports) of sample LU i in stratum h.*

ELEVATION FACTORS:

Regarding elevation factors, the *theoretical elevation factors* are differentiated for each stratum h derived directly from the design, which take the following expression:

$F_h = \frac{N_h}{n_h}$ *(Factor associated with each LU and belonging to a non-exhaustive stratum h)* and which will take value 1 for exhaustive LUs.

These theoretical factors sometimes differ from the final factors used during the estimation process, because of adjustments for non-response and stratum changes.

The most common technique for processing non-responses of an active unit is imputation. In this way, the theoretical factors established by the design are respected as much as possible in each quarter, limiting to two the causes for these to differ from the final factors: *Stratum changes,* and LUs that, being *initially non-exhaustive according to the design, eventually become so* because they meet one of the exhaustiveness criteria discussed in section 4.3.3.

For these two reasons, the *final factors* of a given LU i belonging to a stratum h, denoted above as F_{hi}^{f}, will generally take the following expression:

$$F_{hi}^{f} = \frac{N_h - E_h - n_h^k F_h^*}{n_h - E_h - n_h^k} \quad con\ F_h^* = \frac{N_h - E_h}{n_h - E_h} \qquad (2)$$

Where:

N_h= *Total number of framework LUs in stratum h.*

E_h= *Total number of LUs in stratum h that were originally non-exhaustive but have become exhaustive by meeting an exhaustiveness criterion.*

n_h= *Total number of sample LUs originally selected in stratum h according to design.*

* Valid response means the response collected directly from the sample LUs that have answered the questionnaire and whose response has been recorded, cleaned and validated, plus those that did not respond for any reason (total non-response) and whose data have been duly imputed.

n_h^k= *Total number of sample LUs with valid responses originally selected in stratum h and moved to stratum k (with k differing from h).*

F_h^*= *Theoretical elevation factor adjusted by the exhaustive units, in stratum h.*

STRATUM CHANGES:

- Stratum changes are always made by checking against the initial stratum assigned to the unit in the theoretical sample, and not against the stratum where the unit moved in a previous quarter, if that is the case.
- Stratum changes are considered when there has been a change in activity (ACTI) or in the range of the number of employees (TAME) from one quarter to another, as both stratification variables are collected in the ITSS questionnaire. The rest of the stratification variables such as GROUP or BRACKET_TI, as they are only available once a year, are not assessed if they change for a specific unit from one quarter to another.

DOMAIN ESTIMATOR:

The formula (1) of the estimator of the total of X can be generalised for any domain 'd' in the survey (any subgroup of the population, which does not have to coincide with the strata). These domains can be: the type of service, the counterpart country, the mode of supply, the CNAE, etc., or any combination of these.

In this case the formula for the direct estimator for a given domain "d" would be:

$$\hat{X}_d = \sum_h \sum_{i=1}^{n_{hf}} F_{hi}^f \; x_{hi} \; Z_{dhi} \qquad (3)$$

With:

Z_{dhi} = *Dichotomous random variable that takes value 1 if the LU i from stratum h belongs to domain d and 0 if otherwise.*

– **Estimators at the level of the Enterprise Statistical Unit (SE)**

Indirect estimators are used for SE, as estimates are calculated at the SE level through the LU sample. Among the possible expressions of the indirect estimators that can be found in: '*Indirect Sampling Applied to Skewed Populations' de Pierre Lavallée y Sébastien Labelle-Blanchet (Survey Methodology, June 2013, Vol. 39), the INE has chosen for the new ITSS (and for the rest of the business statistics that by law must provide SE data) those based on connection weighted according to the probability of selection of LUs (the inverse of the LU's elevation factor).* The general expression of the indirect estimator for the total of variable Y would be:

$$\hat{Y} = \sum_{i=1}^{n} w_i \; y_i \qquad (4)$$

Where:

$\hat{Y}$= *Estimated value of services exports (or imports) based on the SE.*

y_i = *Value of exports (or imports) of services from the sampled SE and sampling. This is calculated by summing the values of exports (or imports) of each LU (sampled and non-sampled) belonging to the SE i. This total can be calculated because exports (imports) are additive variables and therefore do not need to be consolidated within each SE i.*

n = *Number of sample SEs.*

w_i = *Elevation factor (indirect) of the SE i:*

$$w_i = \frac{m_i}{\sum_{j \in i}^{M_i} (F_{hj}^f)^{-1}} \qquad (5)$$

Where:

m_i = *Total number of sample LU j pertaining to SE i.*

M_i = *Total number of LU j (sample and non-sample) pertaining to SE i.*

F_{hj}^f = *Final elevation factor of LU j pertaining to stratum h and SE i. The expressions for these elevation factors correspond to those given in section 4.3.6.1.*

As in the case of LUs, the formula (4) of the estimator of the total of *Y* can be generalised for any domain 'd' in the survey (any subgroup of the population, which does not have to coincide with the strata). These domains can be: the type of service, the counterpart country, the mode of supply, the CNAE, etc., or any combination of these.

In this case the formula for the indirect estimator for a given domain "d" would be:

$$\hat{Y}_d = \sum_{i=1}^{n} w_i \, Y_i \, z_{di} \qquad (6)$$

With:

z_{di} = *Dichotomous random variable that takes value 1 if the SE i pertains to domain d, and 0 if otherwise.*

4.3.7 SAMPLING ERRORS

– **Sampling error at the LU level for the annual total**

The sampling error is calculated for the estimated annual total of X. This is given as the sum of the estimates of the totals for each quarter, which is:

$$\hat{X}_d = \hat{X}_{d1} + \hat{X}_{d2} + \hat{X}_{d3} + \hat{X}_{d4} \qquad (7)$$

Where

$$\hat{X}_{dt} = \sum_{h} \sum_{i=1}^{n_{hf}} F_{hi}^{f} x_{hi} z_{dhi} \quad t = 1...4$$

$$z_{dhi} = \begin{cases} 1 & si\ i \in d \\ 0 & en\ otro\ caso \end{cases}$$

The expression of the estimated variance for $\hat{X}_d$ is as follows:

$$\hat{V}(\hat{X}_d) = \sum_{t=1}^{4} \hat{V}(\hat{X}_{dt}) + 2 \sum_{t=1}^{4} \sum_{t<j} \hat{C}ov(\hat{X}_{dt}, \hat{X}_{dj}) \qquad (8)$$

This calculation applies the Raulin formula, which results in a good approximation to the direct method, and is given as follows:

$$\hat{V}(\hat{X}_{dt}) = \sum_{h} \hat{V}(\hat{X}_{h,dt}) = \sum_{h} \sum_{i=1}^{n_{hf}} F_{hi}^{f} (F_{hi}^{f} - 1)(x_{hi} z_{dhi} - \hat{\bar{X}}_{dh})^2$$

$$\hat{\bar{X}}_{dh} = \frac{\sum_{i=1}^{n_{hf}} F_{hi}^{f} x_{hi} z_{dhi}}{\sum_{i=1}^{n_{hf}} F_{hi}^{f}} \qquad (9)$$

The covariance is calculated as follows:

$$Cov(\hat{X}_{dt}, \hat{X}_{dj}) = \sum_{h} \hat{\rho}_{h,dtj} \sqrt{\hat{V}(\hat{X}_{h,dt})} \sqrt{\hat{V}(\hat{X}_{h,dj})} \quad (10)$$

The correlation coefficient in stratum h between the common units *(n_{hfc})* of quarter t with quarter j is calculated according to the following expression:

$$\hat{\rho}_{h,dtj} = \frac{\sum_{i=1}^{n_{hfc}} (X_{hti} - \bar{X}_{ht})(X_{hji} - \bar{X}_{hj})}{\sqrt{\sum_{i=1}^{n_{hfc}} (X_{hti} - \bar{X}_{ht})^2} \sqrt{\sum_{i=1}^{n_{hfc}} (X_{hji} - \bar{X}_{hj})^2}}$$

$$\bar{X}_{ht} = \frac{\sum_{i=1}^{n_{hfc}} X_{hti}}{n_{hfc}}; \quad \bar{X}_{hj} = \frac{\sum_{i=1}^{n_{hfc}} X_{hji}}{n_{hfc}}$$

Finally, the coefficient of variation (CV) or relative sampling error for the estimator of the total $\hat{X}_d$ in domain d is given by:

$$C\hat{V}(\hat{X}_d) = 100 \times \frac{\sqrt{\hat{V}(\hat{X}_d)}}{\hat{X}_d} \quad (11)$$

– **Sampling error at the LU level for the quarterly total**

As a specific case of the above, the estimated variance of the estimator for the quarterly total t in the domain d, is simply:

$$\hat{V}(\hat{X}_{dt}) = \sum_{h} \sum_{i=1}^{n_{hf}} F_{hi}^{f}(F_{hi}^{f} - 1)(X_{hi} z_{dhi} - \hat{\bar{X}}_{dh})^2$$

$$\hat{\bar{X}}_{dh} = \frac{\sum_{i=1}^{n_{hf}} F_{hi}^{f} X_{hi} z_{dhi}}{\sum_{i=1}^{n_{hf}} F_{hi}^{f}}$$

– **Sampling error at the SE level**

To obtain the sampling error of the indirect estimator in section 4.3.6.2, and following the above methodology, the indirect estimator for the total for variable Y in domain d, can be expressed in terms of LU as follows:

$$\hat{Y}_d = \sum_{h=1}^{H} \sum_{j=1}^{m_h} F_{hj}^{f} \theta_{hj} z_{dhj} \qquad (11)$$

Where:

$$\theta_{hj} = \frac{(F_{hj}^{f})^{-1}}{\sum_{j=1}^{M_i} (F_{hj}^{f})^{-1}} Y_i \qquad j \in i$$

z_{dhj} = *Dichotomous random variable that takes value 1 if the LU j of the SE i from stratum h belongs to domain d and 0 if otherwise.*

M_i = *Total number of LU j (sample and non-sample) pertaining to ESU i*

m_h = *Total number of sample LU j in stratum h*

Y_i = *Value of variable Y corresponding to the sample ESU i*

This estimator takes a similar form to the case of the estimator of the total at the LU level, which means the Raulin formula can therefore be applied analogously to errors due to LUs.

4.4 MEANS OF DATA COLLECTION AND PROCESSING

4.4.1 DATA COLLECTION METHODS

The basic information is obtained from each Legal Unit (LU), and comes from two sources:

– Questionnaires sent quarterly to the LUs of the selected sample (direct collection):

The collection of questionnaires via Internet (CAWI) through the INE's *Integration of Information Collection and Administration (IRIA)* platform(https://iria.ine.es/iriaPortal/contents/login/login.jsf), which is conducted via the INE's three Collection Units that are in charge of the ITSS. Completion of the questionnaire via the Internet is encouraged (more than 93% of ITSS questionnaires

are completed in this way) although, in any case, the informants have other response channels available (post, telephone, fax, etc.).

– Tax-based administrative information (VAT Form 349), available on a quarterly basis for all sample and non-sample LUs for each of the "statistical enterprises" or ESUs in the sample:

  The tax information (VAT Form 349 of the AEAT and the tax authorities of Navarra, Alava and Guipuzcoa), is collected via Excel/SAS file by e-mail.

4.4.2 DESCRIPTION AND PROCESSING OF ANTICIPATED INCIDENTS IN THE FIELDWORK

The three INE Collection Units in charge of the ITSS are responsible for the nationwide management of the collection, recording and filtering of the questionnaires, as well as for answering the telephone lines to resolve respondents' queries. Enterprises are also called in cases where no response is obtained within the established period or is considered insufficient or inconsistent.

In supervising the fieldwork, different situations that may arise during the information gathering process are taken into account. The sample unit shall be considered to have been effectively surveyed if the completed questionnaire has been obtained and the data is verified for established completeness and submitted to consistency checks.

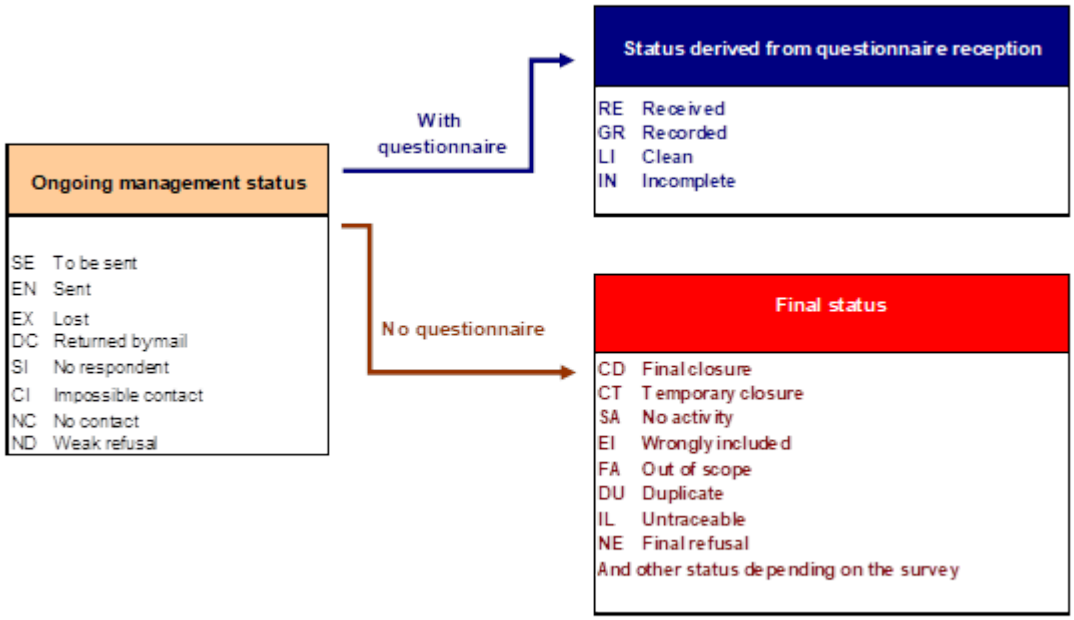
In addition, a series of incidents can occur in the process of collecting information which prevent the survey from being taken. Exercising rigour in the survey is of utmost importance, since its posterior analysis allows the survey framework to be updated and affect how the information is processed.

During the survey collection phase, the interviewer-agent manages each sample unit in order to obtain the completed questionnaire and, once received, proceed to its recording and initial filtering. In this process, the situation regarding the collection of the sample unit changes and this will be reflected in the computer application through the entry of codes called *"States".*

The states reflect the unit's status during the collection process. Three main state groups are distinguished by their stages of collection:

- **Ongoing management states**: These reflect the situation of the respondent unit before the completed questionnaire is received.
- **States resulting from the receipt of the questionnaire**: These indicate the stage of the process between receipt of the questionnaire and final approval.
- **Final states/impacts**: These reflect the final situation at the end of the data collection period.

Graphically:



In addition, there are other final impacts applicable to all enterprise surveys such as ITSS, which are directly linked to business-to-business relationships:

- **FU Merger**
- **AB Takeover**
- **ET Full demerger**
- **FP Changes in the factors of production**

What needs to happen is that once the data processing phase starts on gather data after the compilation phase, each sample unit is assigned a FINAL incidence, so that before calculating the estimators it is known what information there is and what needs to be imputed.

In general, if the ongoing management states are not resolved by the date set for further data processing, and therefore not all questionnaires are assigned a final impact, the following correspondences or equivalences can be established:

SE, EN, EX, SI, ND: These ongoing management states end up amounting in practice to a **final refusal or final NE**, as they are the typical excuses given by respondents such as the questionnaire *will be sent* (SE) or has already been *sent* (EN) or the questionnaire has been *lost* (EX) or has not been received, or it *is without a respondent* (SI) as the company could be located, but not the appropriate contact person or finally *refuses, albeit weakly* (ND), to answer the questionnaire.

DC, CI, NC: These ongoing management states end up amounting to an unreachable **IL.** These are the cases *returned by post* (DC) when the questionnaire is returned by the post office to the INE, *contact impossible* (CI) when the company is called and nobody answers the calls and *not contacted* (NC), when there is no means of contacting the company.

Assuming that all LUs in a quarter have ended either as LI (Clean) or with a final impact assigned, Table 1 below includes how each of these final impacts is supposed to be processed in the fieldwork.

Table 1: Final impacts, description and processing

FINAL IMPACT	DESCRIPTION	PROCESSING
CD (Permanent closure or removal)	The LU has definitively ceased its activity, a situation that is justified with an official document that accredits it (e.g. cancellation of the IAE [business activities tax], AEAT form 036, etc.)	**These are imputed**: Processed as NO RESPONSE due to REMOVAL. The reason is that, although they are low, as the population is not renewed quarterly (population sizes remain constant throughout the year), and there is no reserve sample, these units cannot be replaced until the end of the year and must therefore be imputed every quarter in order to maintain the sampling fractions.
CT (Temporary Closure) or SA (No Activity)	The LU remains closed during the information collection period and no respondent can be located (CT) or it has no activity during the year (SA)	**These are imputed:** Its imports and exports in the quarter are given a zero
EI (Erroneously included)	The main activity of the LU is outside the scope of the survey (this is not usually the case in ITSS because it has no activity restrictions)	**These are imputed**: Processed as NO RESPONSE due to FRAMEWORK ERRORS. The reason is that, although they are framework errors, as the population is not renewed quarterly (population sizes remain constant throughout the year), and there is no reserve sample, these units cannot be replaced until the end of the year and must therefore be imputed every quarter in order to maintain the sampling fractions.
FA (Out of scope)	Other characteristics of the unit, other than the main activity, place it outside the scope of the survey (e.g. natural persons with 1 or 0 employees in the new ITSS, or non-resident LUs)	
DU (Duplicate)	The LU is listed in the directory more than once (this rarely happens, sometimes when only the letter in the Tax ID of LU changes)	
IL (Could not be located)	LUs that, due to problems with the address or contact coordinates, could not be located by any means or surveyed during the quarter	**These are imputed:** NEs are a clear example of NO RESPONSE. In the case of ILs, there is hope that they can be located in another quarter. If not, they should be removed from the sample by the end of the year. These situations, which are minor issues at the end of the collection, are dealt with in particular by the Collection Units to try to minimise the lack of response.
NE (Final refusal)	LUs that have refused to answer or that in the end, without explicitly refusing, have either not sent the questionnaire or have sent it after the deadline to be included in the quarterly estimates	
FU (Merger)	LUs that have merged with others to form a new company, and therefore disappear	**These are imputed**: Processed as NO RESPONSE due to REMOVAL. The reason is that, although these are removals for different reasons, as the population is not renewed quarterly (population sizes remain constant throughout the year), and there is no reserve sample,
AB (Takeover)	LUs that have been absorbed by others and no longer exist as such	
ET (Full demerger)	The LU that is fully split into 2 or more units, thus disappearing from the original one.	

FP (Changes in factors of production)	When company B occupies the same location as the sampled company A, but the factors of production change: facilities, activities, etc., and therefore there is a change of Tax ID and CNAE activity	these units cannot be replaced until the end of the year and must therefore be imputed every quarter in order to maintain the sampling fractions.

4.4.3 COLLECTION QUESTIONNAIRES AND RELATED CHARACTERISTICS

A single ITSS questionnaire (https://www.ine.es/metodologia/t37/cuestionario_ECIS.pdf) has been designed in collaboration with the Bank of Spain. This questionnaire covers 66 international transactions in accordance with the transactions included in the various Balance of Payments accounts considered in the IMF's BPM6: 61 for services, 1 for goods (Merchanting) and 3 for other international transactions.

The questionnaire includes a comprehensive explanatory appendix for each of the 66 international transactions with their standardised definition, as well as the transactions included and excluded in each transaction. In the case of exclusions, the alternative transaction where they should be included is indicated, or, conversely, whether the transaction is included in a transaction that is outside the scope of the survey.

The expected completion time for the respondent varies according to the number of international transactions reported each quarter, as this is not a closed questionnaire (any number of statements is possible). The range of ITSS respondents reporting extends from those reporting no transactions covered by the survey in the quarter, to those reporting one or two transactions, to those reporting multiple transactions (e.g. credit institutions reporting under international financial services bank charges accrued with many countries for various reasons).

4.4.4 PROCESSING THE COLLECTED INFORMATION

– **Cleaning and validation**

An initial data cleaning process is done during the collection phase. Both the electronic surveys that the informants fill out via the Internet (CAWI) on the INE's *Integration of Information Collection and Administration (IRIA)* platform, and the management, recording and cleaning of the collection applied by the INE Collection Units, employ systems for the detection of errors programmed to validate the data while they are being introduced by the user.

A distinction is made between serious errors (which must necessarily be corrected) and secondary anomalies or minor errors (which, once confirmed, must be justified). In addition, during the data collection and cleaning process, measures for the reduction of non-response are also carried out.

Recorded entries by the Collection Units form and feed, at least every fifteen days, the complete recording files on which the following processing and information phases are made. These files are processed in Central Services, which carry out a new check on information coverage to ensure the comprehensiveness of the recorded data and detect duplicates and coverage errors, as well as conducting an initial assessment of the quality of the collected variables.

It is at this point that a second cleaning phase takes place, which could be considered the true validation phase. There are rules for monitoring variation ranges in imports and exports declared by respondents that warn whether these quarter-on-quarter and year-on-year variations deviate from the established ranges. This control is prioritised for the most important statistical units in terms of the value imported or exported, as their weight has a greater influence on the totals of each heading or service operation. In some of these cases, the Collection Unit in charge of a certain data-critical unit is urged to re-contact the subject it in order to confirm the declared information.

In the case of the quarterly information from Form 349, filtering processes have been developed jointly between the AEAT and the INE for the filtering of the taxable income declared by 349 filers, prior to their being sent by the AEAT to the INE.

– **Imputation**

- Imputation of sample LUs (direct collection via questionnaire):

  Once the data cleaning and validation phase has been completed, the non-response imputation phase begins for those units with the final impacts indicated in Table 1 of section 4.4.2.

  The imputation of sample LUs occurs when there is a total non-response. Partial non-response cannot occur since the validation rules implemented in IRIA do not allow a questionnaire to be considered Clean (LI) if there is partial non-response (of any section or variable of the questionnaire). On the other hand, as the number of international transactions in services or other international transactions may vary from quarter to quarter, a lower number from one quarter to the previous one does not necessarily imply partial non-response by the respondent.

  The imputation method for sample LUs shall be:

  - Sample LUs with available historical information: This is the imputation that was already being done in the ITSS according to the historical information (from previous quarters or years) available on the LU to be imputed, which was updated with information from LUs with a valid response in the reference quarter.
  - Sample LUs with NO available historical information: Until 2022, not having an alternative source, these units were imputed by re-weighting the elevation factors of the units of their stratum that they did answer, which was equivalent to imputing these units by the mean of their stratum. Normally this type of imputation varies the distribution of the data and underestimates the variance. From 2022 onwards, these sample LUs are imputed in the same way as non-sample LUs (using information from Form 349).

- Imputation of non-sample LUs (via Form 349):

  For non-sample LUs, the only source of information where information related to imports and exports of services can be extracted is Form 349.

  To this end, the INE will also receive quarterly information from the AEAT and from three of the regional tax authorities for each quarter of year A corresponding to the *quarterly self-assessment returns from Form 349* for all LUs (sample and non-sample) that form part of the ITSS sample ESAs. Form 349 only contains intra-EU services and acquisitions of intra-EU services broken down by EU27 country. It

does not include non-EU imports and exports of services, nor the type of service, nor the mode of supply (MoS), all of which are necessary variables in ITSS.

For purposes of the Balance of Payments/STEC/MoS, it is necessary to impute these non-sample LUs, as far as possible, by some method that uses the information from Form 349 that will be available each quarter. The variables to be imputed are:

- Non-EU imports and exports of services by type of service, country and MoS, and
- The type of service and MoS for intra-EU imports and exports of services.

This is one of the major challenges of the new ITSS. There are several potential imputation methods, but the *distance-based "Hot-Deck" (or "Nearest Neighbour" method)* has been chosen: Minimise a distance function to find a donor as close as possible to the non-sample LU that will be the recipient of the information.

In this method, the receiving units will be the non-sample LUs and the donors will be the direct collection sample LUs. The distance function shall be established according to the only common information that in each quarter is available for both types of units. This information is derived from the 349 data for the reference quarter and will consist of the tax bases for S (Supply of Services), T (Triangular Transactions) and I (Acquisition of Services) transactions for EU27 countries.

The distance function chosen is the *Mahalanobis (1936)* distance, which requires the calculation of the variance-covariance matrix for the three variables in 349. This allows, on the one hand, to take into account the dependency relationships that may be found between the variables (e.g. whether the higher/lower value of purchases incurs a higher/lower value of service provision), and, on the other hand, to weight the variables according to their variance. Variables with lower variance will be more important than those with higher variance. This is intended to equalise the importance of the variables in the final result of finding the optimal donor.

Once the optimal donor has been chosen for each non-sample LU recipient according to the three variables of Form 349, the information is imputed according to these criteria:

- **Intra-EU data:** Receiving units are imputed their own 349 data for S, I and T transactions by EU27 countries in the corresponding quarter. As for the distribution of intra-EU S, I and T figures by type of service and MoS, since this information is not available in Form 349, the EU27 operation-country combinations having donor and recipient in common are identified, and the recipient figures corresponding to these common combinations are distributed according to how the donor figures are distributed by services and MoS.

  For the recipient's operation-country combinations that do not occur in the donor, the distribution is now made by looking at the transactions (S, I or T) that the recipient and donor have in common (taking into account in the latter only those involving EU countries), and the recipient's figures are distributed by services and MoS according to how the EU aggregate figures are distributed by services in the donor's transactions. In this way, instead of using the service structure observed in a given country declared by the donor, the service structure observed in the donor at the EU level is used.

If there are still non-common entries between recipient and donor (or even if the donor does not declare intra-EU data, or declares not to do ITS), the recipient's figures for these entries are now split by service taking into account the service structure observed in the totals by operation and country of the sample LUs belonging to the same stratum (strictly speaking: the combination of activity grouping, size grouping, group and sub-stratum or BRACKET-TI) as the recipient. The process continues (for those records that are not cross-referenced) by relaxing the stratum definition at the activity, wage earner bracket and group level, then at the activity and wage earner level, and finally for the branch and bracket. This is the only way to apply a set of percentages to distribute all the records of the non-sample LUs corresponding to Form 349 and units with non-response for which no historical information is available.

- **Non-EU data:** Receiving units are imputed the same data reported in the ITSS questionnaire by their donor for each combination of transaction-type of service-non-EU country in the corresponding quarter

In the case of the headings of the ITSS questionnaire corresponding to other international transactions (merchanting, transfers and capital transactions), which are not services, the receiving units are directly imputed the transaction-type combinations of other international transaction - country (EU or non-EU), reported in the ITSS questionnaire by their donor, in the corresponding quarter.

4.5 DATA COLLECTION FREQUENCY

The deadline for the submission of duly completed ITSS surveys is the *20th day of the month following the reference quarter*.

For this purpose, surveys are sent to respondents on the last day of the reference quarter or at the beginning of the following week. Respondents therefore have approximately twenty days to complete the survey and send it to the INE.

In the case of Form 349 information:

– Summary declarations for intra-community transactions (annual) referring to year A-1: They are sent to the INE in February of year A, since the ITSS sample of year A is delivered to the Data Collection Unit at the beginning of March of year A. This is the file that serves as the population framework of the ITSS for year A.

– Summary declarations for intra-Community transactions (quarterly) referring to each quarter T of year A: These are sent to the INE in about T+42 days, T being the reference quarter of year A, shortly before the deposit of the directly collected data in the "Repository". This is the quarterly Form 349 that is used to impute the information of the non-sample LUs and the non-response of the sample LUs without historical information.

5 Dissemination Plan and Frequency

5.1 DISSEMINATION PLAN

– INE (SG for Short-term Statistics) sends ITSS data to its main institutional users:

- **Bank of Spain (BdE), Dept. of INE National Accounts (DCN) and the Large Companies Division Unit (LCU) of the INE:** Quarterly ITSS micro-data based on the ESA are submitted on the established dates and in the established formats, for the purpose of quarterly and annual Balance of Payments (Other Services).

– INE stopped disseminating quarterly and annual ITSS data in INEbase as of reference year 2023. During the years 2022 and 2023, the latest data were published in the previous methodology for the 2022 reference quarters and the annual ITSS 2022 reference publication.

Until the 2022 reference year there had been a dual dissemination of official data on International Trade in Services (ITS) in Spain:

- **ITSS raw data:** Based on the direct response of ITSS respondents without any adjustment. These data have been disseminated only at the national level by the INE.
- **Balance of Payments Data (Other services):** Based mainly on ITSS data, but also on data from other sources, which are macro-accounting adjusted according to the Balance of Payments methodology. These data are disseminated nationally and internationally by the BdE.

This dual dissemination of data on the same phenomenon (CIS) was practically unheard of in our neighbouring countries, as the ITSS surveys usually only serve as "input" for the Balance of Payments, the latter being the only official data. The reason for this dual dissemination in Spain was due to the need to give some visibility to CIS data from a basic business statistics perspective, and not only from the perspective of macroeconomic summary statistics represented by the Balance of Payments and National Accounts.

It is true that this dual dissemination may have caused some confusion to users, despite the fact that the sources and adjustments that differentiated the final ITSS data from the Balance of Payments for Other Services (BoP_OS) data have been detailed in each ITSS publication.

The new STEC and MoS requirements of the EBS-R have been defined according to the final annual Balance of Payments data (and not on the basis of ITSS raw data), which implies that *total STEC=total BP_OS (always),* and that *total MoS=total BoP_OS (for the MoS specific to BP_OS statistics and for the EBOPS headings common with BP_OS).*

This EBS-R decision links STEC and MoS *-which by their nature are statistics more common to basic business statistics (as Spain has defended in all international fora) than to summary statistics (which include many accounting adjustments in an aggregate form)-,* only with Balance of Payments.

Therefore, a decision was taken jointly with the BdE that the INE should cease the national dissemination of direct ITSS data. Thus, the only official data in the field of

International Trade in Services is the Balance of Payments (Other Services), as the rest of the new statistics linked to ITS (STEC and MoS) must be compiled with according to these Balance of Payments (Other Services) data.

– The INE informed its other institutional users of the ITSS (State Secretariat for Trade, ICEX and certain OCECA) about the new dissemination plan agreed between INE and BdE due to EBS and BoP regulations. These users continue to receive aggregated information from the new ITSS, as in the past.

– The INE is responsible for the annual production and transmission of the STEC and MoS to Eurostat on the dates set in the EBS regulation and their national publication in INEbase. STEC and MoS data are compiled from annual Balance of Payments (Services) data, based on STEC and MoS information collected in ITSS.

– The monthly, quarterly and annual Balance of Payments (Services) data are the only official data on International Trade in Services in Spain. On an annual basis, both Balance of Payments (Services) data and STEC and MoS data coexist as official data, as they are perfectly aligned.

5.2 DISSEMINATION FREQUENCY

Not applicable.