

# PRODUCT MARGIN RATIOS AND TRADE CHANNELS: COMBINING ADMINISTRATIVE RECORDS AND SURVEYS IN COSTA RICA

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## ABSTRACT

This report incorporates the ongoing Costa Rica's national accounting's experience into the compilation of product trade ratios and distributive channels.

The product margin refers to the difference between sales and the cost of products sold by retailers and wholesalers. Specifically, a trade margin is the difference between the price realized on a good or service purchased for resale and the distributor's cost of replacing the items sold at the time of sale. A distributive channel is a chain of businesses, wholesalers or retailers through which a good passes until it reaches the end consumer.

A change in the product has an impact on commerce price index; a change on a trade chain has an impact on commerce volume. Results show, from 2012 to 2014, changes on products margin ratios and distributive channels trade channels. These results pose the need for more frequent reviews of product margins ratios and distributive channels in order to get better estimates of national accounting.

# CONTENT

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Content.....	3
1. Overview .....	4
2. Conceptual framework .....	5
3. Methods for compiling trade margins matrices.....	8
3.1 Supply-side .....	8
3.2 Use-side.....	9
4. The Costa Rican experience .....	10
4.1 Basic data .....	10
4.2 Compiling product margin ratios and distributive channels.....	11
4.2.1 Using CES .....	12
4.2.2 Using administrative records .....	12
4.3 Results .....	16
4.3.1 Trade margins ratios .....	16
4.3.2 Distributive Channels .....	19
5. Final Remarks and suggestions .....	28
Acronyms.....	29
References.....	30
Annexes .....	31
Annex 1. Income Tax Return .....	31
Annex 2. Statistical data .....	32

## 1. OVERVIEW

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Wholesalers and retailers supply services to their customers by storing and displaying goods and making them available for customers to buy. Wholesaling and retailing are the final steps in the distribution of merchandise and their output is measured by the total value of the trade margins obtained on the products they purchase for resale.

A trade margin is the difference between the prices obtained on a product purchased for resale and the trader's cost of replacing the product sold at the time of sale. Largely, trade margin refers to the difference between sales and the cost of products sold by retailers and wholesalers. Trade margins are an important part of the difference between the basic price<sup>1</sup> received by the producer and the purchaser's price paid by the buyer.

Trade margins matrices contains data about margins coefficients and distributives channels by product and are broadly used in national accounts, specifically, in measuring commerce output, in input output tables and in supply and use table (SUT) compilation. Methods for compiling trade margins are very demanding in terms of data and focus on side demand or side supply.

Under commercial conditions without changes (same channels and stable margin), trade margin behaves according to quantities and prices of the traded product. In these cases, commerce volume and prices index match with the performance of basic value of traded product. Nonetheless, commercial industry changes over time and so a change in the margin coefficient has an impact on the margin's price index and a change on channels composition has an impact on trade volume index.

The present paper layouts Costa Rica experience into compilation of margin trade ratios and distributive channels. This work is as an additional product of the Rebase of the National Accounts Project.

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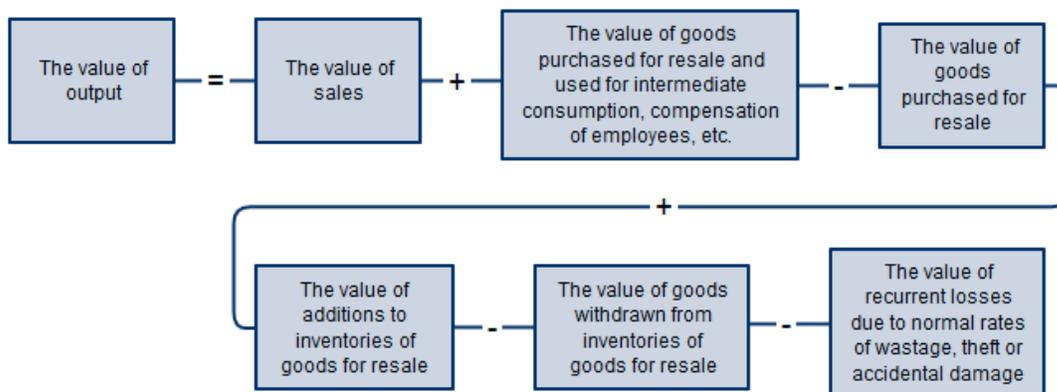
<sup>1</sup> The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.

## 2. CONCEPTUAL FRAMEWORK

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Wholesalers and retailers<sup>2</sup> supply services to their customers by storing, sorting and displaying goods and making them available for customers to buy. Their output is measured by the total value of the trade margins obtained on the products they purchase for resale.

According to SNA2008, a trade margin is the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of (CGS). The standard formula for measuring output for wholesalers or retailers is layout on this way.



So, the trade margin ratio (X) is equal to:

$$X = TM/CGS$$

TM = Product margin.

CGS = Price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of.

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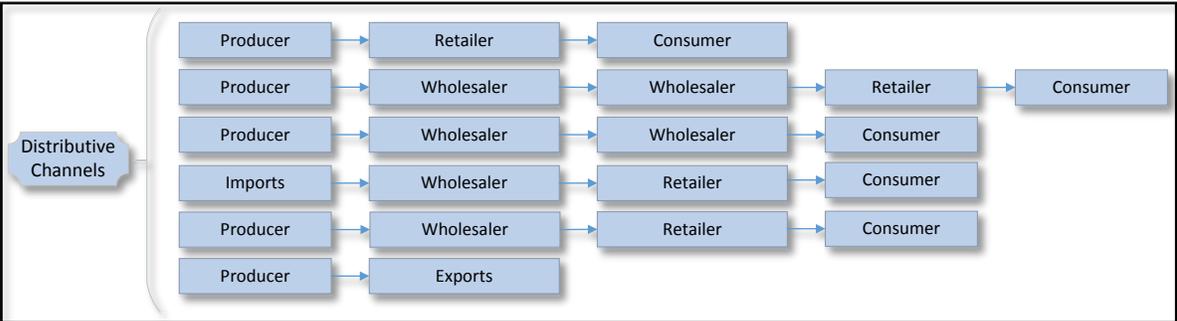
<sup>2</sup>The International Standard Industrial Classification of All Economic Activities (ISIC rev 4 ISIC Rev.4) states that wholesale consists of re-selling new and used goods to retailers, industrial, commercial, institutional or professional users, or to other wholesalers; while retailing includes re-selling of new and used goods mainly for personal or household consumption.

Wholesalers and retailers buy and sell products with only minimal processing, which would include grading, mixing, cleaning, packaging, etc. The margins realized on some goods may be negative if their prices have to be marked down and they may also be negative on goods that are never sold because they go to waste or are stolen.

Trade margins along with transport margin and taxes and subsidies on products are part of the difference between basic price received by the producer and the purchaser's price paid by the buyer.

Distribution is the process of making a product available for use by a consumer or firm. Distribution of products takes place by means of channels. A distribution channel is a chain of businesses, wholesalers or retailers through which a product passes until it reaches the end consumer. Channels are broken into direct and indirect forms, with a "direct" channel allowing the consumer to buy the good from the manufacturer, and an "indirect" channel allowing the consumer to buy the good from a wholesaler or retailer. Distribution channels can be short or long, and depend on the amount of intermediaries required to deliver a product. Wholesaling and retailing are the final steps in the distribution of merchandise. In the case of Costa Rica, the most representative channels behave as follows.

**Figure 1. Distributive Channels.**



Source: Own elaboration.

When commerce shows no change in the distributive channels and the coefficient margin, the trade margin behaves according to prices and quantities of the traded product. In these cases, volume and prices index match with the performance of basic value of traded product.

Margin's price index is a result of the performance of traded product and changes in ratio margins of those channels where product goes through. Trade volume index is a result of volume traded product performance and changes on distributive channels.

By example, is the product A, sold through two steps distributive channel (before the consumer purchases the product), such as:



Volume change in commerce is represented by:

$$V_0 = V_1 + V_2$$

$$V_1 = z_1 * z_2 * z_3$$

$$V_2 = z_1 * z_2 * \mu_2 * \mu_3$$

$$z_1 = VP_T / VP_{T-1}$$

$$z_2 = SW_T / SW_{T-1}$$

$z_3$  = Share of wholesaler's margin in  $t-1$  at current values

$$\mu_2 = SR_T / SR_{T-1}$$

$\mu_3$  = Share of retailer's margin in  $t-1$  at current values

VP = Volume of product A

SW = Share of wholesalers into importer's distribution.

SR = Share of retailers into wholesaler's distribution.

Change in prices commerce margin is represented by:

$$P_0 = P_1 + P_2$$

$$P_1 = \ddot{E}_1 * \ddot{E}_2 * \ddot{E}_3$$

$$P_2 = ((\ddot{E}_1 * \hat{C}_1 + \ddot{E}_1 * \ddot{E}_2 * \hat{C}_2) * \hat{C}_4) * \hat{C}_3$$

$$\ddot{E}_1 = BP_T / BP_{T-1}$$

$$\hat{E}_2 = WR_T / WR_{T-1}$$

$\hat{E}_3$  = Share of wholesaler's margin in the total margin at prices of the previous year.

$$\hat{C}_1 = 1 / (1 + X)$$

$$\hat{C}_2 = X / (1 + X)$$

$\hat{C}_3$  = Share of retailer's margin in the total margin at prices of the previous year.

$$\hat{C}_4 = RR_T / RR_{T-1}$$

X = Coefficient margin of wholesalers in  $t-1$

BP = Basic price of product A

WR = Margin ratio of wholesalers

RR = Margin ratio of retailers

Hence, compiling the trade margin matrices in national accounts is very demanding in terms of data related to trade margin coefficients and distributive channels by product.

### 3. METHODS FOR COMPILING TRADE MARGINS MATRICES

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Compilation of trade margins matrices is usually based on two approaches, namely, supply side valuation and use side valuation. This section presents a brief review, all the details of the methods can be seen in Eurostat. 2008. Manual of Supply, Use and Input-Output Tables, 2008 edition.

#### 3.1 SUPPLY-SIDE

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**Basic data:** Revenue data by industries from structural business statistics or administrative records.

**End result:** Trade margins by product and industry.

**Compilation process:**

**Step 1. Separate trade turnover by industry into wholesale turnover and retail turnover.**

This provides two trade turnover matrices one for wholesale turnover and other for retail turnover.

**Step 2. Separate the trade turnover by products both for wholesale and retail.**

This provides two trade turnover matrices industries by products, one for wholesale and other for retail.

**Step 3. Obtain product specific ratios both for wholesale and retail sale.**

**Step 4. Transform trade turnover by product into trade margin by product by multiplying the trade turnover matrix by the product margin ratios.**

It is possible to use industry technology (industry average margin ratio is applied to all the products traded in that industry) or product technology (a specific product ratio is applied to all trade turnover of that product irrespective of the industry).

**Step 5. Compare resulting wholesale and retail trade margins by industries with the estimated trade margins by industry.**

Due to restrictions in every step, data is not always available and many assumptions are necessary.

## 3.2 USE-SIDE

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**Required data:**

1. Distributive channel for each single product of the use table.
2. Products margin ratios according to users.

**End result:** Wholesale and retail trade margins by products and industries and their uses.

***Compilation process:***

Use-side matrices are generally more data demanding than supply-side matrices so, due to data availability, the calculation of the use-side trade margin matrices should use assumptions about the different uses.

For each different use (intermediate consumption, private consumption, capital formation, exports, stocks) a trade margin ratio must be allocated in each channel.

## 4. THE COSTA RICAN EXPERIENCE

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The experience of Costa Rica is more oriented to the use side, so trade margins coefficients are calculated for each product according to its different uses: intermediate consumption, final consumption, capital formation and exports. Distributive channels are also calculated. As will be mentioned later, the main sources are Corporate Economic Survey (CES) and tax returns.

**Products scope.** Each item of CPC Rev.2 is assigned to 183 products that constitute the nomenclature of products of Costa Rica (NPCR); chosen according to the relative importance of each product within the national economy, of which 113 are goods and the remaining 70 correspond to services.

Thirty-seven products are agricultural goods, which receive a different methodological treatment and are therefore excluded from this study.

### 4.1 BASIC DATA

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- **Registry of Economic Variables (REVEC).** The Registry of Economic Variables of Central Bank has company statistics (classification ISIC rev.4, AECR, sales and employment) organized by firm ID.
- **Annual declaration of summary of customers, suppliers, and specific expenditure.** Ministry of finance special report form “D151”. All companies must submit this declaration to the Ministry of Finance each year. This very detailed administrative record shows who-to-whom transactions in an annual form. Companies with information about their sales and purchases provide it. Each company declares its sales and purchases by counterpart for amounts higher than the equivalent to 4.700 US dollars in a fiscal year. The firm that makes the declaration is named “Reporter”, each reporter must record the value and the company ID (“reported”) involved in the specific sale or purchase. This database also is matched with REVEC, so it is possible obtain channels trade and so classify wholesaler’s sales by economic activity.

- **Income Tax Returns.** Ministry of finance special report form “D101” (See annexes 1). All companies must submit this declaration to the Ministry of Finance each year. This is a very detailed administrative record; it shows the information by period, ID and company name. The extract: “Costs, expenses and deductions” contains data of initial inventory, purchases, final inventory and cost of goods sold. This report also shows other relevant information such assets and liabilities, income, taxable base and credits.
- **Corporate Economic Survey (CES).** The objective of this survey is to collect data on non-financial private companies, including financial accounts and destination of production. It was started in January 2013, to review the accounts of firms for the year 2012, which is the base year of the new set of accounts. The 2012 survey included 1800 companies. The survey is quinquennial (next complete survey will be in 2017). An annual version of this survey, based on a limited sample, is conducted every year and used for the compilation of 40 economic activities. The annual sample for the CES consists of about 775 businesses classified into approximately forty economic activities. The CES contains a group of economic activities (the most important in the country) which are surveyed every year, while another group of economic activities is not surveyed on a yearly basis.
- **Trade Enterprises Characteristics (TEC):** It links data of trade and the business statistics registers using the importer’s and exporter’s identification. Matching the company profile and HS categories, at the most detailed level allows identifying the users of specific imported products and determines if the product is used for intermediate consumption, final consumption or gross capital formation. Over 90% of import’s value is matched with importer’s profile. Imports are classified by product in a manner consistent with that used for domestic production. In addition, it is possible to identify the exporter’s economic activity. All data is compiled into a software developed by the Central Bank of Costa Rica.

## 4.2 COMPILING PRODUCT MARGIN RATIOS AND DISTRIBUTIVE CHANNELS

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Trade margin ratios and distributive channels are compiled using surveys and administrative records, so it is possible to have two different estimates for the same product.

For each product, the data is analyzed and the trade margin coefficients and distributive channels are chosen according to the quality of the information and the plausibility of the result.

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### 4.2.1 USING CES

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CES collects data from the most important commerce companies of the country. It includes data by product (sales, purchases, changes in stocks, recurrent losses due to normal rates of wastage, theft or accidental damage). This data is also required in case of others firms that produce trade margins as secondary production.



CES also, allows get data about sales channels for product.



Trade margin coefficients are calculated according to its different uses: intermediate consumption, final consumption, capital formation and exports.

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### 4.2.2 USING ADMINISTRATIVE RECORDS

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Trade margin coefficients were calculated based on data from income tax reports of the Ministry of Finance<sup>3</sup>. The data provided was primarily intended to provide criteria that complement the information of CSE.

Due to resources availability, it is not possible to process all of the trade companies, so a sample is used.

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<sup>3</sup> The present case study has been carried out based on the recommendation of the international consultant Marie-Thérèse Schiltz in her visit to the Banco Central de Costa Rica on October 20 and 21, 2010. On this occasion, it was recommended to use information from income tax declarations to estimate the trade margin coefficients by product.

## Compilation Process

### Step 1. Select a firm's sample.

To optimize the use of the resources a sample is used. This sample size has increased through time.

Table 1. Number of Companies Researched.

Years	2010	2012	2014
Companies	151	485	540

Source: Own elaborated.

### Step 2. Prepare a matrix of companies and products traded.

For each company of the sample a specific research is carried out in order to classify each company between wholesaler and retailer and determine its products traded and its final use.

### Step 3. Data for the following variables is drawn for the companies that conform the matrix of companies and products traded.

- Inventories (I)
- Sales of goods and services (S)
- Initial inventory (II)
- Purchases (P)
- Final inventory (FI)
- Cost of products sold (CGS)

### Step 4. Calculation of trade margin by company, using drawn data.

The trade margin (TM) is equal to the difference between the sales and the cost of the goods sold. It is the amount that sellers charge above their purchasers' prices (replacement value)

$$TM = S - CGS$$

The trade margin ratio (TMR) is equal to:

$$\text{TMR} = \text{TM}/\text{CGS}$$

**Example:** Given the following data:

Sales	100
CGS	70
Margin	30

$$\text{TMR} = 30/70 = 0.428571$$

Thus, the trade margin value would be  $70 * 0.428571 = 30$

If data available is at purchasers' prices, for instance final consumption, it is necessary so to use the formula as follows:

$$\text{TMC}^* = \text{TM}/\text{S}$$

$$\text{TMC}^* = 30/100 = 0.30$$

Thus, the trade margin level would be  $100 * 0.30 = 30$

#### **Step 5. Calculation of trade margin by product and final use.**

The trade margin ratio of the company is used for each product it sells, according to NPCR.

A geometric mean of the trade margins ratios (Retail and Wholesale) is obtained for each of the products distinguishing the use of product traded by the company.

Figure 2. **Margin Product Ratio by Product. Retailers**

Firms Products	Firm 1	Firm ...	Firm ...	Firm 540	Geometric mean Retail		
					IC	FC	GFC
					Product 1	A	H
...	A		C	Z			
.....		H	C				
Product 80	A			Z			

Source: Own elaboration.

### Step 6. Comparison of trade margin by year, and its variation

The geometric mean of the trade margins ratios by product and final use is compared over years.

### Step 7. Review and validation of trade margins

The validation criteria in this analysis are as follows:

- Companies whose trade margins are very high in various years. The piece of information is not deleted or replaced.
- Companies with trade margins above 150% for only one year. This happened in only a few cases, and these companies were excluded from the calculation.
- Products that are only sold by one or two companies, where trade margins are very different between themselves, or otherwise very high. In these cases, it was decided not to exclude these extremes, but to avoid the impact of extreme data, and obtain better validation

criteria, it is recommended to include other companies that sell the products, as it is difficult to determine which values are extreme and which are representative for each product.

## 4.3 RESULTS

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Margin products ratios and distributive channels presented in this section are raw data. Afterwards, the data is used in supply and use table (SUT) and hence it may be subject to review during the supply and use table-balancing process.

### 4.3.1 TRADE MARGINS RATIOS

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Table 2 illustrates average margin ratios distinguishing between wholesale and retail. From 2012 and 2014, according to results wholesale margins had a higher increase (+5.1 pp) than retailers (+1.0 p.p.).

Table 2. **Costa Rica: Average Margin Ratios.**

<b>%</b>	<b>Wholesale</b>	<b>Retail</b>	<b>Total</b>
2012	20.3	19.5	20.0
2014	25.4	20.6	23.1
<b>Change in pp</b>	5.1	1.0	3.1

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**Source:** Own elaboration.

On table 3, are aggregated seventy-two products into twenty different categories in order to analyze the detail of the margin coefficients. The list of products included in each category is available in annex 2.<sup>4</sup> Wholesale margins grew by more than 2 p.p. in all groups. At the level of wholesaler margins, the highest variation is presented in “Electronic Devices, (+12.6 pp), followed by “Refractory Products” (+9.5 pp), and “Clothing” (+8.1 pp). On the other hand, other products show a smaller

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<sup>4</sup> See table 13 for the list of products detailed.

wholesale margin ratio, such as metal products (-5.3 pp) and parts, machinery and others (-2.2. pp); either retailer or wholesaler.

Table 3. **C.R. Margin coefficients by group (2012-2014)**

Variation in percentage points (pp)

	Wholesale	Retail	Total
Prepared meals and beverages	4.5	0.5	3.1
Alcoholic beverages and Tobacco	2.0	-0.8	-0.4
Clothing	8.1	1.6	2.9
Wood and paper products	9.2	2.7	4.0
Oil Products	4.0	0.3	5.9
Chemical products	7.4	3.0	6.4
Cork and plastic products	4.7	2.4	2.9
Glass	7.7	3.3	3.9
Refractory products	9.5	3.2	4.4
Cement and concrete products	5.3	3.7	4.2
Metal products	-5.3	4.1	0.9
Electronic devices	12.6	-0.7	3.4
Motor Vehicles and related	0.0	-5.6	-5.6
Parts, machinery and others	-2.2	-0.4	0.1
Furniture	3.6	2.1	2.5
Medical and dental instruments	3.1	-2.6	-0.8
Other manufactured products	2.7	4.5	4.0
St. Deviation	4.6	2.6	2.9

**Source:** Own elaboration.

On retail margin coefficients, the highest increase belongs to other manufactured products (+4.5 pp) followed by metal products (+4.1 pp). On the other hand, medical and dental instruments reduced its margin coefficient (-2.6 p.p.), while it increased in wholesaler.

Table 4. **C.R. Margins ratios by use.**

2014	Intermediate Consumption	Final Consumption	Gross Capital Formation
<b>Wholesaler</b>	21,8	24,4	42,8
<b>Retailer</b>	21,6	22,1	32,1

**Source:** own elaboration.

Table 4 illustrates that wholesaler's ratios are greater than retailer's for all uses. Margins ratios are greater for GCF and lowest for IC.

Table 5. **C.R. Wholesale ratios: Extreme changes by use (2012-2014)**

Rate of change		
Use	Product	%
IC	Pesticides and other chemicals in agriculture use	71.1
	Artificial fibers and chemical products n.e.c	1.7
FC	Meat and edible offal of cattle	38.1
	Pharmaceutical and medicinal products	-7.2
GFCF	Communications equipment, and consumer electronic devices	46.6
	Irradiation, electronic, medial and therapeutic equipment	1.5

Source: Own elaboration.

As illustrated in table 5, pesticides and other chemicals used in agriculture is the product with the greatest increase for IC, while for FC is meat and edible offal of cattle and for GFCF is communications equipment and consumer electronics. On the other hand, pharmaceutical and medicinal products present the strongest reduction.

Table 6. **C.R. Retail ratios: Extreme changes by use (2012-2014)**

Rate of change		
Use	Product	%
IC	Pesticides and other chemicals in agriculture use	71.1
	Wheat flour	-6.8
FC	Meals, prepared dishes and other food products	20.4
	Distilled alcoholic beverages and wines	-8.8
GCF	Motors, generators, electric transformers, distribution and control apparatus of the electrical energy	70.2
	General-purpose and special machinery	-9.8

Source: Own elaboration.

Table 6 shows top variations of retail margin coefficients. Pesticides and other chemicals used in agriculture show the largest increase for IC; either wholesaler or retailer. While, motors, generators,

electric transformers, distribution and control apparatus of the electrical energy present the strongest lift for GCF. These variations are greater than 70%, in both cases.

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## 4.3.2 DISTRIBUTIVE CHANNELS

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### 4.3.2.1 CHANGES IN DISTRIBUTIVES CHANNELS

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As shown on table 7, for national output, products purchased directly by users loses importance on distributives channels meanwhile retailers' soar. Distributives channels for imported products remain practically unchanged.

Table 7. C.R. Distributives Channels for national output and imported products, shares.  
(2012-2014)

		National Output			Imported products		
		User	Wholesale	Retail	User	Wholesale	Retail
<b>Average composition by distribution channel (%)</b>	<b>2012</b>	69,4	26,2	4,4	43,4	40,1	16,4
	<b>2014</b>	52,6	22,6	24,8	41,3	42,3	16,4
<b>Change in pp</b>		-16,0	-3,5	19,5	-2,1	2,2	0,0
<b>St. Deviation of the average variation in pp</b>		36,9	37,5	19,7	13,9	13,3	6,3

**Source:** Own elaboration.

Distribution channels of national output by products are presented in table 8. The groups "Alcoholic beverages and Tobacco" and "Motor Vehicles and related" are special cases because in these markets there are just a few firms. The first group has the highest increase in trade channels in both wholesale and retail channel (53,2% and 17,7% respectively) while part acquired directly by the user decreased strongly (70,9%). Similarly, in "Motor Vehicles and related" whose wholesale channel falls markedly.

Table 8. C.R. Distributives Channels of National Output: Changes by groups

Rates of change, 2012-2014

%	User	Wholesale	Retail
Prepared meals and beverages	-17,8	-12,8	30,6
Alcoholic beverages and Tobacco	-70,9	53,2	17,7
Clothing	-17,9	-10,5	28,4
Wood and paper products	-10,4	-1,6	12,0
Oil Products	7,5	0,0	-7,5
Chemical products	-20,5	0,9	19,6
Cork and plastic products	-28,6	3,6	25,0
Glass	-13,5	4,6	8,9
Refractory products	-19,2	-24,6	43,8
Cement and concrete products	-23,4	-7,1	30,5
Metal products	-53,1	43,8	9,2
Electronic devices	-0,5	-3,0	3,6
Motor Vehicles and related	99,2	-99,8	0,6
Parts, machinery and others	8,6	-28,6	20,0
Furniture	6,4	-31,7	25,4
Medical and dental instruments	-54,5	3,4	51,1
Other manufactured products	-38,1	15,1	23,0

**Source:** Own elaboration.

Table 9 illustrates changes in the composition of distribution channels for imported products based on TEC data. These channels have less variability than those for domestic production and highlights "Oil Products" whose imports realized directly by users falls heavily (13,9%), meantime wholesale channel hikes almost 13,3%. Moreover, "Cement and concrete products" increases in the share purchased directly by users (10%), while at the same time, retail falls (-19,7%).

Table 9. C.R. Distribution Channels of Imported Products: Changes by groups

Rates of change, 2012-2014

	User	Wholesale	Retail
Prepared meals and beverages	-3,8	4,1	-0,3
Alcoholic beverages and Tobacco	0,9	-6,0	5,1
Clothing	1,0	-4,1	3,1
Wood and paper products	-8,4	7,0	1,5
Oil Products	-13,9	13,3	0,6
Chemical products	-1,5	1,5	0,0
Cork and plastic products	1,4	-2,2	0,7
Glass	3,1	-6,7	3,6
Refractory products	-0,8	6,9	-6,1
Cement and concrete products	10,4	9,4	-19,7
Metal products	-1,6	-0,1	1,7
Electronic devices	0,5	0,4	-1,0
Motor Vehicles and related	-4,7	0,1	4,6
Parts, machinery and others	0,0	-3,2	3,2
Furniture	-0,5	1,3	-0,7
Medical and dental instruments	2,6	-1,5	-1,0
Other manufactured products	-0,5	0,9	-0,4

Source: Own elaboration.

TEC data allows for the identification of trader's exports. Costa Rica traders (either wholesalers or retailers) allot very few exports, since producers usually exports directly and re-export are not relevant in the country even though as shown on table 10, average variations in the distributives channels of exports are significantly higher than those for other uses.

Table 10. Distributives Channels: Average Variations by use

Rate of change (2012-2014)

%	Exports	IC / FC / GFCF
Wholesaler	52.9	19.9
Retailer	94.4	1.8

Source: Own elaboration.

#### 4.3.2.2 DISTRIBUTIVES CHANNELS ACCORDING TO USE

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Tables 11 and 12 present distribution channels for each use, both national production and imports as well as the percentage distribution between the user, wholesaler and retailer. In the case of the national production, the IC and GCF products are mainly delivered from the producers to the users. For FC products, retailers directly redeem an important share.

Table 11. **Distributives Channels of national production:**

Perceptual distribution, 2012

%	User	Wholesaler	Retailer
IC	56,1	22,0	21,9
FC	19,7	37,4	42,9
GCF	73,2	10,5	16,4

Source: Own elaboration.

The IC and FC products are mainly imported by wholesalers, while IC products are imported to a large extent by the user. Retailers deliver FC products and user import directly GCF.

Table 12. **Distributives Channels of import**

Perceptual distribution, 2012.

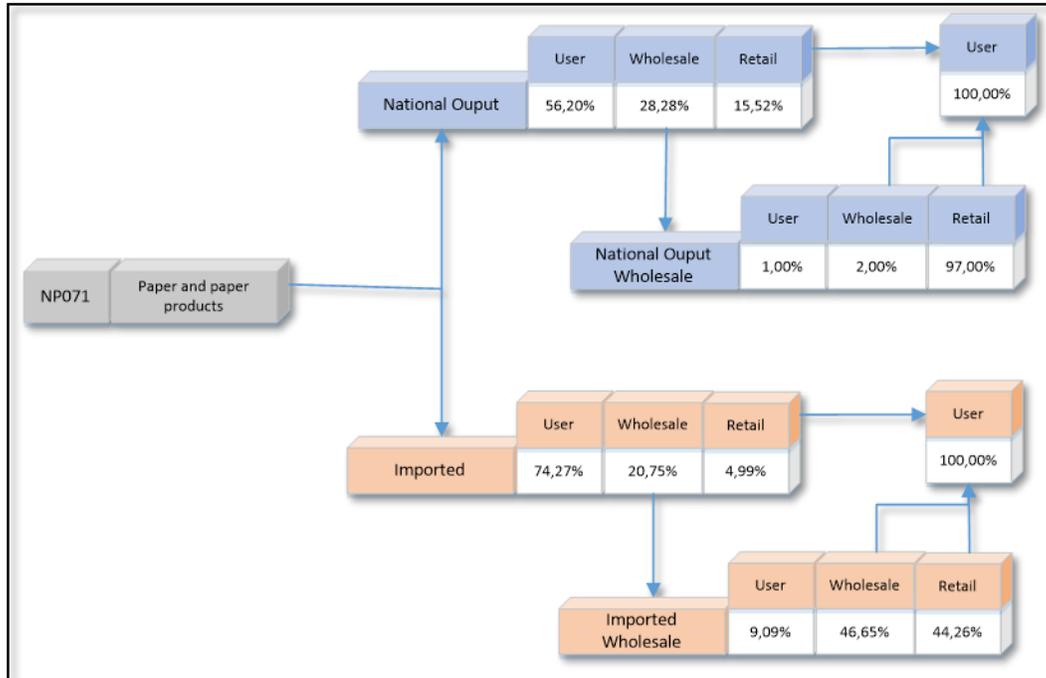
	User	Wholesaler	Retailer
IC	41,1	46,3	12,6
FC	14,6	47,8	37,6
GCF	53,2	21,9	24,9

Source: Own elaboration.

#### 4.3.2.2.1 INTERMEDIATE CONSUMPTION

Main products used as intermediate consumption are purchased directly to the producer or directly imported by user. As an example, next figure<sup>5</sup> shows distribution chains for paper products and iron and steel products. In these products, wholesalers canalize a significant fraction of the sales.

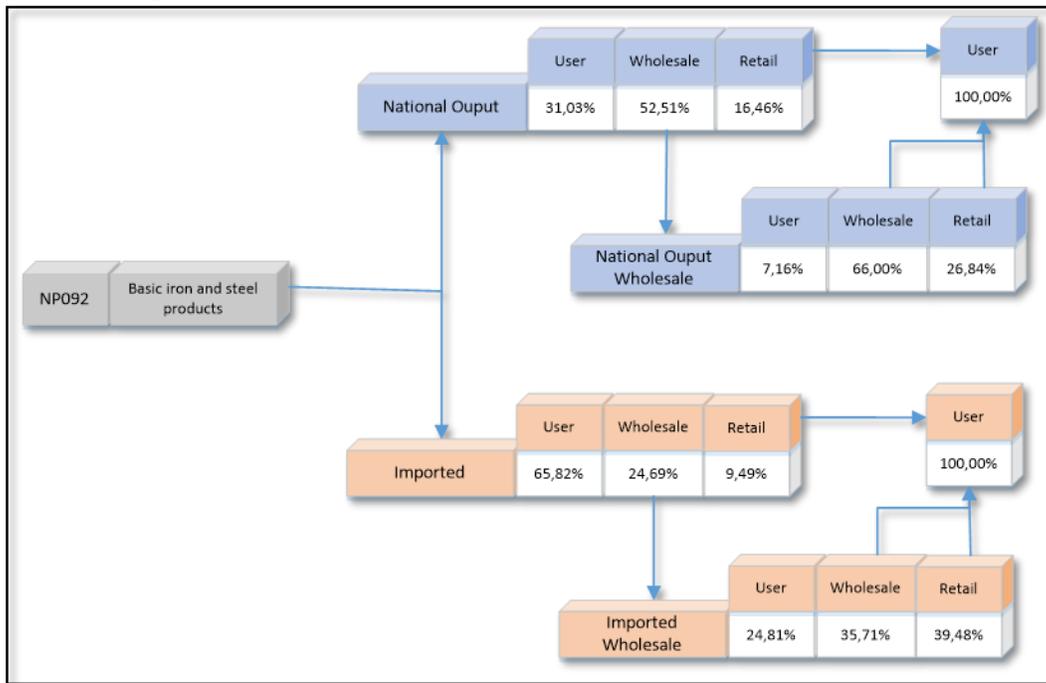
**Figure 3A.** C.R. Distribution Chain: Paper and Paper products



Source: Own elaboration.

<sup>5</sup> On graphs "user" refers to FC, IC or GCF.

**Figure 3B.** C.R. Distribution Chain: Basic Iron and steel products

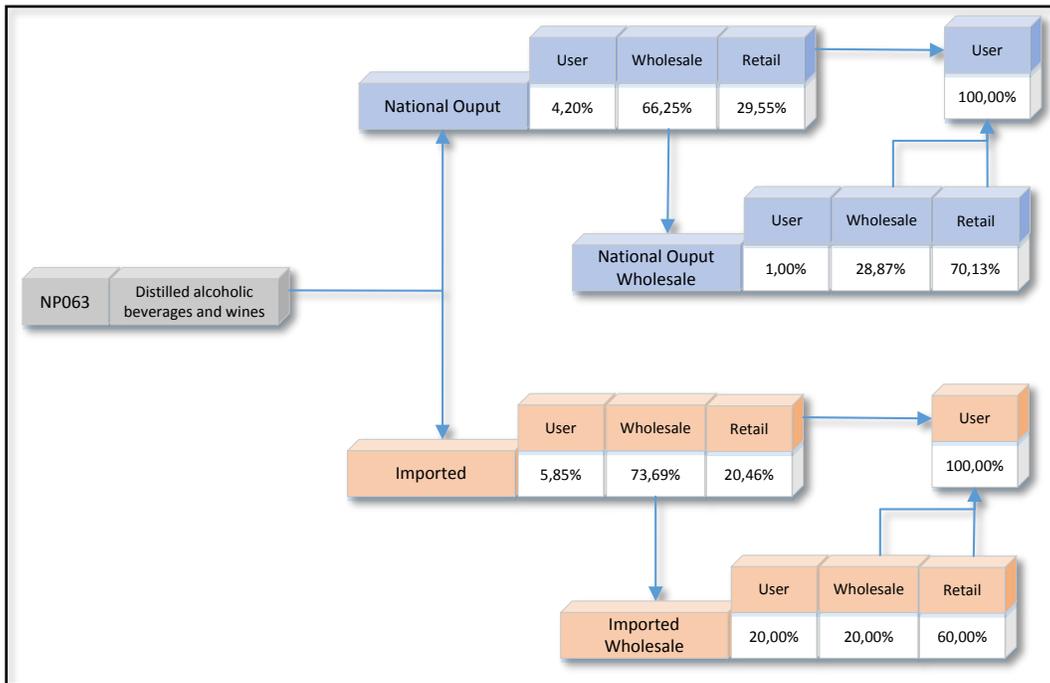


Source: Own elaboration.

#### 4.3.2.2.2 FINAL CONSUMPTION

Wholesalers play a very important role in final goods of mass consumption because these products tend to go first through that channel and then through the retailers before arriving to the final consumer. For example, in the first instance, wholesalers capture more than 60% of alcoholic beverages either produced locally or imported; even though retailers deliver directly to FC.

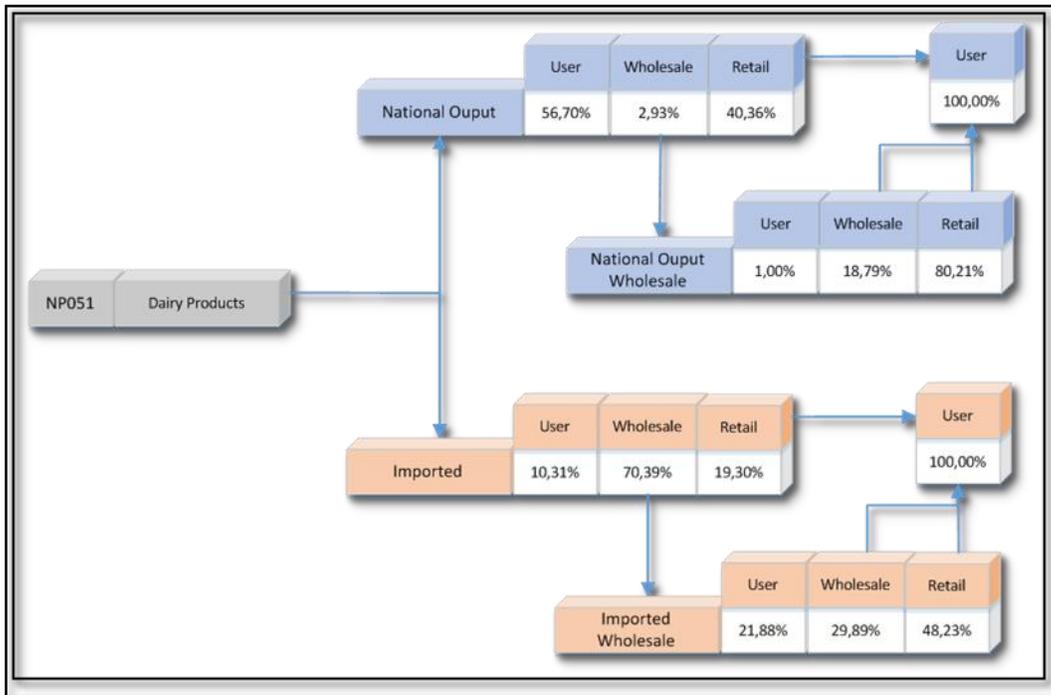
**Figure 4A.** C.R. Distribution Chain: Alcoholic beverages and wines



**Source:** Own elaboration.

In the country, there is a high consumption of dairy products. For national output an important share is purchased directly by the user to the producer (56,7%), this result is swayed by government purchases and industries that uses it as IC. In imports, wholesalers canalize a significant fraction of the sales.

**Figure 4B.** C.R. Distribution Chain: Dairy Products

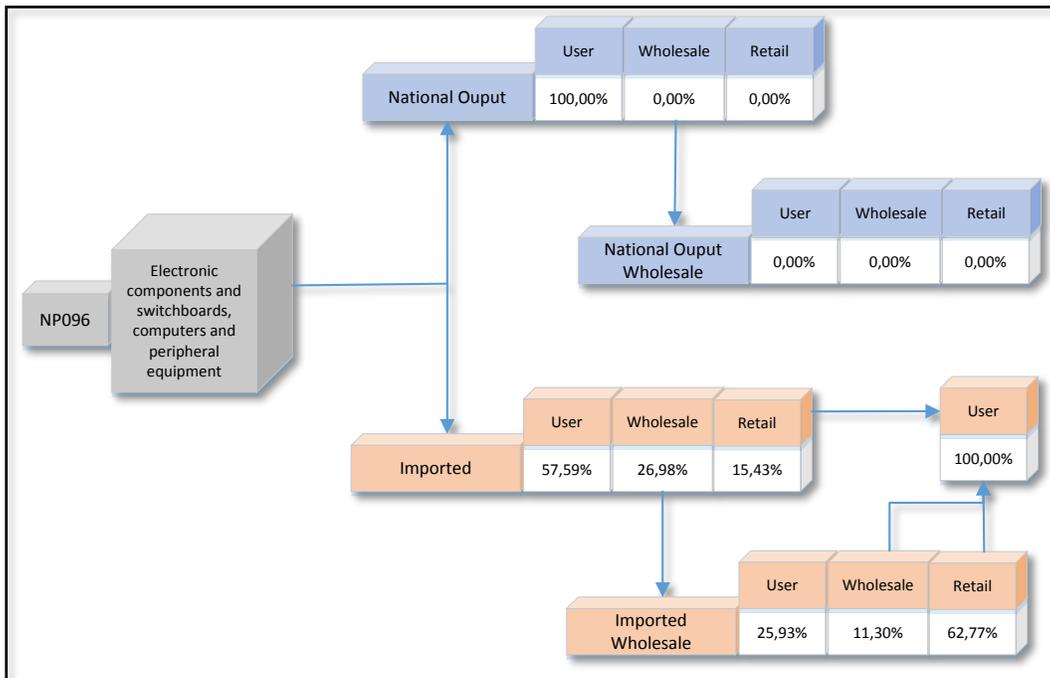


**Source:** Own elaboration.

#### 4.3.2.2.3 GROSS CAPITAL FORMATION

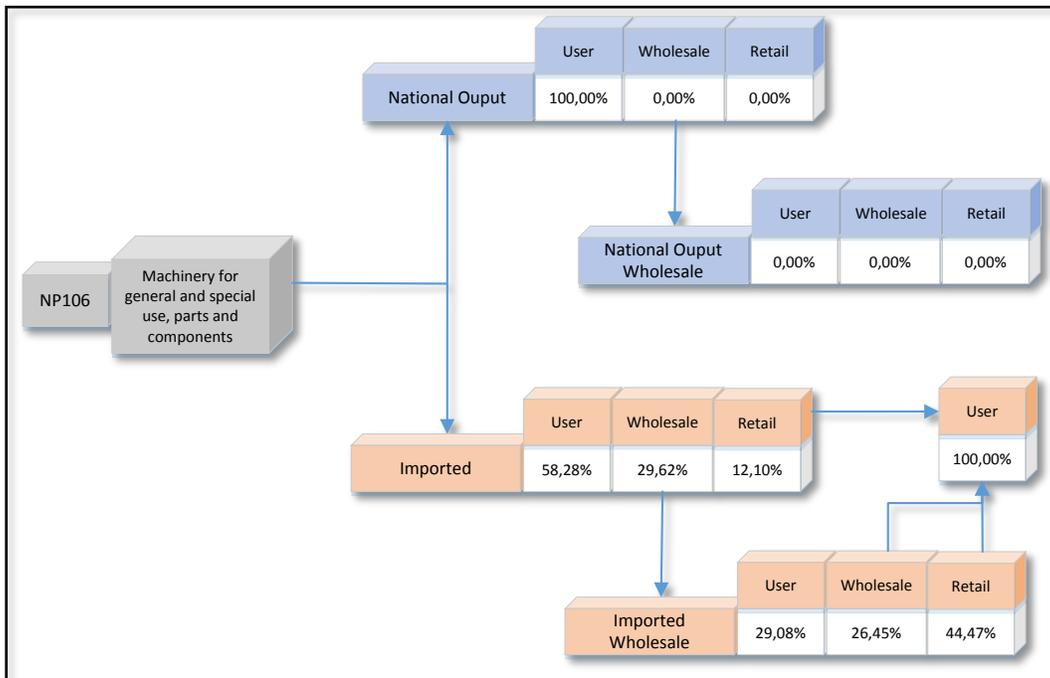
Data available reveals that GCF is mainly imported directly by the user or purchased to the producer or imported by a wholesaler. National production represents a small share of total supply (5%) and is concentrated in some specific products so all production tends to be purchased directly by users.

Figure 5A. C.R. Distribution Chain: Electronic Components



Source: Own elaboration.

Figure 5B. C.R. Distribution Chain: Machinery



Source: Own elaboration.

## 5. FINAL REMARKS AND SUGGESTIONS

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- From 2012 to 2014, wholesale margins showed an increase of 5.1 pp and retail margins of 1.0 pp. FC margin coefficients increased more than those corresponding to other uses.
- Producers directly import so much products used as IC and GFC products; the remnant is delivered to the producers by wholesale and retail trade. Wholesalers play a very important role in FC; even though retailers deliver directly to final consumers. The share of goods imported directly by users and retailers decreases, while that of wholesalers increases for all uses.
- Changes in distributive channels suggest changes on volume trade margins. The distributives channels of national output show that on average retailers have increased their share and meanwhile decreased the share purchased directly by the user. Imported products distribution, shows a slight increase in wholesale channels. Changes in coefficients margins for almost all products at wholesaler's level point out to higher margin prices. This poses the need to conduct annual updates of matrices to incorporate this data in the supply and use tables, thus avoiding the underestimation or overestimation of the margin trade.
- Administrative records have shown a good performance for the estimation of ratio trade margins and distributions channels, so we recommend use them more intensively. The improvements that are constantly being introduced in REVEC allow for a better separation of trade between wholesaler and retailer, which produces better results.
- Having assessed data tax return it is recommending exploit this administrative record for compiling a supply-side matrix to balance it with side use matrix.
- We recommend to analyze the consistency of these results with the performance of other indices, such as imports, exports, producers and consumer indices.
- Suggested future work could look into the detail of the purchases done directly by the user through e-commerce.

## ACRONYMS

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<b>AECR</b>	Standard Classification of Economic Activities for Costa Rica
<b>BEC</b>	Broad Economic Categories
<b>CES</b>	Corporate Economic Survey
<b>CPC</b>	Central Product Classification
<b>CGS</b>	Cost of products sold
<b>FC</b>	Final Consumption
<b>FI</b>	Final inventory
<b>GFCF</b>	Gross Fix Capital Formation
<b>HS</b>	Harmonized System
<b>I</b>	<b>Inventories</b>
<b>IC</b>	Intermediate Consumption
<b>II</b>	Initial inventory
<b>ITR</b>	International Trade Registers
<b>ISIC</b>	International Standard Industrial Classification
<b>NPCR</b>	Standard Products Classification of Costa Rica
<b>REVEC</b>	Registry of Economic Variables
<b>S</b>	Sales
<b>P</b>	Purchases
<b>PHC</b>	Private Household Consumption
<b>PP</b>	Percent points
<b>SUT</b>	Supply and Use Table
<b>TM</b>	Trade margin
<b>TMR</b>	Trade margin ratio
<b>VA</b>	Value Added

## REFERENCES

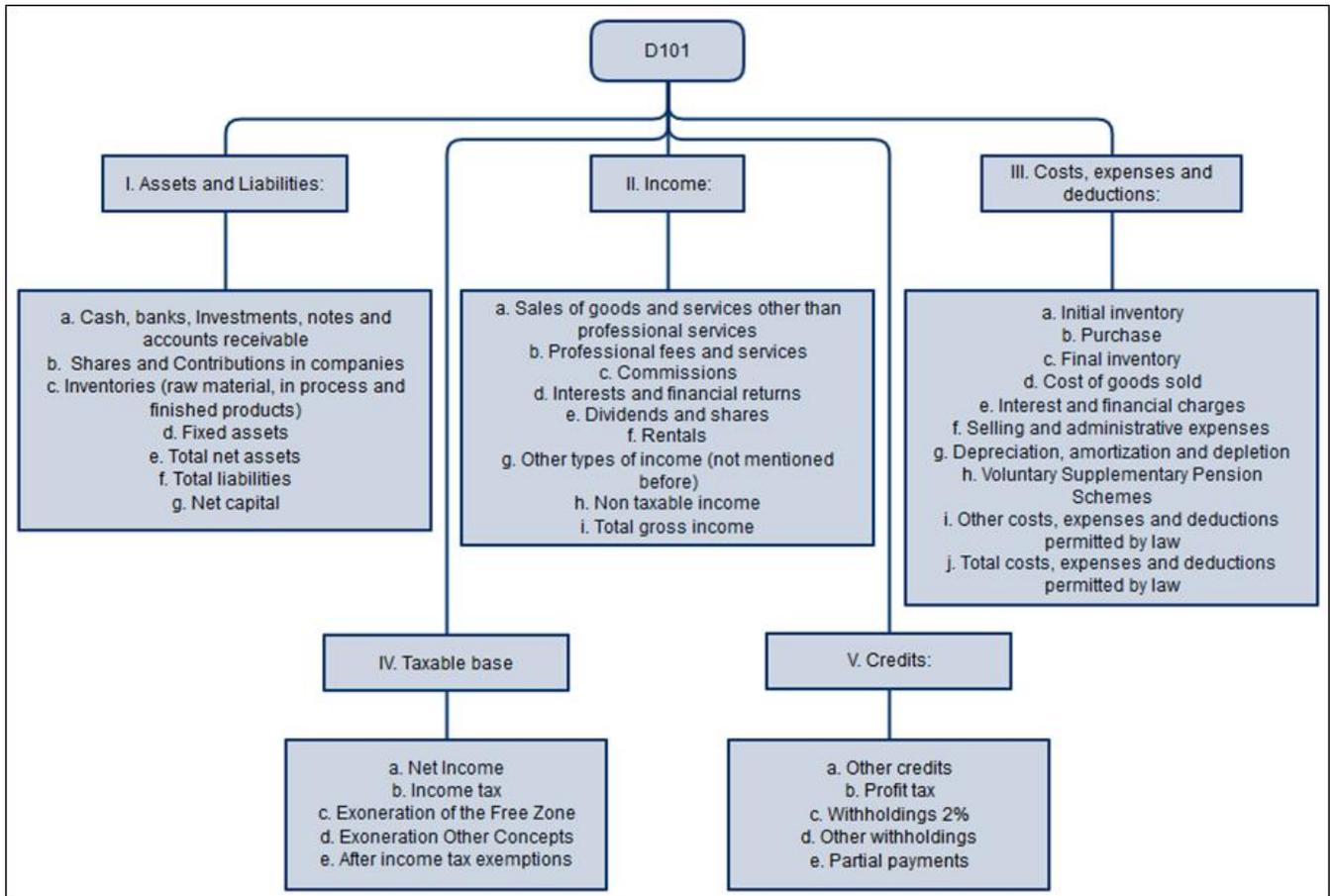
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ANNEXES

ANNEX 1. INCOME TAX RETURN

Figure 4. Income Tax Return Data.



ANNEX 2. STATISTICAL DATA.

Table 13. Average Variation of the Margin Coefficient in Percentage Points by Product.

		Average variation in percentage points		
		Wholesale	Retail	Total
NP043	Meat and edible offal of poultry	6,4	2,6	3,0
NP044	Meat and edible offal of cattle	7,1	2,5	3,2
NP045	Meat and edible offal of pigs	5,3	2,5	3,0
NP046	Sausages and other meat products	6,0	2,5	3,1
NP047	Preserved fish, crustaceans and mollusks	1,0	3,1	2,4
NP048	Canned fruit, legumes and vegetables	4,9	0,5	2,2
NP049	Raw and refined vegetable oils	3,6	-1,0	2,0
NP050	Other oils and vegetable and animal fats n.e.c.	3,1	-1,0	1,5
NP051	Dairy products	3,0	0,1	1,2
NP052	Husked, prepared and semi-prepared rice	3,5	-1,0	1,7
NP053	Wheat flour	2,8	-1,0	1,4
NP054	Other grain mill products n.e.c., starches and starch derivatives	1,0	-1,0	0,3
NP055	Bakery products	1,2	1,1	1,4
NP056	Cane sugar, molasses, syrups and other sugars	2,2	-1,0	1,0
NP057	Cocoa, chocolates and confectionery products	2,7	1,3	1,7
NP058	Macaroni, noodles and similar starchy products	0,1	-1,0	-0,5
NP059	Unroasted coffee	17,5	0,0	17,5
NP060	Ground and instant coffee, coffee extracts and concentrate	13,3	-1,0	13,5
NP061	Food, prepared dishes and other food products	4,7	2,0	3,3

<b>NP062</b>	Prepared animal feed	0,3	-0,5	-0,4
<b>NP063</b>	Distilled alcoholic beverages and wines	3,0	-0,9	-0,4
<b>NP064</b>	Beer, malt, non-alcoholic beverages, and bottled water	1,7	-0,9	-0,3
<b>NP065</b>	Tobacco products	1,5	-0,6	-0,5
<b>NP066</b>	Textile articles, except clothing items	11,5	1,5	4,4
<b>NP067</b>	Wearing apparel	5,5	-4,0	-2,7
<b>NP068</b>	Leather and related products, except footwear	6,1	2,3	2,9
<b>NP069</b>	Footwear	9,2	6,8	7,2
<b>NP070</b>	Timber and cork, timber and cork products, except furniture; articles of straw and plaiting materials	8,1	3,5	4,2
<b>NP071</b>	Paper and paper products	4,0	2,1	2,6
<b>NP072</b>	Products related to publishing, printing and recording, except computer programs	15,4	2,5	5,1
<b>NP073</b>	Gasoline	3,8	0,1	5,4
<b>NP074</b>	Diesel	3,8	0,1	5,4
<b>NP075</b>	Bunker	0,0	0,0	0,0
<b>NP076</b>	Oils and lubricant greases	7,3	1,6	13,5
<b>NP077</b>	Other petroleum and coke products	5,2	0,0	5,2
<b>NP078</b>	Basic chemical substances and fertilizers and nitrogen compounds	13,4	12,7	23,6
<b>NP079</b>	Plastics and synthetic rubber in primary forms	0,0	0,0	0,0
<b>NP080</b>	Pesticides and other chemical products for use in agriculture	14,4	12,2	18,8
<b>NP081</b>	Paints, varnishes and similar coatings, printing ink and putty	6,5	4,4	4,9
<b>NP082</b>	Soaps, detergents, perfumes and toiletries	4,8	-3,8	-1,4
<b>NP083</b>	Artificial fibers and chemical products n.e.c	9,6	-0,6	1,0
<b>NP084</b>	Pharmaceutical and medicinal products	2,8	-4,2	-2,3
<b>NP085</b>	Cork products	4,8	1,7	2,2

<b>NP086</b>	Profiles, tubing and hard plastic connections without supports	6,2	3,5	4,2
<b>NP087</b>	Other plastic products	3,0	2,0	2,2
<b>NP088</b>	Glass and glass products	7,7	3,3	3,9
<b>NP089</b>	Refractory products, clay construction materials, and other porcelain and ceramic products	9,5	3,2	4,4
<b>NP090</b>	Cement, lime and plaster	2,6	3,5	3,8
<b>NP091</b>	Articles made of concrete, cement and plaster, and other mineral non-metallic products n.e.c.	8,0	3,8	4,6
<b>NP092</b>	Basic iron and steel products	-5,8	3,8	0,7
<b>NP093</b>	Primary products of aluminum, zinc, gold, silver and other semi-finished products through a smelting process	-5,2	5,0	1,4
<b>NP094</b>	Metal products for structural use, tanks, reservoirs, metal containers, and steam generators	-6,0	2,7	-0,7
<b>NP095</b>	Other metal products	-4,2	5,0	2,2
<b>NP096</b>	Electronic components and switchboards, computers and peripheral equipment	14,3	0,4	7,6
<b>NP097</b>	Communications equipment, and consumer electronic devices	34,1	-1,6	6,6
<b>NP098</b>	Measuring, testing, navigation and control equipment, and watches	11,4	3,5	5,8
<b>NP099</b>	Irradiation, electronic, medial and therapeutic equipment	-36,0	0,0	-36,0
<b>NP100</b>	Optical, photographic instruments, magnetic and optical supports	25,7	0,9	6,1
<b>NP101</b>	Motors, generators, electric transformers, distribution devices, and devices for the control of electrical energy	7,1	3,1	4,8
<b>NP102</b>	Cells, batteries, storage batteries, cables and wiring devices	8,0	-0,1	1,7
<b>NP103</b>	Electrical lighting equipment	2,9	1,7	1,9
<b>NP104</b>	Refrigerators, stoves, washers and other household appliances	7,9	1,0	2,1
<b>NP105</b>	Other types of electrical equipment	51,0	-15,5	33,5
<b>NP106</b>	Machinery for general and special use, parts and components	4,5	1,8	3,3
<b>NP107</b>	Motor vehicles, car bodies, trailers and semi-trailers	0,0	-5,6	-5,6

<b>NP108</b>	Parts and components for motor vehicles	3,3	-1,8	-1,6
<b>NP109</b>	Other types of transport equipment	-14,5	-1,2	-1,4
<b>NP110</b>	Wooden furniture	2,4	2,1	2,4
<b>NP111</b>	Furniture made with other types of materials, except rock, concrete, and ceramics	4,7	2,1	2,6
<b>NP112</b>	Medical and dental instruments and supplies	3,1	-2,6	-0,8
<b>NP113</b>	Other manufactured products	2,7	4,5	4,0

**Source:** Drawn by the author.

**Table 14. Products Included in the Estimation of Margin Coefficients.**

<b>NP</b>	<b>Product</b>
<b>NP043</b>	Meat and edible offal of poultry
<b>NP044</b>	Meat and edible offal of cattle
<b>NP045</b>	Meat and edible offal of pigs
<b>NP046</b>	Sausages and other meat products
<b>NP047</b>	Preserved fish, crustaceans and molluscs
<b>NP048</b>	Canned fruit, legumes and vegetables
<b>NP049</b>	Raw and refined vegetable oils
<b>NP050</b>	Other oils and vegetable and animal fats n.e.c.
<b>NP051</b>	Dairy products
<b>NP052</b>	Husked, prepared and semi-prepared rice
<b>NP053</b>	Wheat flour
<b>NP054</b>	Other grain mill products n.e.c., starches and starch derivatives
<b>NP055</b>	Bakery products
<b>NP056</b>	Cane sugar, molasses, syrups and other sugars
<b>NP057</b>	Cocoa, chocolates and confectionery products
<b>NP058</b>	Macaroni, noodles and similar starchy products
<b>NP059</b>	Unroasted coffee
<b>NP060</b>	Ground and instant coffee, coffee extracts and concentrate
<b>NP061</b>	Food, prepared dishes and other food products
<b>NP062</b>	Prepared animal feed

<b>NP063</b>	Distilled alcoholic beverages and wines
<b>NP064</b>	Beer, malt, non-alcoholic beverages, and bottled water
<b>NP065</b>	Tobacco products
<b>NP066</b>	Textile articles, except clothing items
<b>NP067</b>	Wearing apparel
<b>NP068</b>	Leather and related products, except footwear
<b>NP069</b>	Footwear
<b>NP070</b>	Timber and cork, timber and cork products, except furniture; articles of straw and plaiting materials
<b>NP071</b>	Paper and paper products
<b>NP072</b>	Products related to publishing, printing and recording, except computer programs
<b>NP073</b>	Gasoline
<b>NP074</b>	Diesel
<b>NP075</b>	Bunker
<b>NP076</b>	Oils and lubricant greases
<b>NP077</b>	Other petroleum and coke products
<b>NP078</b>	Basic chemical substances and fertilizers and nitrogen compounds
<b>NP079</b>	Plastics and synthetic rubber in primary forms
<b>NP080</b>	Pesticides and other chemical products for use in agriculture
<b>NP081</b>	Paints, varnishes and similar coatings, printing ink and putty
<b>NP082</b>	Soaps, detergents, perfumes and toiletries
<b>NP083</b>	Artificial fibers and chemical products n.e.c
<b>NP084</b>	Pharmaceutical and medicinal products
<b>NP085</b>	Cork products
<b>NP086</b>	Profiles, tubing and hard plastic connections without supports
<b>NP087</b>	Other plastic products
<b>NP088</b>	Glass and glass products
<b>NP089</b>	Refractory products, clay construction materials, and other porcelain and ceramic products
<b>NP090</b>	Cement, lime and plaster
<b>NP091</b>	Articles made of concrete, cement and plaster, and other mineral non-metallic products n.e.c.

<b>NP092</b>	Basic iron and steel products
<b>NP093</b>	Primary products of aluminum, zinc, gold, silver and other semi-finished products through a smelting process
<b>NP094</b>	Metal products for structural use, tanks, reservoirs, metal containers, and steam generators
<b>NP095</b>	Other metal products
<b>NP096</b>	Electronic components and switchboards, computers and peripheral equipment
<b>NP097</b>	Communications equipment, and consumer electronic devices
<b>NP098</b>	Measuring, testing, navigation and control equipment, and watches
<b>NP099</b>	Irradiation, electronic, medial and therapeutic equipment
<b>NP100</b>	Optical, photographic instruments, magnetic and optical supports
<b>NP101</b>	Motors, generators, electric transformers, distribution devices, and devices for the control of electrical energy
<b>NP102</b>	Cells, batteries, storage batteries, cables and wiring devices
<b>NP103</b>	Electrical lighting equipment
<b>NP104</b>	Refrigerators, stoves, washers and other household appliances
<b>NP105</b>	Other types of electrical equipment
<b>NP106</b>	Machinery for general and special use, parts and components
<b>NP107</b>	Motor vehicles, car bodies, trailers and semi-trailers
<b>NP108</b>	Parts and components for motor vehicles
<b>NP109</b>	Other types of transport equipment
<b>NP110</b>	Wooden furniture
<b>NP111</b>	Furniture made with other types of materials, except rock, concrete, and ceramics
<b>NP112</b>	Medical and dental instruments and supplies
<b>NP113</b>	Other manufactured products
<b>NP114</b>	Waste and scrap

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**Source:** Drawn by the author.

**Table 15. Categories of Products and NP-Codes of Products Included.**

Groups of products	NP
Prepared meals and beverages	NP043 - NP062
Alcoholic beverages and Tobacco	NP063 - NP065
Clothing	NP066 - NP069
Wood and paper products	NP070 - NP072
Oil Products	NP073 - NP077
Chemical products	NP078 - NP084
Cork and plastic products	NP085 - NP087
Glass	NP088
Refractory products	NP089
Cement and concrete products	NP090 - NP091
Metal products	NP092 - NP095
Electronic devices	NP096 - NP105
Motor Vehicles and related	NP107
Parts, machinery and others	NP106, NP108 - NP109
Furniture	NP110 - NP111
Medical and dental instruments	NP112
Other manufactured products	NP113