



Costa Rica
Trade by Enterprises Characteristics (TEC)

Data Analysis and Statistics Division

Cover photograph: "Presents", bronze sculpture, 1983, by Costa Rican artist Fernando Calvo Sánchez.
Collection of the Central Bank of Costa Rica.

Trade by Enterprises Characteristics (TEC)

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Abstract

Costa Rica is a small economy that historically has a focused on foreign trade, therefore, the characteristics of the companies involved in external trade are of crucial interest.

To obtain data of companies involved in international trade, the Macroeconomic Statistics Department of the Central Bank of Costa Rica combines information from three different sources. The company's ID serves as a unifying variable, linking customs information from General Customs Office (tariff heading such as connector with other classifications), Economic Variables Register (REVEC) from Central Bank (economic variables by firm and establishment) and information from digital invoices of the Ministry of Finance (sales distribution of retailers and wholesalers). Digital invoices are associated with the REVEC through the ID which allows the distribution of sales from wholesalers and retailers by economic activity and product.

The data linkage allows foreign trade information to be presented by different categories such as: economic activity, type of trader, size class, partner country, among others and the calculation of the import matrix.

Exports of services comprise over 40% of all exports in Costa Rica. A challenge is to incorporate foreign trade in services through a gradual approach.

Keywords

TEC: Trade by Enterprises Characteristics

ITR: International trade registers

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1. Introduction

Costa Rica is a small, upper-middle-income economy that historically, and regardless of the development model in force, has fostered a focus on continuous insertion into external real and financial markets. This reality of the Costa Rican economy has led to local productive and export performance positively correlated with the evolution of the economic activity of the country's main commercial and financial partners; in particular, the United States of America (USA), Europe and Central America.

Costa Rica has traditionally been an open economy with a degree of openness of 68%¹. Exports and imports of the country represent 32% and 36% of Gross Domestic Product (GDP), respectively. A significant share of these exports and imports are driven by foreign companies located in free zone areas (inside Costa Rica).

In this context, international trade statistics are critical economic variables for the country not only the absolute values but also the characteristics of the companies immersed in this process from a spatial and temporal perspective. For that reason, international trade statistics are among the most widely consulted data. However, such conventional international trade statistics do not offer information on the actors who are engaged in cross-border trade.

The OECD Trade by Enterprise Characteristics (TEC)² database aims to fill this gap, and contains information about international trade by different categories of companies such as: economic activity, type of trader, size class, partner country, etc.

The Macroeconomic Statistics Department of the Central Bank of Costa Rica (BCCR) designed software called “External trade of goods” (CEB) that combines information from three different sources, using as a unifying variable the company’s ID (Identification). This software combines customs information from the General Customs Office (tariff heading

¹ Measured as exports plus imports of goods and services as a share of GDP.

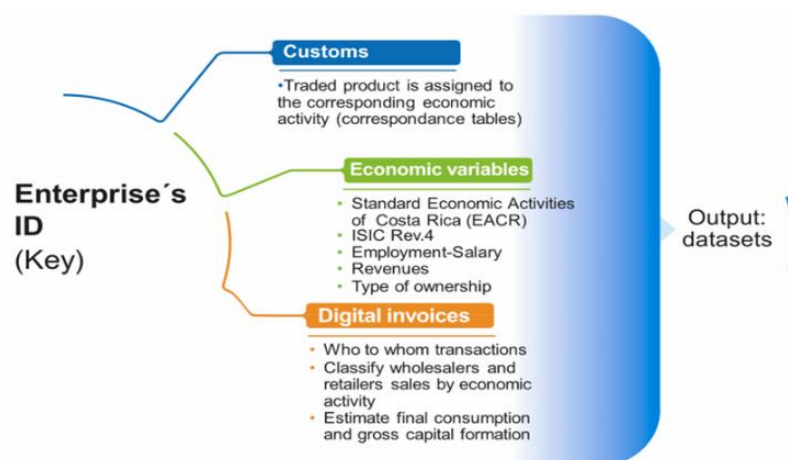
² Trade by company characteristics data is available for 26 OECD and 6 non-OECD countries: including 27 EU member states (except Ireland) plus Canada, Norway, Israel, Turkey and the United States. For more information consult:

https://stats.oecd.org/Index.aspx?DataSetCode=TEC1_REV4#

provides the ability to link to other classifications), Economic Variables Register from the BCCR (economic variables by firm and establishment) and information from digital invoices of the Ministry of Finance (sales distribution of retailers and wholesalers) (Diagram 1).

Through this procedure, it is feasible to obtain information about international trade by different categories of companies such as: economic activity, type of trader, size class, partner country, export intensity, among others and an import matrix.

Diagram 1 CEB: Linking data sources



Source: Central Bank of Costa Rica.

It is important to consider that the BCCR is the entity in charge of compiling, tabulating, and publishing official data on goods and services statistics in Costa Rica. This institution has legal support to carry out this function established in article 14 of its Organic Law 7558, which indicates that it must provide the public with the information it has in its possession. Additionally, article 34, paragraph g, of the Law of the National Statistics System (SEN) No. 9694, establishes that the Central Bank of Costa Rica has the responsibility of preparing and publishing national accounts and other macroeconomic accounts: Monetary and financial statistics, international accounts, and environmental accounts, mainly.

It is important to note that to manage the information received by the BCCR, which is essential for statistical production, there is an Information Management Division (IMD), specialized in the administration and processing of data, whose procedures are based on statistical techniques, using the best relevant international practices and recommendations.

The aim of this paper is to explain the process used by the Macroeconomic Statistics Department of the Central Bank of Costa Rica to characterize trade by companies which is based on linking trade microdata with business register and customs information (using the company ID, as a key identification), allowing a deeper analysis of the impact of trade on employment and production³.

2. Data sources

The Macroeconomic Statistics Department has different sources such as: administrative registers (AR) and surveys that can be used to obtain companies characteristics and others that can be linked through the company's ID to achieve a complete characterization of trade by companies.

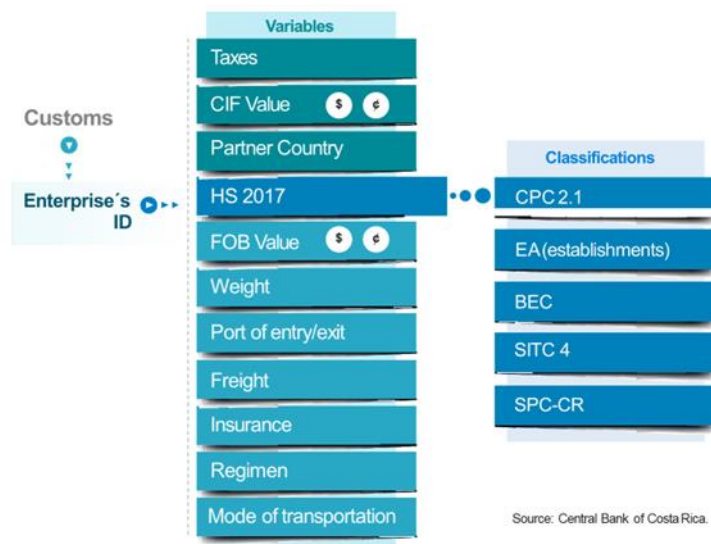
2.1. International trade registers (ITR)

The Customs Office of Costa Rica provides a dataset for exports and imports comprising tariff headings and their respective codes of Harmonized Commodity Description and Coding System (HS) by importer or exporter ID, partner country, weight, CIF value (imports), FOB value (exports), freight, insurance, port of entry or exit, regimen, mode of transportation, and others (Diagram 2).

As shown in Diagram 2, through the heading tariff (Harmonized System, 2017), the information coming from customs is encoded according to the Central Product Classification Rev.2 (CPC2), Broad Economic Categories (BEC), International Standard Industrial Classification Rev.4 (ISIC 4) and Costa Rica's Standard Product Classification (SPC-CR).

³ The production of trade by companies characteristics represents for the country a challenge in terms of time, human resources and technology.

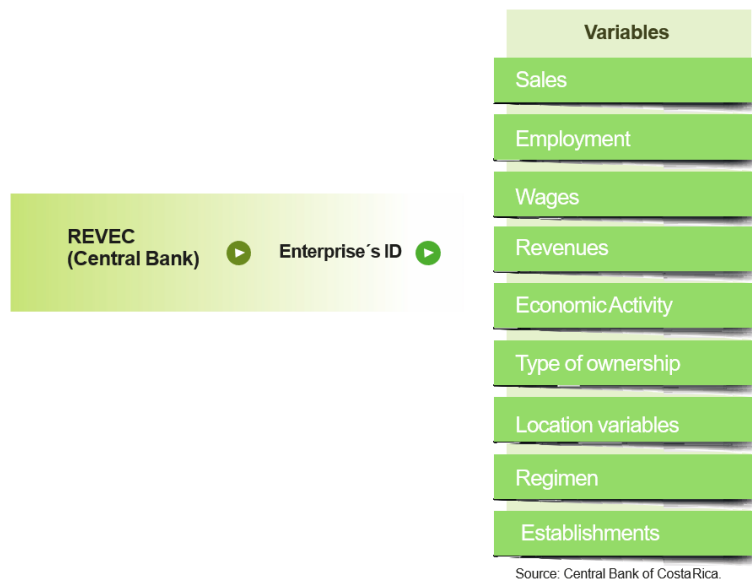
Diagram 2 International trade registers (ITR)



2.2. Economic Variables Register (REVEC the Spanish acronym)

Developed and updated by Central Bank of Costa Rica. The REVEC contains characteristics by company's ID such as described in Diagram 3.

Diagram 3 Economic Variables Register (REVEC)

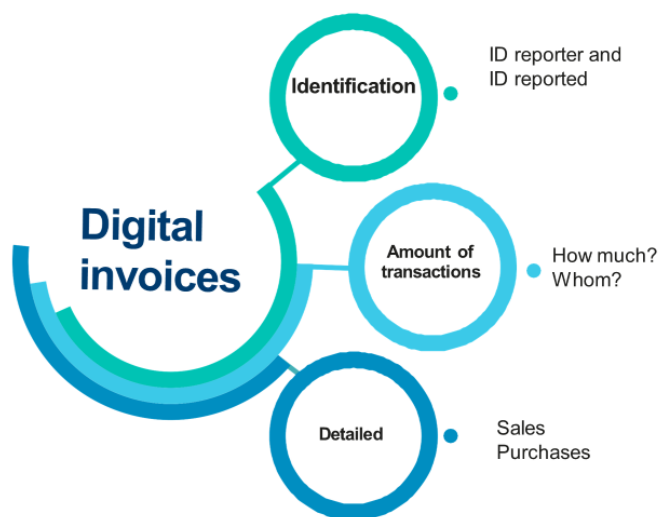


2.3. Digital invoices

Most companies that buy and sell goods/ services, must complete a 'digital invoice'⁴ to the Ministry of Finance for tax purposes to which BCCR has access.

Digital invoices are a detailed administrative record, each company declares its local sales and purchases. The company that makes the declaration is called the "reporter" of the electronic voucher; the "reporter" is the buyer. Each issuer must register the identifier of the buyer to which it sells and the value of the sale of the good or service. This declaration contains the information of declared purchases and sales, such as: its location, identification number, type of good or service, etc (Diagram 4).

Diagram 4 Ministry of Finance, digital invoices



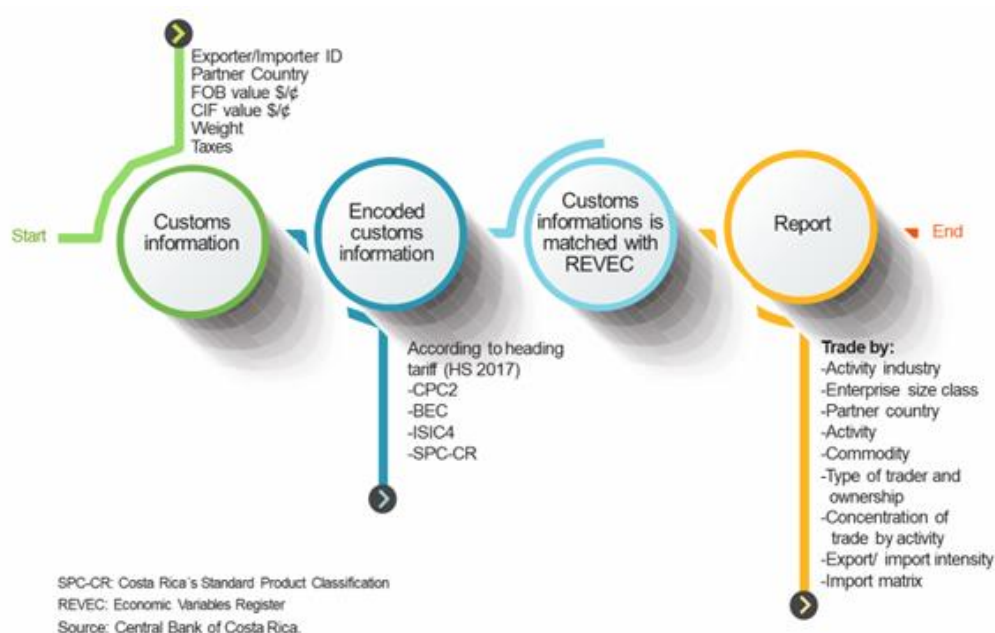
Source: Central Bank of Costa Rica.

3. Linking data sources and process

⁴ Religious foundations, trade unions and small companies are exempted.

A company's ID enables the combination of the variables belonging to the three databases: ITR, REVEC and digital invoices. As is shown in Diagram 5, customs information is coded according to heading tariff and is matched with REVEC obtaining different reports for both exports and imports: by economic activity, company size class, partner country, concentration of trade, type of trader, type of ownership, export and import intensity and others. These reports can be visualized in Excel and Power BI (Diagram 5 and 6).

Diagram 5 Export-import process

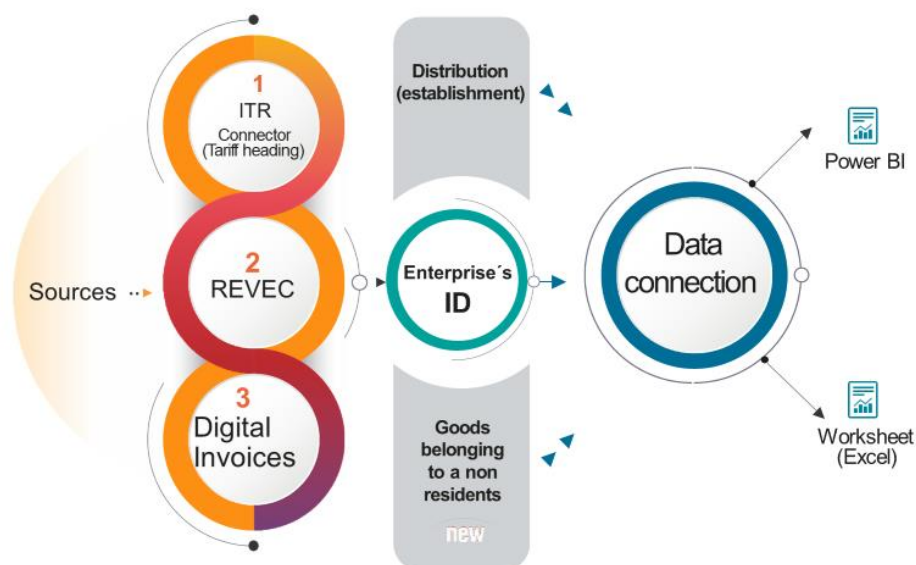


Digital invoices are associated with the REVEC by means of the ID which allows to distribute the sales of wholesalers and retailers by economic activity.

It is important to clarify that CEB allows the exclusion of goods belonging to non-residents. These must be excluded from the statistics of exports and imports according to the sixth

Balance of Payments Manual (BPM6) and must be included in services instead⁵ (Diagram 5 and 6).

Diagram 6 Data connection



Source: Central Bank of Costa Rica.

3.1. Import Matrix

The import matrix allows analysts and users in general to distinguish the intermediate consumption of imported origin, which is critical in the input-output analysis. This information is not only relevant to identify the characteristics of the economy but also the dependence on imported inputs in the production process of an industry and the country in general.

The elaboration of the import matrix requires a complex process that consists of the following steps (Diagram 7):

⁵ For more detail consult the document: Saborío, G, Torres, R, (2016). Services on Physical Inputs Owned by Others Methodological and Practical Aspects. An Update.

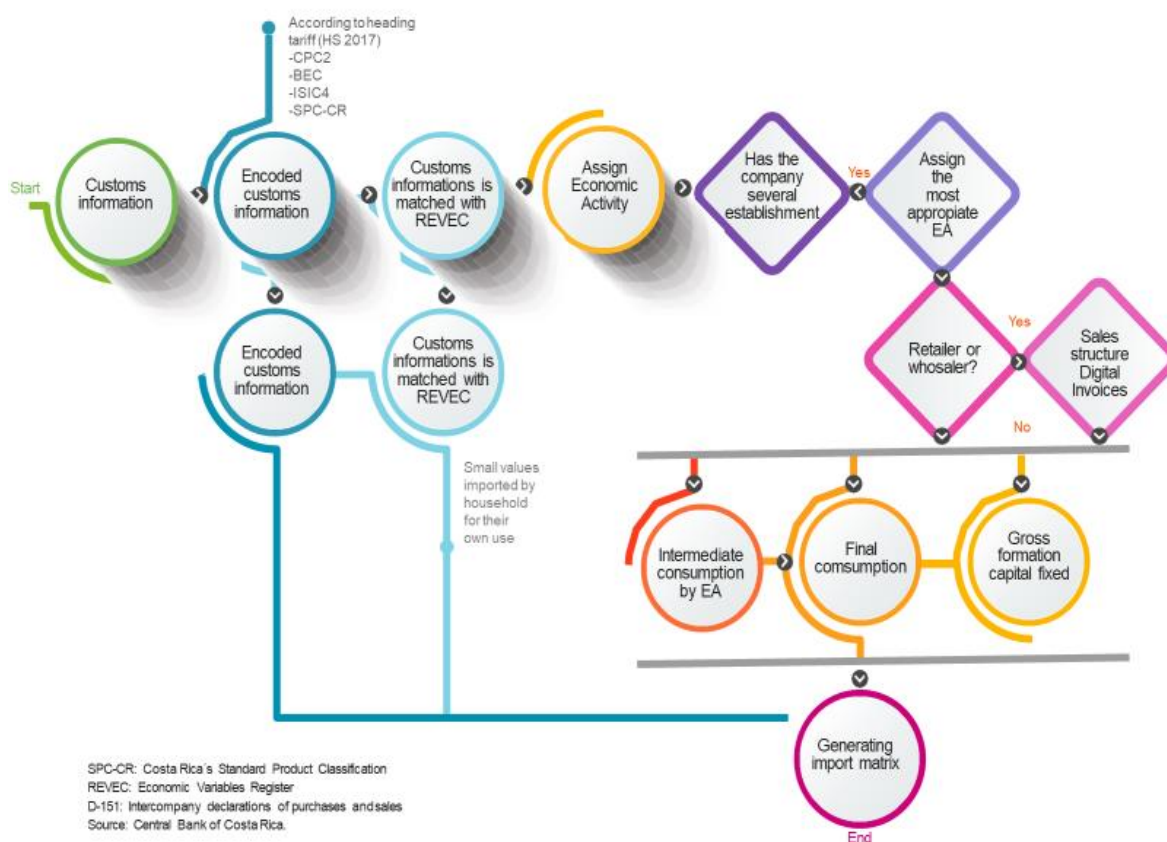
- Import information is obtained from the customs database. Each heading tariff is encoded according to BEC, CPC2, ISIC 4 and SPC-CR with the correlatives.
- Customs information is matched with REVEC. The heading tariffs, at the most detailed level, are matched with REVEC through the ID's importer to obtain the importer's profile. Over 90% of the value of imports is matched with specific importers in the database.
- Connecting tariff heading-establishment: The reporting unit is the company rather than the establishment. According to REVEC, some companies undertake more than one economic activity. Depending on its intrinsic type, the imported product is assigned to the corresponding economic activity.

For example, if one company undertakes two economic activities with two establishments, e.g., footwear and wearing apparel, those tariff headings associated with fabrics are allocated to wearing apparel and those associated with leather are allocated to footwear.

CEB keeps these links between tariff heading and economic activities of the company. It is important to mention that CEB uses the distribution of activities for establishments from the previous year. New products are assigned to the main activity when they are below a threshold (US\$500 dollars). If they are above the threshold, it is necessary to associate with the respective establishment.

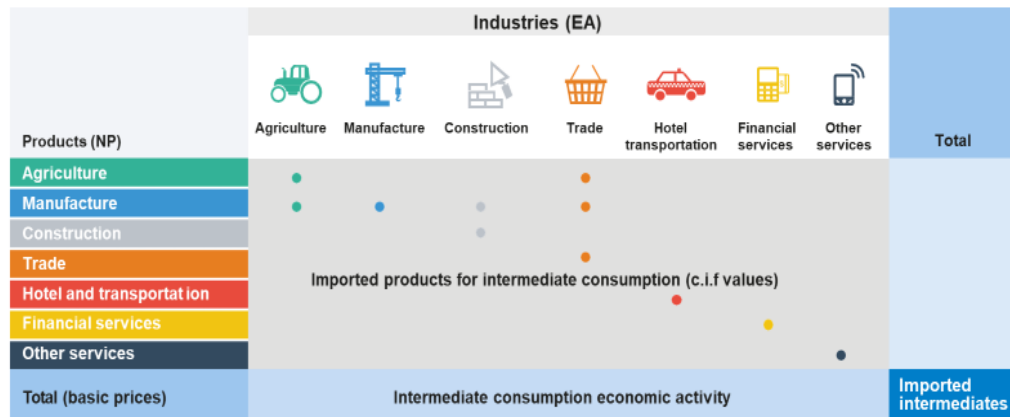
- Trade-Distributions: Wholesalers and retailers' sales by economic activity are tracked using data from digital invoices. In this way, intermediate consumption is allocated according to 142 economic activities. Also, it is possible to estimate final consumption and gross capital formation, especially for products such as computers and passenger vehicles.

Diagram 7 Import Matrix Process



The procedure allows the identification of users of imported products, by product and industry, to determine if the products are used for intermediate consumption, final consumption, or gross capital formation in generating an import matrix (Figure 1). Knowing that some imported goods by companies can be used for intermediate consumption or for capital formation, a threshold is defined based on the import's value (under this threshold is considered intermediate consumption). Low value imports undertaken by households and courier companies are considered as final consumption.

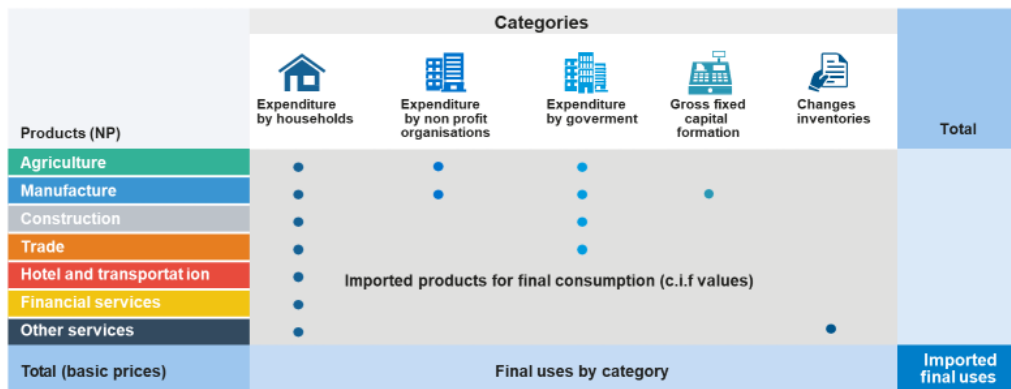
Figure 1 Intermediate consumption



Source: Based on SNA2008 and Manual of Supply Use and Input-Output Table, Eurostat.

Also generated is a report of the final demand that shows the use of imported goods by categories of final use.

Figure 2 Final consumption



Source: Based on SNA2008 and Manual of Supply Use and Input-Output Table, Eurostat.

4. Some results

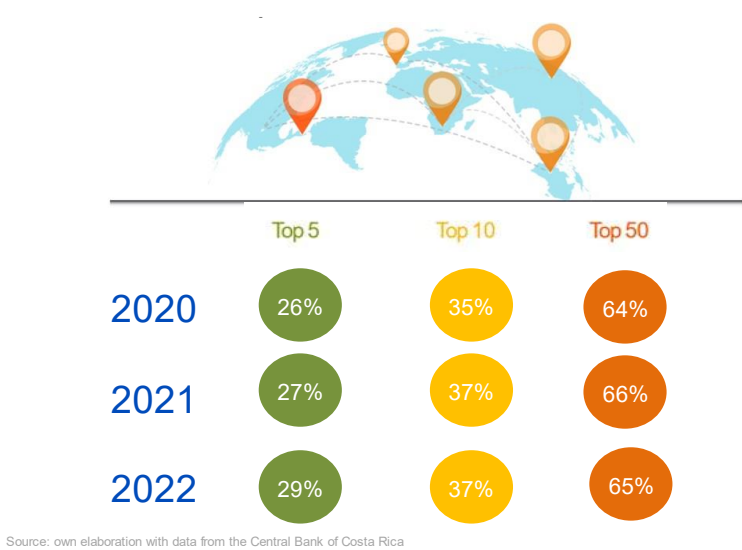
The main outcomes presented in this section focus on concentration of trade by number of companies, partner countries and exports value according to origin of capital.

4.1. Concentration of trade by number of companies

This dataset presents the value of exports undertaken by the top 5, 10 and 50 exporting and importing companies in the economy.

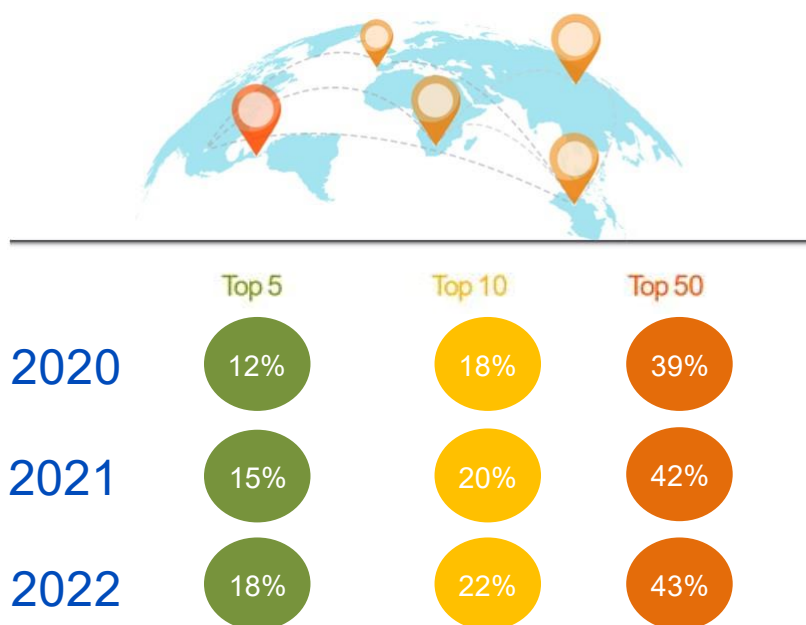
The top 5 companies accounted for 26% of the total of exports in 2020, the top 10 for 35% and the Top 50 for 64%. In 2022 each percentage increased, reflecting a notable trend towards the concentration of exports in few companies (Figure 3).

Figure 3 Concentration of exports value



As with exports, the percentage concentration of imports increased in 2022 as can be seen in Figure 4. Top 5, 10 and 50 increased by more than three percentage points.

Figure 4 Concentration of imports value



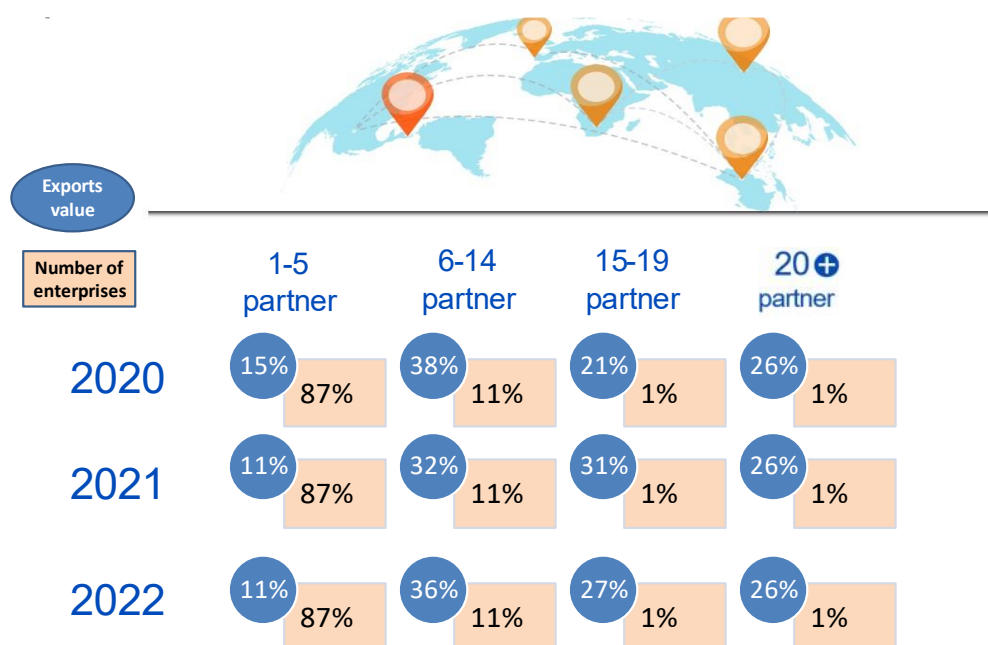
Source: own elaboration with data from the Central Bank of Costa Rica

4.2. Partner country

This dataset shows the percentage of total of value that is exported and imported to 1-5 partner countries, 6-14 partners, 15-19 partners and more than 20 partner countries.

Figure 5 indicates the concentration of trade by partner country; in 2020 companies that export products to 15-19 partner countries represent 21% of total value. This value, in 2022, increased significantly by 6 percentage points (21% to 27%), the percentage shifted from the first two categories 1-5 and 6-14 partner countries, while the category of more than 20 partner countries remained unchanged during 2022.

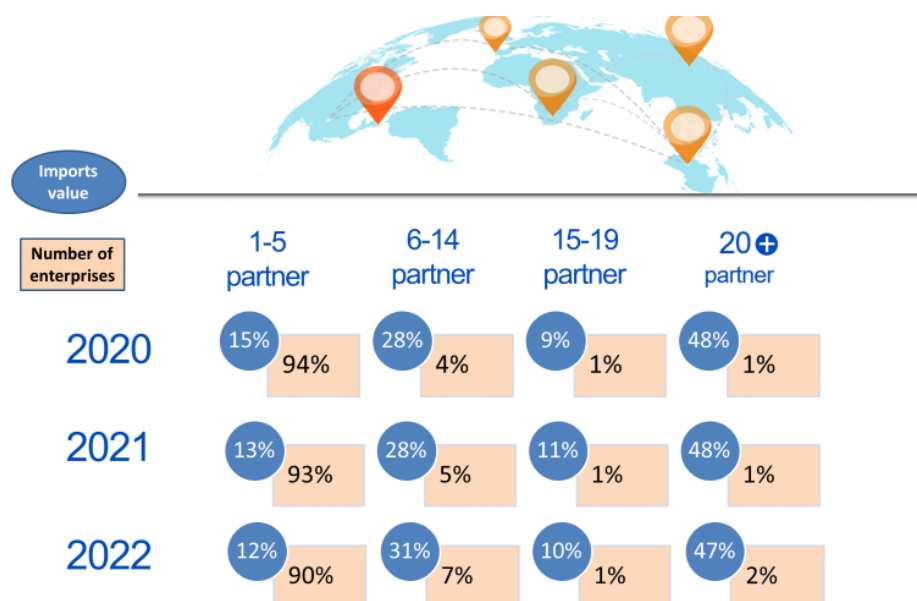
Figure 5 Exports value according to number of partners countries



Source: own elaboration with data from the Central Bank of Costa Rica

The value of imports in 2020 was mostly concentrated in the categories of more than 20 and 6-14 partners countries, a behavior that changes in 2021.

Figure 6 Imports value according to number of partners countries

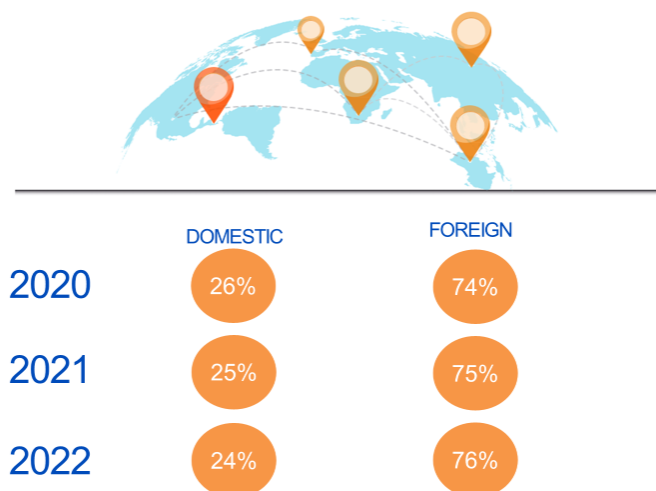


Source: own elaboration with data from the Central Bank of Costa Rica

4.3. Exports value according to origin of capital

In 2020 and 2021 in Costa Rica, approximately only a quarter of total exports corresponded to domestic capital companies, that is, about 75% of the value of exports corresponds to foreign companies (Figure 7).

Figure 7 Exports value according to origin of capital



Source: own elaboration with data from the Central Bank of Costa Rica

This is partly explained by the incentives of the special regimes of the free trade zones, where foreign investment companies have exemptions from export taxes, income taxes in various forms, sales taxes, free possession, and management of foreign currency, among other

benefits, which make Costa Rica an attractive country for foreign investment. And in turn, the most important export industries related to foreign investment have to do with high quality goods and services such as medical equipment and devices, management services, logistics, pharmaceuticals, and financial services.

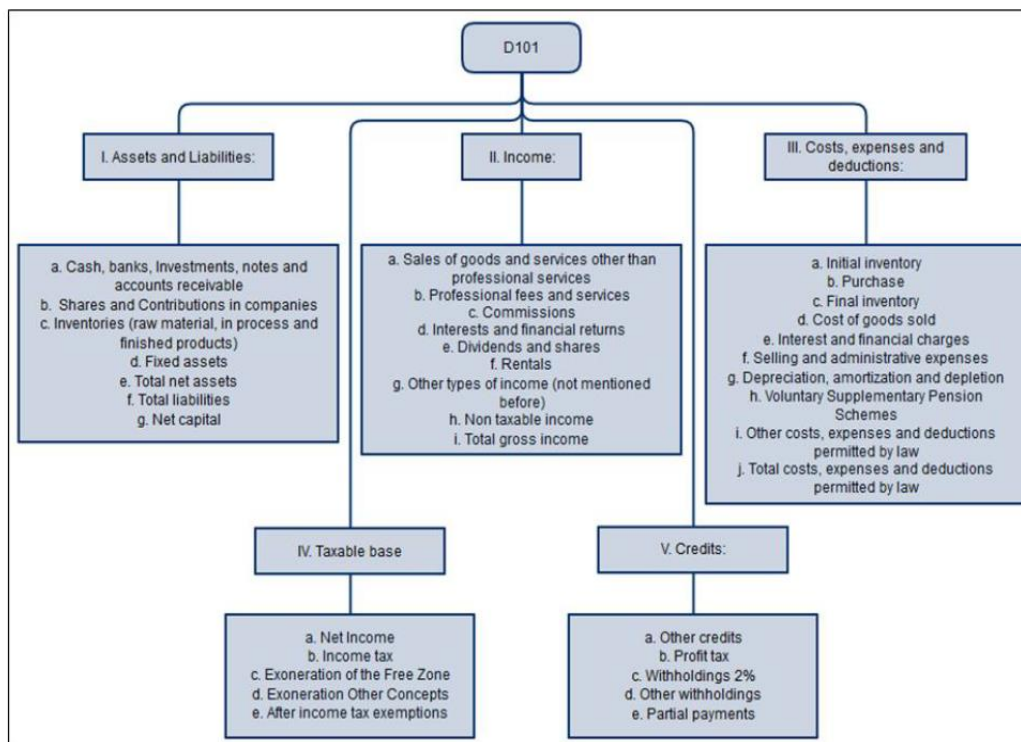
5. Challenges

1. Incorporate exports of services using a gradual approach. It starts with the export products of the free trade zones and later, in the medium term, those of the rest of the economy.⁶
2. Include value added information by company whenever it is available.
3. Add inventories and other information from Income Tax Return data (D-101) form of the Ministry of Finance) (Annex 1).

ANNEXES

Annex 1 Income Tax Return data from the Ministry of Finance

⁶ Annex 2 shows some of the sources of information that are being used to assess the incorporation of services in the TEC bases.



Source: Own elaboration.

Annex 2 Other data sources used to profile companies

Free trade zones (FTZs) reports

FTZs is granted to companies seeking to promote Foreign Direct Investment, trade exchange and employment for the country. As part of the obligations of the FTZs beneficiary, they must submit details of income, expenditures, and

	financial transactions to the Costa Rica Export Promotion Agency (PROCOMER) to which the BCCR has access.
Business surveys	Quarterly and annual surveys adapted to obtain the information inputs required to feed external accounts and trade in services between residents and non-residents. It contains, among others, data related to exports and imports of services.
Corporate Economic Study (CES)	<p>This survey collects data from non-financial private companies for national and international accounts. CES is applied on an annual basis to a group of firms always included called “large corporations” and to a random sample of companies that belong to the “rest of the private non-financial firms”. The content of the survey, covers:</p> <ol style="list-style-type: none"> identification of each firm, description of their activities and products, turnover per products, other revenues (non-financial and financial), detailed costs, surplus/deficit, income taxes and detailed taxes on production, employment, detailed balance sheet, and Foreign direct investment module. <p>The unit of selection is the company, and the analysis unit is the establishment, the first one is used for the institutional account, and the second one for the economic activity.</p>
Costa Rican Tourism Institute (ICT):	It is a quarterly survey that investigate spend overnight stays by form of tourism and categories of visitors, expenses incurred, and places visited, among others. Likewise, a survey is carried out on residents leaving the country to determine the average length of the visit and the expense incurred.

Export of services through technology, information, and communication network (ICT):ⁱ

This survey is aimed at quantifying and characterizing the proportion of services delivered via ICT based on a survey. The goal is to capture those service transactions that use technology networks for cross-border delivery (rather than in-person delivery). This is of interest to understand the link between technology and the growth of services exports.

- a. Percentage of foreign capital (non-residents) in the company.
- b. Last resort investor and their respective country of origin.
- c. Number and distribution of employees according to gender.
- d. Main activity of the line of business.
- e. Total value of income and services
- f. Exports of services and intra-group trade.
- g. Percentage of modalities through which it offers services internationally: mode 1, mode 2, mode 3 and mode 4.
- h. Services provided by the relevant quantification modes in the study (mode 1 and 3), as well as the values channeled through each of these two routes.

Source: Own elaboration.

ⁱ https://www.bccr.fi.cr/indicadores-economicos/DocCuentasNacionales2017/Costa_Rica_Exports_services_ICT_networks_2022.pdf