

Review Article

Comparing Imports in FOB, CIF Terms of Delivery and Invoice Values and an Example on the Member States of the Economic Cooperation Organization

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Abstract

Foreign trade data and indicators are important resources for many economic analysis. In particular, the Central Bank of the Republic of Türkiye uses these data for the calculation of balance of payments. Export data published by Turkish Statistical Office (TURKSTAT) are calculated according to free on board (FOB terms of delivery) and the import data are calculated according to the cost of goods, insurance and freight (CIF terms of delivery). In the balance of payments account calculated by the Central Bank, export and import is used by FOB terms of delivery. Therefore, imports data should be calculated according to FOB terms of delivery at the same time. However, international methodological studies have concluded that valuation using invoice values is more compatible with the concepts and definitions of the system of national accounts and the balance of payments, and therefore the use of invoice values is recommended. In line with international methodological recommendations, this study compares the import balance values calculated in terms of FOB and CIF terms of delivery with the values calculated in terms of invoice value and reveals the difference between them. For this comparison, import values to the member countries of the Organisation for Economic Co-operation and Development are taken into account.

Keywords

Outlier, Foreign Trade, Outlier Detection, FOB, CIF, Invoice Values

1. Introduction

Foreign trade is defined as the goods and services trading activities of a country with other countries and has a dynamic structure that is constantly changing. Foreign trade, which plays a very important role in the economic life of governments and tries to adapt rapidly to changing technology, is also effective in the development and prosperity of the countries. Many countries aim to achieve economic growth and development via foreign trade activities. Therefore, before taking decisions about foreign trade policies, foreign trade structure

should be determined and developments should be followed. The most important tools used for this purpose are foreign trade data and foreign trade statistics and indicators. Foreign trade statistics are calculated and published by Türkiye Statistical Institute (TURKSTAT) officially in Türkiye. The data source of foreign trade statistics is the customs declarations received from the Ministry of Trade.

Imports data and indicators are important resources for many economic analysis. In particular, the Central Bank of the

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Republic of Türkiye uses these data in the calculation of balance of payments. Exports and imports data published by TURKSTAT are calculated according to FOB and CIF terms of delivery respectively. In the balance of payments account calculated by the Central Bank, export and import is taken into account by FOB terms of delivery. Therefore, import data should be calculated according to FOB terms of delivery at the same time.

The current national accounts system handbook that prepared by international organizations (United Nations (UN), Organisation for Economic Co-operation and Development (OECD)) recommends calculating the import and export of goods on an FOB basis. However, according to the results of the national accounts meeting held in 2013, it was determined that the principle of output valuation with basic prices used for domestic transactions and FOB valuation did not fully reconcile. In this direction, it was suggested to use invoice values for import and export valuation in national accounts and balance of payments statistics in the following years.

In this study, the import data were analyzed by taking into account the FOB, CIF valuation and invoice values, and the analysis was made using the import data of the member countries of the Economic Development and Cooperation Organization.

First, information about international commercial terms (terms of deliveries) is given then importance of invoice values is explained according to the principle of output valuation with basic prices. Afterwards, calculating freight and insurance rates, and imports in FOB terms of delivery is explained. In the next section, the brief is given about the Economic Development and Cooperation Organization.

Finally, it was explained how the import data were analyzed in accordance with the purpose of the study, and the results of the analysis were tabulated and the differences were numerically revealed by comparing the valuation methods.

2. Literature

The costs associated with cross-border shipping and insurance of goods are an important determinant of the volume and geography of international trade. While certainly not the only barrier to trade, transport and insurance costs are not insignificant and can pose barriers similar in size and effect to import tariffs [4] which highlights how the costs associated with for example poor quality infrastructure (ports, roads), geographical distance to market, and oil prices, continue to shape global production networks and the integration of countries into global value chains [1]. Few (official) data are available on the size and trends in transport and insurance costs for international trade. In addition, these data are not in product, country, etc. details. At most, and still rarely, countries publish highly aggregated information in for example their Supply-Use tables or auxiliary tables for Balance of Payment statistics [1].

There are a lot of works on estimating transport and in-

surance costs of international trade in literature. Several datasets on CIF-FOB margins by product and partner country have already been produced, mostly with the aim of explaining the size, trends, and drivers of trade costs and the importance of trade facilitation. The most remarkable examples of this literature are Limao and Venables [10], Hummels and Skiba [7], Hummels and Lugovskyy [6], Pomfret and Sourdin [11, 13]. Overall, the literature can be divided into a group of papers that uses what is often referred to as explicit data on transport costs, published by statistical offices (e.g. the United States), and a group of papers that uses the differences between mirrored flows (imports CIF and exports FOB), generally drawing on UN Comtrade data, to implicitly derive transport costs. These two strands are discussed in more detail by Miao and Fortanier [1].

The apparent inconsistency of the 2008 System of National Accounts (SNA) recommendation to value output at basic prices and to record imports and exports at FOB values as recommended in balance of payment manual 6 (BPM6) was first addressed by Anne Harrison in a 2012 International Monetary Fund (IMF) Balance of Payments Committee (BOPCOM) paper [3] Walters [14] and Hiemstra and de Haan [5] propose to value exports and imports of goods both in the balance of payments and national accounts based on invoice values.

3. Data and Methodology

3.1. International Commercial Terms

Incoterms are also referred to as International Commercial Terms, which are published by the International Chamber of Commerce (ICC), which relate to International Commercial Law. They are accepted by governments and legal authorities around the world. Put simply, incoterms are the selling terms that the buyer and seller of goods both agrees to. The Incoterm clearly states which tasks, costs and risks are associated with the buyer and the seller. The Incoterm is agreed between the buyer and seller and states when the seller's costs and risks are then transferred onto the buyer [2].

Rules for any mode or modes of transport;

Ex-Works or Ex-Warehouse (EXW) means that the seller delivers when it places the goods at the disposal of the buyer at the seller's premises or at another named place (i.e., works, factory, warehouse, etc.). The seller does not need to load the goods on any collecting vehicle, nor does it need to clear the goods for export, where such clearance is applicable.

Free Carrier (FCA) means that the seller delivers the goods to the carrier or another person nominated by the buyer at the seller's premises or another named place. The parties are well advised to specify as clearly as possible the point within the named place of delivery, as the risk passes to the buyer at that point.

Carriage Paid To (CPT) means that the seller delivers the goods to the carrier or another person nominated by the seller

at an agreed place (if any such place is agreed between parties) and that the seller must contract for and pay the costs of carriage necessary to bring the goods to the named place of destination.

Carriage and Insurance Paid to (CIP) means that the seller delivers the goods to the carrier or another person nominated by the seller at an agreed place (if any such place is agreed between parties) and that the seller must contract for and pay the costs of carriage necessary to bring the goods to the named place of destination. 'The seller also contracts for insurance cover against the buyer's risk of loss of or damage to the goods during the carriage. The buyer should note that under CIP the seller is required to obtain insurance only on minimum cover. Should the buyer wish to have more insurance protection, it will need either to agree as much expressly with the seller or to make its own extra insurance arrangements.

Delivered At Place (DAP) means that the seller delivers when the goods are placed at the disposal of the buyer on the arriving means of transport ready for unloading at the named place of destination. The seller bears all risks involved in bringing the goods to the named place.

Delivered at Place Unloaded (DPU) means that the seller delivers when the goods, once unloaded, are placed at the disposal of the buyer at a named place of destination. The seller bears all risks involved in bringing the goods to, and unloading them at the named place of destination.

Delivered Duty Paid (DDP) means that the seller delivers the goods when the goods are placed at the disposal of the buyer, cleared for import on the arriving means of transport ready for unloading at the named place of destination. The seller bears all the costs and risks involved in bringing the goods to the place of destination and has an obligation to clear the goods not only for export but also for import, to pay any

duty for both export and import and to carry out all customs formalities.

Free Alongside Ship (FAS) means that the seller delivers when the goods are placed alongside the vessel (e.g., on a quay or a barge) nominated by the buyer at the named port of shipment. The risk of loss of or damage to the goods passes when the goods are alongside the ship, and the buyer bears all costs from that moment onwards.

Free On Board (FOB) means that the seller delivers the goods on board the vessel nominated by the buyer at the named port of shipment or procures the goods already so delivered. The risk of loss of or damage to the goods passes when the goods are on board the vessel, and the buyer bears all costs from that moment onwards.

Cost and Freight (CFR) means that the seller delivers the goods on board the vessel or procures the goods already so delivered. The risk of loss of or damage to the goods passes when the goods are on board the vessel. The seller must contract for and pay the costs and freight necessary to bring the goods to the named port of destination.

Cost, Insurance and Freight (CIF) means that the seller delivers the goods on board the vessel or procures the goods already so delivered. The risk of loss of or damage to the goods passes when the goods are on board the vessel. The seller must contract for and pay the costs and freight necessary to bring the goods to the named port of destination. 'The seller also contracts for insurance cover against the buyer's risk of loss of or damage to the goods during the carriage. The buyer should note that under CIF the seller is required to obtain insurance only on minimum cover. Should the buyer wish to have more insurance protection, it will need either to agree as much expressly with the seller or to make its own extra insurance arrangements.

| | Freight Collect Terms | | | | | Freight Prepaid Terms | | | | | |
|--|--------------------------------|----------------------|-----------------------------------|----------------------|-------------------------|---------------------------------|--------------------------------|--------------------------------------|----------------------------|-------------------------------|-----------------------------|
| Groups | Any Mode or Modes of Transport | | Sea and Inland Waterway Transport | | | | Any Mode or Modes of Transport | | | | |
| Incoterm [®] | EXW | FCA | FAS | FOB | CFR | CIF | CPT | CIP | DAP | DPU | DDP |
| | Ex Works (Place) | Free Carrier (Place) | Free Alongside Ship (Port) | Free On Board (Port) | Cost and Freight (Port) | Cost Insurance & Freight (Port) | Carriage Paid To (Place) | Carriage & Insurance Paid to (Place) | Delivered at Place (Place) | Delivered at Unloaded (Place) | Delivered Duty Paid (Place) |
| Transfer of Risk | At Buyer's Disposal | On Buyer's Transport | Alongside Ship | On Board Vessel | On Board Vessel | On Board Vessel | At Carrier | At Carrier | At Named Place | At Named Place Unloaded | At Named Place |
| Obligations & Charges: | | | | | | | | | | | |
| Export Packaging | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller |
| Loading Charges | Buyer | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller |
| Delivery to Port/Place | Buyer | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller |
| Export Duty, Taxes & Customs Clearance | Buyer | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller |
| Origin Terminal Charges | Buyer | Buyer | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller |
| Loading on Carriage | Buyer | Buyer | Buyer | Seller | Seller | Seller | Seller | Seller | Seller | Seller | Seller |
| Carriage Charges | Buyer | Buyer | Buyer | Buyer | Seller | Seller | Seller | Seller | Seller | Seller | Seller |
| Insurance | Negotiable | Negotiable | Negotiable | Negotiable | Negotiable | *Seller | Negotiable | **Seller | Negotiable | Negotiable | Negotiable |
| Destination Terminal Charges | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Seller | Seller | Seller | Seller | Seller |
| Delivery to Destination | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Seller | Seller | Seller |
| Unloading at Destination | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Seller | Buyer |
| Import Duty, Taxes & Customs Clearance | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Buyer | Seller |

Figure 1. Incoterms 2020 rules responsibility quick reference guide.

Freight Collect and Freight Prepaid are common terms used in International Freight. It is very important to understand the difference, it is basically a statement of who will be paying for all the International freight charges. If you export your goods on 'Freight Collect' terms (EXW, FCA, FAS and FOB are all Freight Collect terms) that means that the importer (your buyer) will 'collect' and pay all of the freight charges on their side, you will not have to pay any freight at all. If you are the exporter and sell the goods on CFR, CIF, CPT, CIP, DAP, DPU or DDP terms, this means that you will pay for the freight charges ('Freight Prepaid' – you will pre-pay the freight charges). These are linked to the selling terms of your invoice, if you are selling your goods on 'FOB' terms (Free on Board) then you are only covering the costs to get the goods loaded on board the vessel. All charges thereafter will be charged to the receiver of the goods (consignee) – so it will be Freight Collect. These freight terms are stated on the Bill of Lading, the document issued by the shipping line or freight forwarder [2].

3.2. Common Price Valuations for International Merchandise Trade

Before calculating freight and insurance rates, common price valuations for international merchandise trade are given below.

Free on board (FOB): This term means that the seller's obligation to deliver is fulfilled when the goods have passed over the ship's rail at the named port of shipment. This means that the buyer has to bear all costs and risks of loss or of damage to the goods from that point. The FOB term requires the seller to clear the goods for exports. This term can only be used for sea or inland waterway transport [1].

Cost, insurance and freight (CIF): The seller has the same obligations as under CFR, but with the addition that he/she has to procure marine insurance against the buyer's risk of loss of or damage to the goods during the carriage. The seller contracts for insurance and pays the insurance premium. The buyer should note that, under the CIF term, the seller is required to obtain insurance only on minimum coverage. The CIF term requires the seller to clear the goods for export. This term can only be used for sea and inland waterway transport [1].

Free alongside ship (FAS): This term means that the seller's obligation to deliver is fulfilled when the goods have been placed alongside the vessel on the quay or in lighters at the named port of shipment. The buyer must bear all costs and risks of loss or of damage to the goods from that moment. The FAS term requires the seller to clear the goods for exports. This term can only be used for sea or inland waterway transport [1].

Cost and freight (CFR): This term means that the seller's obligation to deliver is fulfilled when the goods have passed over the ship's rail in the port of shipment. The seller must pay

the costs and freight necessary to bring the goods to the named port of destination, but the risk of loss or of damage to the goods, as well as any additional costs due to events occurring after the time of delivery, are transferred from the seller to the buyer. The CFR term requires the seller to clear the goods for export. This term can only be used for sea and inland waterway transport [1].

The current National accounts system handbook that prepared by international organizations (United Nations, Organisation for Economic Co-operation and Development) recommends calculating the import and export of goods on an FOB basis. However, according to the results of the national accounts meeting held in 2013, it was determined that the principle of output valuation with basic prices used for domestic transactions and FOB valuation did not fully reconcile. In this direction, it was suggested to use (invoice) valuation for import and export valuation in national accounts and balance of payments statistics in the following years [1].

FOB and basic pricing principles differ in the handling of freight and insurance services between exporting and importing countries. According to the FOB valuation principle, goods are valued excluding these services between exporting and importing countries to obtain a single valuation point. According to the basic pricing principle, goods are valued at the observed transaction price the producer will receive, and therefore freight and insurance services are included or excluded depending on whether these services are priced separately by the producer. For this reason, the principle of output valuation with basic prices used for national accounts and balance of payments does not fully reconcile with FOB valuation, and it is recommended to use invoice values. For a better understanding of the subject, a numerical example is given in the balance of payments guidance note G1 [1].

Example

Let the value of the goods produced in country A be 10 000, the freight from the factory to the border in country A is 200, the freight between country A and country B is 300, and the freight in country B from the border to the importer is 100. In this case;

Cost of goods = 10 000

FOB value = 10 200

CIF value = 10 500

Freight in country A = 200

Freight between A-B = 300

Freight in country B = 100

This example considers trading partners contracting on an "ex works" (EXW) basis (ie the invoice price is 10,000 and the importer in Country B pays separately for all shipping from the seller's facility to him).

If the carrier is located in country B;

Country B's international merchandise trade statistic indicates a CIF record of 10,500 to be included in the supply table, and the record of transport services depends on the nationality of the carrier. In this case, no imports of services are recorded,

as the shipping service is considered a domestic transaction and the CIF registration of the goods results in a low trade balance of -500. An adjustment of -500 in the import flow of transport services is needed to offset this inconsistency. Re-

cording based on transaction value (EXW) is limited to trading in goods only. The balance of trade will not include a record of services relative to the actual transaction between trading parties.

Table 1. Recording supply table.

| | | Initially recorded | | Suggested treatment (invoice value) | |
|--------------------|-----------|--------------------|-----------|-------------------------------------|-----------|
| | | Imports | | Imports | |
| | Value(\$) | | Value(\$) | | Value(\$) |
| Goods | 10 000 | Goods(CIF) | 10 500 | Goods(EXW) | 10 000 |
| Services | | Services | - | Services | - |
| | | Exports | | Exports | |
| | | Goods | - | Goods | - |
| | | Services | | Services | - |
| Balance of imports | - 10 000 | | - 10 500 | | - 10 000 |

As seen in Table 1, If the import of country B is registered according to CIF, it is recorded as if it has made this payment, although the carrier of country B is resident in country B, although it does not actually import 500 for transportation. Therefore, it has to make a correction of -500 on its imports. However, if the invoice value is used directly instead, there is no need for such an adjustment in the supply table [8].

If the carrier is not located in country B;

The EXW contract leads to a separate recording of all transport services of 600, likely captured in ITS. As a result, the CIF recording of imports of goods in the supply table leads to an overstated import of 500, corresponding to the transport services included in the CIF value. The CIF recording requires a counter balancing adjustment of the same amount (-500) in the import of services.

Table 2. Recording supply table.

| | | Initially recorded | | Suggested treatment (invoice value) | |
|--------------------|-----------|--------------------|-----------|-------------------------------------|-----------|
| | | Imports | Value(\$) | Imports | Value(\$) |
| | Value(\$) | | | | |
| Goods | 10 000 | Goods(CIF) | 10 500 | Goods(EXW) | 10 000 |
| Services | 600 | Services | 600 | Services | 600 |
| | | Exports | | Exports | |
| | | Goods | - | Goods | - |
| | | Services | | Services | - |
| Balance of imports | - 10 600 | | - 11 100 | | - 10 600 |

As seen in Table 2, If the import of country B is registered according to CIF, the transport fee will be recorded twice and it will be recorded as if an overpayment of 500 has been made for the import. However, if the invoice value is used directly

instead, there is no need for such an adjustment in the supply table [8].

3.3. Calculating Freight and Insurance Rates, Import in FOB Delivery Terms

In this section, it's calculated the average freight and insurance rates by using the existing freight and insurance values taking into account the product, country and mode of transportation variables. Thus, it will be possible to calculate freight and insurance values for missing values by applying these average rates. While calculating freight and insurance rates in the first stage, 3 years before the relevant year were taken into account, The rates were calculated as 3-year rates, and import values in FOB were computed for both rates [9]. The following were applied for each data set;

The data set is grouped by considering the variables of product, country group and mode of transportation.

Then, records without freight and insurance rates were removed from the data set.

Freight rates between 9.9-10.1 and insurance rates between 2.9-3.1 in the data set were excluded from the data set.

Then, the number of records in the product-country- mode of transportation type groups were determined and groups with 10 and more than 10 records were determined and groups with less than 10 records were excluded from the data set. This is done because the number of records must be at least 10 for outlier detection methods to work effectively.

In order to prevent outliers affecting the freight and insurance rates in the final data set, outlier detection was performed using the first Adjusted Box-Plot and then the Median Z-score methods. Two different methods were applied because the other method detect the outliers that one method could not detect. Two estimators used in the Z-Score, the sample mean and sample standard deviation, can be affected by a few extreme values or by even a single extreme value. To avoid this problem, the median and the median of the absolute deviation of the median (MAD) are employed in the modified z-score instead of the mean and standard deviation of the sample, respectively [12]. Therefore, median z-score was used in this study The Adjusted Box-Plot method is used here instead of the Box-Plot method because although Tukey's Box-Plot method is applicable to both symmetric data and skewed data, it causes a large number of observations to be determined as outliers in the data with high skewness. This is due to the use of the lower and upper quadrants and inter-quartile distances measured without considering the skewness of the data set [15]. The Adjusted Box-Plot method takes into account the skewness of the data set.

After determining the outliers, these values were removed from the data set and the freight and insurance rates were calculated by taking the ratio of the total freight and total insurance values to the total dollar values for each group.

Freight and insurance rates were calculated from a higher group (product-country group, product-mode of transportation, country group-mode of transportation) for groups with less than 10 registrations.

Gold, crude oil, natural gas, aircraft and ships are evaluated

separately in the special goods category.

In freight and insurance calculations, other foreign expenses that are not actually the subject of payment are not included.

Calculated with the formula

$$\text{FOB import} = \text{CIF import} - \text{Freight} - \text{Insurance}$$

3.4. Economic Cooperation Organization

The Economic Cooperation Organization (ECO) was established in 1985 on the legal basis of the Regional Cooperation for Development, which was established in 1964 to develop regional economic cooperation by Türkiye, Iran and Pakistan.

With the participation of Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan and Afghanistan in 1992, the ECO turned into a regional economic organization that covers a population of approximately 500 million on a total area of 8 million km².

Member States of ECO are Türkiye, Iran and Pakistan (Founding Members), Afghanistan, Azerbaijan, Kazakhstan, Kyrgyz Republic, Uzbekistan, Tajikistan and Turkmenistan.

Objectives of the organization are contributing to the development of the Member States, removal of trade barriers within the ECO region, and developing intra-regional trade and promoting the ECO region's integration with global markets, strengthening cultural and historical ties among the Member States.

3.5. Data

In this study, the import data between Türkiye and member states of ECO for 2022 and 2023 years were taken into account when comparing the values calculated by taking into account different valuation methods. Since the most reliable invoice values data can be obtained from 2022 in foreign trade data obtained from different data sources, the study was carried out with data from these years and the macro level data of the Ministry of Trade were used in the study, special permission was obtained from the Ministry. Freight and insurance values are also taken into account in the data set in order to compare with the logic of recording to the supply usage tables given in the previous sections. Invoice values are recorded in the customs declarations at the declaration level, therefore, there is no invoice information at the item level. The following procedures were applied to calculate the invoice value on item basis.

1. Item weights are calculated by dividing the value in dollars of each item in the declaration by the sum of the values in dollars of all items in the declaration.
2. Then, the invoice value is distributed for each item in the declaration, taking into account the item weights. Thus, invoice values are estimated at item level.

Example: Consider a customs declaration with 10 items.

Table 3. Calculation invoice values at item level.

| Custom Declaration Number | Item No | CIF value (\$) | Invoice Value | Weight | Item Invoice Value |
|---------------------------|---------|----------------|---------------|--------|--------------------|
| 1 | 1 | 10 | 1400 | 0.9 | 13.3 |
| 1 | 2 | 20 | 1400 | 1.9 | 26.5 |
| 1 | 3 | 25 | 1400 | 2.4 | 33.2 |
| 1 | 4 | 30 | 1400 | 2.8 | 39.8 |
| 1 | 5 | 35 | 1400 | 3.3 | 46.4 |
| 1 | 6 | 40 | 1400 | 3.8 | 53.1 |
| 1 | 7 | 45 | 1400 | 4.3 | 59.7 |
| 1 | 8 | 400 | 1400 | 37.9 | 530.8 |
| 1 | 9 | 200 | 1400 | 19.0 | 265.4 |
| 1 | 10 | 250 | 1400 | 23.7 | 331.8 |

For this customs declarations in Table 3, total CIF value is 1055 \$. In order to calculate the weight for each item; the item's CIF value divided by the total CIF value. $10/1055 \times 100 = 0.9$ is the first item weight. After the calculation weights, invoice value is distributed according to weights for each items. For the first item, the invoice value is $0.9 \times 1400 / 100 = 13.3$ \$. Thus, invoice values are estimated at the item level.

3.6. Results

Comparing the values calculated by taking into account different valuation methods and the results were given in the annex by tables. Tables have been created by taking into account the country, flag and delivery methods. First of all, the import structure between Türkiye and the countries of the Economic Cooperation Organization was examined. Accordingly, in the table below, import values by chapters are given.

Table 4. Imports by chapters.

| 2022 | | | | | |
|---------|--|-------------------|---------------|---------------------------|----------------------------------|
| HS Code | Chapters | Total Imports Eco | Total Imports | Imports Eco/Total Imports | HS Imports ECO/Total ECO Imports |
| | | Value | Value | Ratio % | Ratio % |
| 74 | Copper and articles thereof | 2 486 377 | 5 510 359 | 45.10 | 22.4 |
| 27 | Mineral fuels, minerals oils and product of their distillation | 2 075 611 | 96 548 874 | 2.10 | 18.7 |
| 52 | Cotton, cotton yarn and cotton textiles | 1 328 822 | 4 841 968 | 27.40 | 12 |
| 76 | Aluminium and articles thereof | 1 188 910 | 7 683 174 | 15.50 | 10.7 |
| 79 | Zinc and articles thereof | 765 542 | 1 377 684 | 55.60 | 6.9 |
| 39 | Plastic and articles thereof | 708 800 | 18 975 915 | 3.70 | 6.4 |
| 31 | Fertilisers | 370 110 | 3 031 474 | 12.20 | 3.3 |
| 72 | Iron and steel | 364 407 | 28 367 022 | 1.30 | 3.3 |
| 71 | Precious stones, precious metals, pearls and articles thereof | 272 581 | 23 457 673 | 1.20 | 2.5 |
| 28 | Inorganic chemicals, organic or | 141 347 | 3 474 630 | 4.10 | 1.3 |

inorganic compounds

2023

| HS Code | Chapters | Total Imports Eco Value | Total Imports Value | Imports Eco/Total Imports Ratio % | HS Imports ECO/Total ECO Imports Ratio % |
|---------|--|----------------------------|------------------------|---|--|
| 27 | Mineral fuels, minerals oils and product of their distillation | 3 781 016 | 69 113 811 | 5,5 | 34,8 |
| 74 | Copper and articles thereof | 2 065 798 | 5 651 900 | 36.60 | 19 |
| 76 | Aluminium and articles thereof | 1 044 527 | 6 292 612 | 16.60 | 9.6 |
| 52 | Cotton, cotton yarn and cotton textiles | 844 183 | 2 746 157 | 30.70 | 7.8 |
| 39 | Plastic and articles thereof | 516 912 | 16 215 325 | 3.20 | 4.8 |
| 79 | Zinc and articles thereof | 482 440 | 863 496 | 55.90 | 4.4 |
| 72 | Iron and steel | 370 378 | 24 160 165 | 1.50 | 3.4 |
| 8 | Edible fruits and nuts, peel of melons or citrus fruits | 191 840 | 1 264 136 | 15.20 | 1.8 |
| 31 | Fertilisers | 173 135 | 2 387 377 | 7.30 | 1.6 |
| 71 | Precious stones, precious metals, pearls and articles thereof | 156 725 | 33 912 165 | 0.50 | 1.4 |

Import values are sorted and the first ten chapters with the highest rate are taken in the Table 4. The chapter with the highest import rate is copper and articles thereof for 2022 and mineral fuels, minerals oils and product of their distillation for 2023 as seen in the Table 4. For 2022, total copper and articles

thereof import is 2 billion 486 million dollars. That means that 45.1% of the chapter named copper and articles thereof imports were made from the countries of the Organization of Economic Cooperation. This rate was %36.6 in 2023.

Table 5. Imports by chapters.

2022

| Country | Chapters | Country Imports | Chapter Total Imports | Ratio % |
|--------------|--|-----------------|-----------------------|---------|
| Kazakhstan | Mineral fuels, minerals oils and product of their distillation | 1 409 827 | 96 548 874 | 1.5 |
| Kazakhstan | Copper and articles thereof | 1 289 256 | 5 510 359 | 23.4 |
| Iran | Aluminium and articles thereof | 821 543 | 7 683 174 | 10.7 |
| Uzbekistan | Cotton, cotton yarn and cotton textiles | 586 430 | 4 841 968 | 12.1 |
| Uzbekistan | Copper and articles thereof | 574 425 | 5 510 359 | 10.4 |
| Iran | Copper and articles thereof | 546 929 | 5 510 359 | 9.9 |
| Iran | Plastic and articles thereof | 454 125 | 18 975 915 | 2.4 |
| Iran | Zinc and articles thereof | 374 136 | 1 377 684 | 27.2 |
| Turkmenistan | Mineral fuels, minerals oils and product of their distillation | 367 286 | 96 548 874 | 0.4 |
| Turkmenistan | Cotton, cotton yarn and cotton textiles | 220 600 | 4 841 968 | 4.6 |

2023

| Country | Chapters | Country Imports | Chapter Total Imports | Ratio % |
|--------------|--|-----------------|-----------------------|---------|
| Turkmenistan | Mineral fuels, minerals oils and product of their distillation | 1 414 946 | 69 113 811 | 2 |

| | | | | |
|------------|--|-----------|------------|------|
| Kazakhstan | Copper and articles thereof | 1 262 275 | 5 651 900 | 22.3 |
| Kazakhstan | Mineral fuels, minerals oils and product of their distillation | 1 205 886 | 69 113 811 | 1.7 |
| Azerbaijan | Mineral fuels, minerals oils and product of their distillation | 935 833 | 69 113 811 | 1.4 |
| Uzbekistan | Copper and articles thereof | 473 617 | 5 651 900 | 8.4 |
| Kazakhstan | Aluminium and articles thereof | 464 717 | 6 292 612 | 7.4 |
| Iran | Aluminium and articles thereof | 396 369 | 6 292 612 | 6.3 |
| Uzbekistan | Cotton, cotton yarn and cotton textiles | 340 336 | 2 746 157 | 12.4 |
| Iran | Plastic and articles thereof | 332 314 | 16 215 325 | 2 |
| Iran | Copper and articles thereof | 302 875 | 5 651 900 | 5.4 |

Imports values are sorted by countries and chapters and the top ten countries are taken in the Table 5. According to this mineral fuels, minerals oils and product of their distillation was imported mostly from Kazakhstan in 2022. Its rate in total mineral fuels, minerals oils and product of their distillation imports was 1.5%. Aluminium and articles thereof was imported mostly from Iran in 2022. Its rate in total aluminium and articles thereof was 10.7%.

In 2023, minerals oils and product of their distillation was imported mostly from Turkmenistan (values in the table are in 1000 dollars).

Foreign trade statistics covers cross border trade in goods between Türkiye and other countries. International trade in services statistics are not covered in statistics. The “general trade system” (GTS) rules are applied both for production and publication of foreign trade statistics. The general trade system covers all goods enter the country's economic area and goods leave from country's economic area. Thus, customs warehouses and free zones in Türkiye data is included in trade statistics. Free zones and customs warehouses are not included in foreign trade statistics in the special trade system (STS), on the other hand, only the goods entered or left a country's free circulation area is included. According to the STS, customs warehouses and free zones are not considered inside of the country's statistical territory. Thus, goods entered

in or left from customs warehouses and free zones of the country are included in the calculations, while international trade between customs warehouses and free zones to abroad are excluded. Data sources of foreign trade statistics by general trade system:

- 1) "Free zone transaction form-SB" used in international transactions of free zones,
- 2) "Customs declaration-GB" used in direct transactions with abroad from Türkiye's free circulation area, free zones and warehouses,
- 3) "Warehouse declaration-AN" used for goods entering to warehouses from abroad,
- 4) "Warehouse declaration-AO" used for goods sent to abroad from warehouses,
- 5) The common transit system -TI"new computerized transit system" and "TIR Carnet" used for goods sent from warehouses abroad.
- 6) Data obtained from the Simplified Customs Declarations=ET, issued electronically by air cargo carriers, ie operators, for import and export are included in statistics. Different data sources were examined and it was determined that some of the data sources did not have invoice value information. According to the data sources the numbers of records are given the table below.

Table 6. Records numbers.

| Years | Exports | | Imports | |
|---------|------------|------------|------------|------------|
| | 2022 | 2023 | 2022 | 2023 |
| Sources | | | | |
| Total | 44 812 402 | 59 879 687 | 22 450 199 | 28 863 746 |
| AN | - | - | 7 992 989 | 9 598 362 |
| AO | 2 737 105 | 5 383 668 | - | - |
| ET | 18 033 355 | 30 478 845 | 7 119 665 | 10 442 097 |

| Years | Exports | | Imports | |
|-------|------------|------------|-----------|-----------|
| | 2022 | 2023 | 2022 | 2023 |
| GB | 23 459 698 | 23 412 199 | 6 850 999 | 8 120 264 |
| SB | 544 069 | 554 111 | 486 546 | 703 023 |
| TI | 38 175 | 50 864 | - | - |

According to the data sources the numbers of records with invoice value are given the table below.

Table 7. Records with invoice value numbers.

| Years | Exports | | Imports | |
|--------------|------------|------------|------------|------------|
| | 2022 | 2023 | 2022 | 2023 |
| Data sources | | | | |
| Total | 42 063 067 | 54 886 271 | 22 167 363 | 28 456 640 |
| AN | - | - | 7 992 955 | 9 598 339 |
| ET | 18 603 369 | 31 474 072 | 7 324 641 | 10 739 249 |
| GB | 23 459 698 | 23 412 199 | 6 849 767 | 8 119 052 |

According to Table 7, there are no invoice values in free zone transaction forms, customs warehouse declarations-AO and TIR Carnet declarations. Some customs declarations (detailed declarations) haven't got invoice values according to table but this number is very small. If invoice value will be used in balance of payments statistics in the future, work should be done to complete this information.

For calculating invoice value in item level, all import data

between Türkiye and member states of ECO for 2022 and 2023 are taken into account first. According to this, there were 22 450 199 records for 2022, 28 863 746 records for 2023 in imports. Number of records with invoice value information was 22 167 363 for 2022, 28 456 640 for 2023. While some of invoice values are at declarations level, some of invoice values are items level. Especially in simplified customs declarations, invoice values are at items level.

Table 8. Impots value by countries and terms of delivery.

2022

| Country | Terms of Delivery | Invoice Value | Rate % | Imports CIF | Rate % | Imports FOB | Rate % | Freight | Rate % | Insurance | Rate % |
|--------------|-------------------|---------------|--------|-------------|--------|-------------|--------|---------|--------|-----------|--------|
| Azerbaijan | CIF | 279 752 | 14.1 | 284 709 | 34.0 | 259 998 | 33.7 | 20 695 | 38.3 | 4 016 | 36.6 |
| Kazakhstan | CIF | 2 249 983 | 48.9 | 2 250 626 | 64.0 | 2 089 355 | 64.5 | 154 739 | 61.6 | 6 531 | 27.7 |
| Turkmenistan | CIF | 498 647 | 38.0 | 499 943 | 51.7 | 458 180 | 51.8 | 36 294 | 51.5 | 5 469 | 44.8 |
| Uzbekistan | FCA | 529 474 | 30.4 | 578 467 | 34.4 | 538 926 | 35.1 | 31 913 | 25.5 | 7 627 | 33.4 |
| Tajikistan | CIF | 50 044 | 21.9 | 50 044 | 29.2 | 46 924 | 29.8 | 2 844 | 24.5 | 276 | 12.7 |
| Kyrgyzstan | FCA | 29 708 | 13.9 | 31 715 | 26.5 | 30 174 | 27.3 | 1 297 | 16.2 | 244 | 22.8 |
| Iran | CIF | 1 164 200 | 34.4 | 1 184 159 | 35.3 | 1 092 910 | 35.6 | 66 691 | 31.0 | 24 558 | 34.9 |
| Afghanistan | CIF | 11 624 | 29.3 | 12 927 | 41.0 | 11 712 | 44.0 | 1 065 | 24.7 | 150 | 24.6 |

| Pakistan | CIF | 249 619 | 4.4 | 248 059 | 57.4 | 236 803 | 58.5 | 10 790 | 44.3 | 466 | 14.0 |
|--------------|-------------------|---------------|--------|-------------|--------|-------------|--------|---------|--------|-----------|--------|
| 2023 | | | | | | | | | | | |
| Country | Terms of Delivery | Invoice Value | Rate % | Imports CIF | Rate % | Imports FOB | Rate % | Freight | Rate % | Insurance | Rate % |
| Azerbaijan | DAP | 718 506 | 31.3 | 717 313 | 49.8 | 651 387 | 49.7 | 56 403 | 51.5 | 9 523 | 49.3 |
| Kazakhstan | DAP | 1 960 219 | 49.1 | 1 957 448 | 55.9 | 1 767 331 | 55.8 | 156 021 | 55.8 | 34 096 | 64.3 |
| Turkmenistan | CIF | 804 041 | 40.3 | 804 411 | 48.5 | 746 164 | 48.8 | 57 335 | 46.7 | 912 | 9.5 |
| Uzbekistan | FCA | 345 798 | 27.0 | 356 535 | 29.5 | 332 079 | 30.1 | 19 375 | 22.1 | 5 081 | 25.2 |
| Tajikistan | FCA | 36 826 | 15.0 | 39 723 | 32.2 | 36 936 | 32.7 | 2 626 | 28.4 | 162 | 13.4 |
| Kyrgyzstan | DPU | 160 341 | 53.8 | 160 338 | 58.5 | 138 557 | 56.9 | 21 656 | 73.6 | 125 | 11.6 |
| Iran | CIF | 716 682 | 30.3 | 727 997 | 33.4 | 655 529 | 33.5 | 56 974 | 32.2 | 15 495 | 32.6 |
| Afghanistan | CIF | 11 557 | 31.4 | 13 075 | 42.0 | 11 871 | 43.0 | 1 022 | 34.7 | 182 | 29.2 |
| Pakistan | CIF | 216 052 | 2.9 | 212 456 | 46.6 | 195 558 | 46.9 | 15 553 | 48.1 | 1 343 | 21.8 |

Table 8 shows the highest import values according to the terms of deliveries of the countries. According to this, in 2022, the highest imports from Azerbaijan were made by CIF terms of delivery, with a rate of 34.0% in total Azerbaijan imports and in 2023 the highest imports from Azerbaijan were made by DAP terms of delivery. The highest import rate in Kazakhstan was in the CIF terms of delivery in 2022 and in 2023 the highest rate was DAP terms of delivery. The highest import rate in the remaining ECO countries was realized in imports according to the CIF terms of delivery. In 2022, the highest import rate was in the FCA terms of delivery in Uzbekistan and Kyrgyzstan, while the highest import rate in the

remaining ECO countries was in the CIF terms of delivery.

Example: Let's re-register the imports of Azerbaijan for the years 2022 and 2023, taking into account the registration method in the Azerbaijan example given above.

In Table 9, Azerbaijan's imports are divided according to the modes of delivery and the flags of the vehicles used in transport. While the first table shows the import figures where the transport is carried out by Türkiye, the other table shows the figures where foreign flagged vehicles are involved. In addition, the goods value column in the table shows only the goods value. According to this table we calculated balance of imports as given below.

Table 9. Azerbaijan imports according to terms of delivery and flags.

| Türkiye 1000\$ | | | | | | | |
|-------------------|-------------------|-------------------|-------------------|---------------|---------------|-----------------|-------------------|
| Year | Terms of Delivery | Total Imports CIF | Total Goods Value | Invoice Value | Total Freight | Total Insurance | Total Imports FOB |
| 2022 | CFR | 8 377 | 8 205 | 8 207 | 385 | 172 | 7 820 |
| | CIF | 92 477 | 92 477 | 93 190 | 6 343 | 825 | 85 309 |
| | CIP | 46 939 | 46 930 | 46 985 | 2 314 | 782 | 43 843 |
| | CPT | 90 279 | 89 813 | 89 814 | 4 952 | 465 | 84 861 |
| | DAP | 50 444 | 50 424 | 52 958 | 2 526 | 1 125 | 46 793 |
| | DDP | 44 | 44 | 44 | 5 | 1 | 38 |
| | DPU | 5 883 | 5 883 | 5 883 | 250 | 145 | 5 487 |
| | EXW | 7 021 | 6 410 | 6 878 | 493 | 118 | 6 409 |
| | FCA | 136 935 | 126 752 | 126 820 | 8 357 | 1 826 | 126 752 |
| | FOB | 18 947 | 17 326 | 17 315 | 1 416 | 205 | 17 326 |

| Türkiye 1000\$ | | | | | | | |
|-------------------------|----------------------|----------------------|----------------------|------------------|------------------|----------------------|----------------------|
| Year | Terms of Delivery | Total Imports CIF | Total Goods Value | Invoice Value | Total Freight | Total Insur- ance | Total Imports FOB |
| 2023 | CFR | 21 075 | 20 536 | 20 536 | 1 628 | 539 | 18 908 |
| | CIF | 121 987 | 121 987 | 122 507 | 9 065 | 1 090 | 111 832 |
| | CIP | 56 949 | 56 949 | 57 251 | 3 898 | 1 024 | 52 027 |
| | CPT | 93 561 | 91 755 | 91 759 | 6 228 | 1 799 | 85 533 |
| | DAP | 150 620 | 149 895 | 154 630 | 11 135 | 1 902 | 137 584 |
| | DDP | 0 | 0 | 0 | 0 | 0 | 0 |
| | DPU | 0 | 0 | 0 | 0 | 0 | 0 |
| | EXW | 16 185 | 14 585 | 18 352 | 1 271 | 330 | 14 583 |
| | FCA | 70 689 | 66 473 | 66 657 | 4 079 | 675 | 65 936 |
| | FOB | 89 559 | 80 772 | 80 748 | 7 782 | 1 004 | 80 773 |
| Foreign Flags 1000\$ | | | | | | | |
| Year | Terms of Delivery | Total Imports CIF | Total Goods Value | Invoice Value | Total Freight | Total Insurance | Total Imports FOB |
| 2022 | CFR | 30 321 | 29 730 | 29 726 | 3 034 | 531 | 26 757 |
| | CIF | 192 207 | 192 207 | 186 538 | 14 352 | 3 192 | 174 664 |
| | CIP | 19 475 | 19 317 | 17 637 | 941 | 349 | 18 185 |
| | CPT | 30 995 | 30 760 | 29 546 | 1 822 | 235 | 28 938 |
| | DAP | 37 876 | 37 828 | 38 392 | 3 345 | 346 | 34 185 |
| | DPU | 329 | 329 | 329 | 14 | 8 | 307 |
| | EXW | 14 189 | 12 473 | 3 590 | 1 230 | 364 | 12 595 |
| | FCA | 40 141 | 38 215 | 33 757 | 1 659 | 267 | 38 215 |
| | FOB | 13 538 | 12 955 | 12 955 | 576 | 8 | 12 955 |
| 2023 | CFR | 21 354 | 21 137 | 20 586 | 1 500 | 117 | 19 737 |
| | CIF | 107 915 | 107 915 | 107 000 | 8 022 | 668 | 99 225 |
| | CIP | 19 723 | 19 723 | 19 327 | 1 479 | 449 | 17 795 |
| | CPT | 67 706 | 66 266 | 63 961 | 4 876 | 1 439 | 61 391 |
| | DAP | 566 693 | 566 041 | 563 875 | 45 268 | 7 621 | 513 803 |
| | DDP | 24 | 24 | 24 | 2 | 0 | 22 |
| | EXW | 9 365 | 8 351 | 4 379 | 793 | 220 | 8 351 |
| | FCA | 11 792 | 10 371 | 6 149 | 1 168 | 252 | 10 372 |
| | FOB | 14 855 | 13 280 | 13 382 | 1 387 | 187 | 13 281 |

Firstly, let's consider Azerbaijan imports according to CFR terms of delivery method. Take into account the data that the

transport is carried out by Turkish flagged vehicles. Accordingly, the total import values of 2022 are given in the table below.

Table 10. Azerbaijan's imports via using Turkish company for transport.

| | | Initially recorded | | Suggested treatment (invoice Value) | | |
|--------------------|------------|--------------------|------------|-------------------------------------|------------|-------------|
| Imports | Value (\$) | Imports | Value (\$) | Imports | Value (\$) | Imports |
| Goods | 8 205 | Goods (CIF) | 8 377 | Goods (CFR) | 8 207 | Goods (FOB) |
| Services | - | Services | - | Services | - | |
| Exports | | Exports | | Exports | | |
| Services | 557 | Services | 557 | Services | 557 | |
| Balance of imports | 8 762 | | 7 820 | | 7 650 | 7 820 |

While the import value of goods in Table 10 expresses only the value of goods, CIF, CFR and FOB values express the import values according to these delivery methods. According to the CFR delivery method, the freight cost belongs to the seller and the insurance cost belongs to the buyer. Therefore, freight cost should be deducted from the total value. Since the transport service is carried out by a Turkish flag company, the freight value should also be deducted from the total import value based on the assumption that the insurance service is

also received by a company belonging to Türkiye Accordingly, the import balance is calculated as in the table. The FOB figure in the table is obtained by subtracting freight and insurance from the CIF figure.

The import figures obtained according to CIF and invoice value show a difference of 170 thousand USD.

When the same delivery methods are evaluated for imports carried out by foreign-flagged transport, the results in the table below are obtained.

Table 11. Azerbaijan's imports via using foreign company for transport.

| | | Initially recorded | | Suggested treatment (invoice Value) | | |
|--------------------|------------|--------------------|------------|-------------------------------------|------------|-------------|
| Imports | Value (\$) | Imports | Value (\$) | Imports | Value (\$) | |
| Goods | 29 730 | Goods (CIF) | 30 321 | Goods (CFR) | 29 726 | Goods (FOB) |
| Services | | Services | 3 034 | Services | 3 034 | |
| | | Services | 531 | Services | 531 | |
| Exports | | Exports | | Exports | | |
| Services | - | Services | - | Services | - | |
| Balance of imports | 33 295 | | 27 818 | | 27 223 | 26 757 |

Accordingly, when calculating the import balance, transport cost is subtracted from the total value and insurance cost is added. Since the transport service is performed by a foreign flagged vehicle, the insurance service is considered within the scope of service imports under the assumption that the insurance service is also purchased from a foreign company. When the import figure according to FOB delivery method is compared with the figure calculated using the

invoice value, it is observed that there is a difference of 466 thousand USD. Freight and insurance value is deducted when calculating FOB value. However, since the cost of insurance service is covered by the buyer in imports carried out according to the CFR delivery method agreement, this value must be added as imports. Therefore, the use of FOB in balance calculations here may cause deviation.

Table 12. Imports balance according to CIF, FOB and invoice values.

| | 2022 | | 1000\$ |
|-------------------|---------------------|-------------------------|---------------------|
| Terms of Delivery | Imports Value (CIF) | Imports Value (invoice) | Imports Value (FOB) |
| CFR | 35 639 | 34 873 | 34 578 |
| CIF | 259 973 | 255 017 | 259 974 |
| CIP | 62 032 | 60 238 | 62 029 |
| CPT | 114 269 | 112 356 | 113 799 |
| DAP | 81 579 | 84 698 | 80 978 |
| DDP | 38 | 38 | 38 |
| DPU | 5 811 | 5 811 | 5 795 |
| EXW | 22 192 | 11 450 | 19 004 |
| FCA | 168 820 | 152 321 | 164 967 |
| FOB | 31 448 | 29 134 | 30 283 |
| TOTAL | 781 803 | 745 935 | 771 445 |
| | 2023 | | |
| Terms of Delivery | Imports Value (CIF) | Imports Value (invoice) | Imports Value (FOB) |
| CFR | 38 879 | 37 573 | 38 646 |
| CIF | 211 057 | 210 662 | 111 057 |
| CIP | 69 822 | 69 727 | 69 822 |
| CPT | 149 802 | 143 987 | 146 924 |
| DAP | 666 630 | 667 823 | 651 388 |
| DDP | 0 | 0 | 0 |
| DPU | 22 | 22 | 22 |
| EXW | 24 962 | 22 143 | 22 934 |
| FCA | 79 148 | 69 474 | 76 308 |
| FOB | 97 203 | 86 918 | 94 054 |
| TOTAL | 1 337 524 | 1 308 330 | 1 211 154 |

Table 12 shows that calculated imports balance values according to CIF, FOB and invoice values for each terms of delivery. According to the data announced by the Turkish Statistical Institute, total imports from Azerbaijan is 836 million 443 thousands dollars in 2022. Considering only the records containing invoice values, this figure is 836 million 418 thousands dollars. The balance of imports was calculated on the basis of these records. Accordingly, when the import balance in Table 12 is calculated by taking CIF values into account, it is seen that imports in 2022 are 781 million 803 thousands dollars. According to the calculation made by using invoice values, this value is 745 million 935 thousands dollars, and according to the FOB import value obtained as a result of CIF/FOB adjustment, it is 771 million 445 thousands dollars. The difference between invoice values and CIF/FOB adjustment methods is 25 million

510 thousands dollars. According to the data announced by the Turkish Statistical Institute, total imports from Azerbaijan is 1 billion 440 million dollars in 2023. Considering only the records containing invoice values, this figure is approximately the same. Accordingly, when the import balance in Table 12 is calculated by taking CIF values into account, it is seen that imports in 2023 are 1 million 337 billion dollars. According to the calculation made by using invoice values, this value is 1 billion 308 million, and according to the FOB import value obtained as a result of CIF/FOB adjustment, it is 1 billion 211 million dollars. The difference between two methods is 97 million 176 thousands dollars. As a result of the calculations made using the two methods, it was observed that there was not a great difference. It can be said that the most accurate FOB/CIF adjustment is also a factor here.

4. Conclusions

In foreign trade statistics, the import value is calculated according to the CIF (cost of goods + freight + insurance) delivery method. The recommendations of the United Nations are taken as basis in the production of foreign trade statistics. In IMTS 2010 (International Merchandise Trade Statistics), the UN's methodological handbook on the subject, it is recommended that countries produce their imports value according to the CIF terms of delivery, but also it is recommended that countries produce their imports value according to the FOB terms of delivery in order to be an auxiliary data source for national accounts and balance of payments. But it was determined that the principle of output valuation with basic prices used for domestic transactions and FOB valuation did not fully reconcile. The IMF and other organisations have argued that it may be more accurate to use invoice values instead of FOB in import and export valuations. The reason for this is that in import and export valuation processes, especially the conversion from CIF (Cost, Insurance, and Freight) value to FOB value is carried out with different methods in different countries and customs records are not in the same standards in all countries, which leads to data incompatibilities. Conceptually, the use of invoice values is favoured because this method can reduce asymmetries between imports and exports and allow for more accurate calculations. However, access to invoice values varies for each country and it is assessed that access to these data is limited in some countries, the quality of CIF-FOB conversion calculations is low, but additional costs, data source changes and updating of information communication systems are required to implement the new method. Consequently, it was suggested to use (invoice) valuation for import and export valuation in national accounts and balance of payments statistics in the following years.

In Türkiye, imports values are produced according to CIF and FOB terms of delivery. For producing imports values according to FOB terms of delivery, special analysis is used mentioned previous section. Because of the principle of output valuation with basic prices used for domestic transactions and FOB valuation did not fully reconcile, instead of FOB valuation, it's suggested using invoice values. Based on this recommendation, three different valuation methods are discussed in this study and the differences between them are revealed.

As a result of the study, it was determined that there was no significant difference between the balance calculations using the invoice values and the values calculated using the values obtained as a result of the CIF/FOB adjustment. It is thought that the calculation of the ratios used for the CIF/FOB adjustment by taking into account important variables such as product and country route is effective in this.

The use of invoice values in balance calculations will give the most accurate result under conditions where freight and insurance data are healthy, whether these services are provided by resident or non-resident firms is determined in the most accurate way and invoice values can be compiled completely and accu-

rately. Therefore, data compilers should firstly investigate and provide the most accurate ways of compiling these data.

The views expressed in this article do not necessarily reflect those of the Ministry of Trade and Turkish Statistical Institute.

Abbreviations

| | |
|----------|--|
| BPM6 | Balance of Payments Manual 6 |
| BOPCOM | Balance of Payments Committee |
| CFR | Cost and Freight |
| CIF | Cost of Goods, Insurance, Freight |
| CIP | Carriage and Insurance Paid to |
| CPT | Carriage Paid to |
| DAP | Delivered at Place |
| DDP | Delivered Duty Paid |
| DPU | Delivered at Place Unloaded |
| ECO | The Economic Cooperation Organization |
| EXW | Ex-works |
| FAS | Free Alongside Ship |
| FCA | Free Carrier |
| FOB | Free on Board |
| ICC | International Chamber of Commerce |
| IMF | International Monetary Fund |
| OECD | Organisation for Economic Co-operation and Development |
| SNA | System of National Accounts |
| TURKSTAT | Turkish Statistical Office |
| UN | United Nations |

Author Contributions

Aylin Kolbaşı is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Fortanier F., Miao G. (2017), "Estimating Transport and Insurance Costs of International Trade", OECD Statistics Working Papers 2017/04, <https://dx.doi.org/10.1787/8267bb0f-en>
- [2] "Global Trade Guide" (2020), <https://incodocs.com/blog/wp-content/uploads/2020/03/Incodocs-Trade-Guide-March-2020.pdf> (accessed on March 2020).
- [3] Harrison, Anne, 2012, FOB/CIF Issue in Merchandise Trade/Transport of Goods in BPM6 and 2008 SNA, paper presented the 2012 BOPCOM (BOPCOM 12/30).
- [4] Hummels D. (1999), "Toward a geography of trade costs", *GTAP Working Paper No. 17*, <http://docs.lib.purdue.edu/gtapwp/17> (accessed on 7 March 2017).

- [5] Hiemstra and de Haan, 2017, CIF/FOB recording of imports and exports in the national accounts and the balance of payments, paper presented to the 2017 AEG.
- [6] Hummels, D. and V. Lugovskyy (2006), "Are matched partner statistics a usable measure of transportation costs?" *Review of International Economics*, Vol. 14(1), pp. 69-86, <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9396.2006.00561.x/epdf> (accessed on 7 March 2017).
- [7] Hummels D. and Skiba A. (2004), "Shipping the good apples out? An empirical confirmation of the Alchian-Allen conjecture", *Journal of Political Economy*, Vol. 112(6), pp. 1384-1402, <http://www.jstor.org/stable/10.1086/422562> (accessed on 7 March 2017).
- [8] Joint Globalization Task Team (2020), "G.1 Valuation of Imports and Exports of Goods in the International Standards (CIF to FOB Adjustment)" <https://www.imf.org/-/media/Files/Data/Statistics/BPM6/GZT/T/g1-valuation-of-imports-and-exports-of-goods-in-the-international-standards-cif-to-fob-adjustment-up.ashx>
- [9] Kolbaşı Aylin, "Imports in Fob Delivery Terms", *Journal of Mathematics and Statistical Science* (ISSN 2411-2518, USA), Vol. 10, Issue 3, 1-19, (accessed on March 2024)
- [10] Limao and Venables (2001), "Infrastructure, Geographical Disadvantage, Transport Costs, and Trade", *The World Bank Economic Review* Vol. 15, No. 3 (2001), pp. 451-479 (29 pages) Published By: Oxford University Press.
- [11] Pomfret, R. and P. Sourdin (2010), "Why do trade costs vary?", *Review of World Economics*, Vol. 146(4), pp. 709-730, <http://hdl.handle.net/10.1007/s10290-010-0072-8> (accessed on 7 March 2017).
- [12] Seo S. (2006). A Review and Comparison of Methods for Detecting Outliers in Univariate Data Sets, Master Thesis, Pittsburgh University, Pensilvania, 1-39.
- [13] Sourdin, P. and R. Pomfret (2012), *Trade Facilitation: Defining, Measuring, Explaining and Reducing the Costs of International Trade*, Cheltenham: Edward Elgar, <http://dx.doi.org/10.1080/08853908.2013.796845> (accessed on 7 March 2017).
- [14] Walters, 2018, Measuring merchandise and international freight transportation costs in the Balance of Payments, paper presented to the Organization of Economic Cooperation and Development (OECD) Working Party on International Trade in Goods and Trade in Services Statistics (WPTGS).
- [15] Vanderviere E., Huber M. (2007), An Adjusted Boxplot for Skewed Distributions.