A magical mirror: Israelis, Palestinians, Jordanians and Egyptians cooperate to improve their foreign trade statistics by using "Mirror Exercises"

Nili Karsai, Israel Central Bureau of Statistics, Israel, nili@cbs.gov.il

Helen Brusilovsky, Israel Central Bureau of Statistics, Israel , helen@cbs.gov.il

Abstract

Official foreign trade statisticians deal with asymmetry problems in bilateral trade statistics. In an ideal situation, country A's data on exports to country B should be equal to country B's data on imports from country A. In real life there are discrepancies which create confusion among users of trade statistics. Discrepancies should be reduced as much as possible since accurate and comparable trade statistics helps decision makers and facilitate actual trade. "Mirror Exercises" are a quality methodological tool used to identify reasons of such asymmetries and conduct reconciliations. The paper reviews some basic concepts of official foreign trade in goods statistics needed to understand the subject. The issue is explained by a case example: Mirror Exercises on Israeli, Palestinian, Jordanian and Egyptian official bilateral trade in goods statistics. The exercises were organized and supported by the European Union (EU) Euro-Mediterranean Statistical Cooperation Project (MEDSTAT). The main reasons for the discrepancies found in these Mirror Exercises were: The use of different trade systems, diverse data sources, misclassifications, data recording issues and errors. Quality improvements achieved in the exercises were as follows, better implementation of international standards, improved coverage and greater harmonization of trade in goods statistics.

The paper was written in a user-friendly "Statistics Storytelling" style, as recommended by the United Nations (UN) guide for increasing literacy of official statistics among users.

Keywords: Bilateral trade in goods statistics, Mirror Exercises, Data asymmetries, MEDSTAT, Statistics Storytelling

1. What is Statistics Storytelling?

"Statistics Storytelling" is a method of writing on data and metadata in hope that readers will find the story interesting, relevant and useful. The aim of the story is to Increase statistical literacy among non professionals users. The United Nations Economic Commission for Europe (UNECE) had published practical a guide named *Making Data Meaningful* which provide guidelines for effective writing techniques.

Here is our story, written in accordance with this guide.

2. Introduction.

In a Mickey Mouse Cartoon, Mickey stands in front of a magical mirror. He moves in a certain way but his reflection in the mirror moves differently, Mickey is confused... Can such a situation happen to statisticians? Well… it can.

2.1 What is the statistical problem?

Foreign bilateral trade in goods statistics are "Two-Sided Mirror" statistics. In an ideal situation, country A's data on exports to country B should be equal to country B's data on imports from country A. However, In real life, statisticians deal with a confusing mirror when confronting asymmetry in the bilateral trade data.

2.2 Why are there data discrepancies?

0fficial foreign trade statistics are conducted in accordance with international recommendations, which allow for the use of different concepts, therefore when comparing data for countries that use different concepts there are built-in asymmetries. In addition, data discrepancies are caused by differences in methods of data recording and implementation as well as by actual errors.

3. How are official foreign trade in goods statistics being collected?

<u>Data source</u>: Official foreign trade in goods statistics reflect the current value of the flow of imports and exports in the national currency and or in other currencies. In most countries, the main source of data on foreign trade statistics is the administrative files of the country's customs authority. The customs authority receives data on import and export activities from customs brokers, who mainly work in customs brokerage firms or in large import/export firms. In some cases the main data source is Value-Added Tax (VAT) Authority's administrative files, based on vouchers submitted by firms.

classification: For the customs authority and other agencies as well as for custom brokers, it is important to classify the goods. The correct classification is the key to determining tax rates, as well as to obtaining various authorizations and permits. The World Customs Organization (WCO) developed an international classification based on a multipurpose international product nomenclature known as The *Harmonized Commodity Description and Coding System*, (which is generally referred to as simply *HS*). The classification comprises about 5,000 commodity groups; each is identified by a six digit code, arranged in a logical structure, and supported by well-defined rules to achieve a uniform international classification (UN, 2011). Despite the use of the international Harmonized System codes, there are still differences in interpreting and applying these codes by customs brokers and there may be misclassifications.

Geographical coverage: The statistical territory adopted by the countries may differ from one country to another (such as including or excluding free trade zones).

Value: Value data are recorded in two possible ways: Free On Board (FOB), which includes the transaction value of goods; or Cost Insurance Freight (CIF), which includes the value of services performed to deliver the goods. Exports are usually recorded as FOB, whereas imports are usually recorded as CIF. When comparing flows, the CIF and FOB values need to be converted.

Trade systems: There are two systems for recording trade data - the *General Trade System*, where goods are recorded as they enter or leave the country; and the *Special Trade System*, where goods are recorded after clearing customs for use in the country. Thus, goods entering a free zone or customs warehouse are excluded.

Confidentiality: There may be confidentiality restrictions on publishing specific data that can affect statistics.

4. Background: Trade characteristics of Israel and its neighbors

Commercial relations between Middle-East countries have existed for thousands of years. Here we refer to the trade in goods since the peace treaties and trade agreements between Israel and its neighbors and up to the years the Mirror Exercises were held. Peace treaties between Israel and Egypt (1978) and Israel and Jordan (1994), led to the signing of Qualifying Industrial Zone (QIZ) trade agreements. These are tripartite agreements between the USA, Israel and Jordan/Egypt, which allow for exports from Jordan/Egypt to USA under free trade. Main Trade of goods between Israel and its partners, at the time the Mirror Exercises were held:

Israel (IL) – Egypt (EG): The signing of the QIZ agreement led to immediate growth in bilateral trade. Natural gas was the main commodity exported from Egypt. However, due to persistent natural gas shortages in Egypt, the gas supply to Israel has been suspended. Other main imports to Israel were: chemical products; "plastics and articles thereof", edible vegetables, roots and tubers.Main exports from Israel to Egypt were chemical products, paper and paper products and plastics.

Israel (IL) – Jordan (JO): The QIZ trade agreement led to years of constant growth in bilateral trade. The slowdown in exports from Israel has been partially attributed to the free trade agreement signed between Jordan and the U.S. which reduced the attractiveness of the tripartite agreement. Israeli exports to Jordan consisted mainly of chemicals, inputs for the textile industry, and agricultural machinery. Main imports from Jordan to Israel were plastics, live animals and electrical machinery.
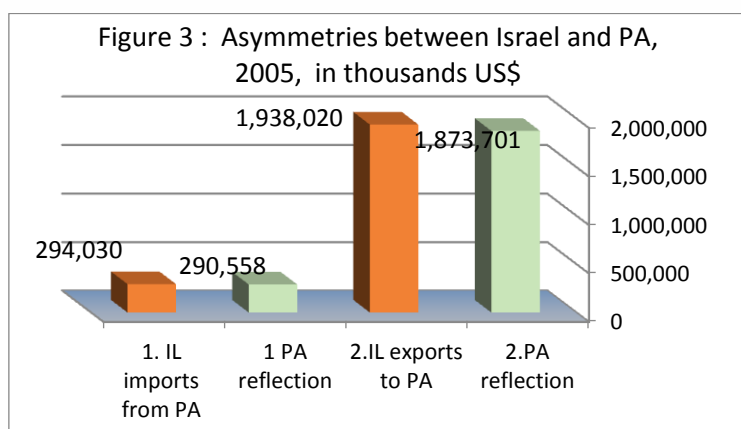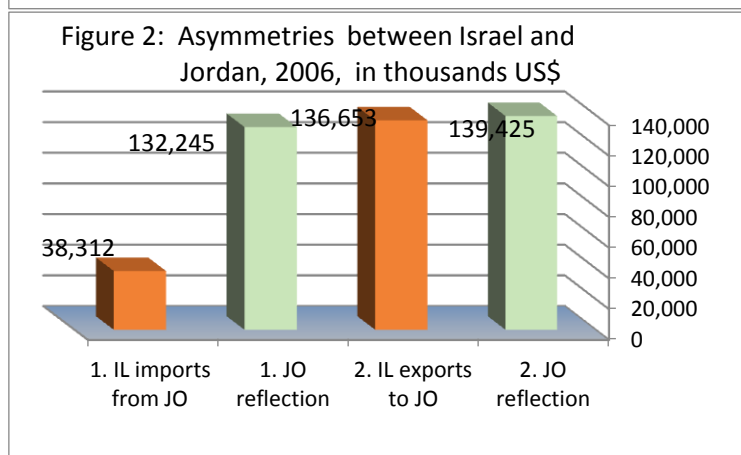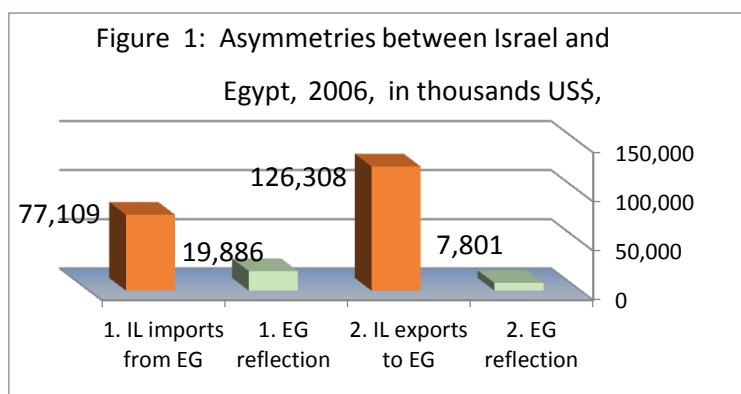
Israel (IL) - Palestinian Authority (PA): Exports from Israel to PA were mainly low technology and medium-low technology manufacturing and energy products (electricity, fuels, and food products).Trade between the parties has a distinctive characteristic: over 70% of PA's imports are from Israel, and almost 90% of its exports are to Israel, while 5% of Israeli exports are to PA.

5. Asymmetries in the bilateral trade statistics of Israel and the partners

5.1 Total asymmetry data

When comparing the bilateral trade data recorded by each partner asymmetries were found (Tyrman, 2013 and Veronese, 2013). In each of the next three graphs the dark columns represent data as reported by Israel (IL) while the fair color columns represent the reflection which is the same flow as reported by the partner country (EG, JO, PA). Ideally the dark and fair columns should be equal.

On the left side of each graph is a pair of columns for imports into Israel :Israeli data and the reflection, as reported by the partner (1). On the right side of each graph is a pair of columns for exports from Israel: Israeli data and the reflection, as reported by the partner (2).

Figure 1: Asymmetries between Israel and Egypt, 2006, in thousands US$,

77,109	19,886	126,308	7,801
1. IL imports from EG	1. EG reflection	2. IL exports to EG	2. EG reflection

Figure 2: Asymmetries between Israel and Jordan, 2006, in thousands US$

38,312	132,245	136,653	139,425
1. IL imports from JO	1. JO reflection	2. IL exports to JO	2. JO reflection

Figure 3 : Asymmetries between Israel and PA, 2005, in thousands US$

294,030	290,558	1,938,020	1,873,701
1. IL imports from PA	1 PA reflection	2.IL exports to PA	2.PA reflection

5.2 How can specific asymmetries be discovered?

A Mirror Exercise is a methodological tool designed to discover and solve asymmetry problems in bilateral trade in goods data. It is a reconciliation study used to identify, explain and assess the causes of discrepancies. In Mirror Exercises cooperation is needed since partner statisticians provide each other with very detailed statistical data based on the *Harmonized System*; A flow of a specific HS exports flow from country A to country B is compared to the reflected flow in the imports received by country B, and vice versa. If discrepancies are found, in either direction, a "data mining" process starts; The statisticians attempt to identify the

reasons for the gaps by providing each other their specific detailed metadata for each HS flow.

Such exercises were conducted between Israeli, Palestinian, Jordanian and Egyptian Foreign trade in goods statisticians from the respective National Statistical Offices (NSO)'s. The exercises were organized within the EU's Euro-Mediterranean Statistical Cooperation Programme No.3 (Medstat III). The partners were part of a professional regional working group who met several times during 2009-2013. Main reasons and examples for data discrepancies between Israel and its neighbors were (Veronese, 2013):

Different Concepts: The partners didn't use the same international trade system (*General Trade System* vs. *Special Trade System*). It led to a large discrepancy between Israel and Egypt: Israeli goods exported to the Quality Industrial Zone (QIZ) were included in the Israeli statistics, but excluded in the Egyptian statistics.

Data source difficulties: No records were registered in the Egyptian exports data to match the data on Israeli imports of "Natural gas in a gaseous state" and "Petroleum coke", due to data sources limitations.

Classification difficulties: PA and Israel used VAT data to record their bilateral trade. There was a non-detailed description of the goods in the vouchers and it was difficult to obtain a 6-digit level HS classification of goods. Therefore Israel published the data according to the economic activity classification of the importer or exporter firms, whereas the PA transformed the description in the vouchers into HS codes. Hence it was hard to compare data on a specific HS flow when classified in different methods.

Data recording issues: Jordan was a transit country for Israeli gold and "Waste of precious metals" goods exports destined to other countries, but in Israeli customs records Jordan was recorded as the final destination. Therefore these flows were mistakenly included in the Israeli export to Jordan statistics.

Errors: The records of Jordan's exports, in "Apparel and clothing" goods to Israel were higher than the Israeli import records, because Israel registered only the value added of the goods in imports after processing instead of registering the full value of the goods.

5.3 How were the data discrepancies reconciled?

After months of collaborative work (face-to-face meetings and correspondence) there were several qualitative improvements (Tyrman, 2013). Some examples of the improvements were as follows;

Discrepancies due to different concepts relating to goods in the QIZ free trade zone were reconciled.

Major asymmetries between Israeli-Egyptian data on fuel products were reconciled by analyzing trade data from a new data source.

Classification difficulty between Israel and the PA were narrowed by converting the PA's classification of goods into Israel's activity branch of the exporter/importer classification.

Data on the final destination of exports were corrected. Import data by country of origin made available.

Better implementation of international standards, coverage, harmonization and treatment of specific transactions were achieved. Export classifications were brought in line with international requirement.

6. Conclusions

Users of bilateral trade in goods data (either of total flow data or flow of a specific HS data) are encouraged to **check the statistics of both countries**. It is recommended to learn the metadata of both sides since the countries may use different concepts, classifications and trade systems which may lead to built-in asymmetries in the bilateral flows.

Cooperation between statisticians on both sides is necessary in order to improve the quality and comparability of their bilateral trade in goods statistics.

Discrepancies should be reduced as much as possible since accurate trade statistics helps decision makers and facilitate actual trade.

 Mirror Exercises is the recommended methodological tool for this purpose as it is a reconciliation study which enables accurate reflections of the corresponding trade flows. In the case example of the Middle-Eastern Mirror Exercises, conducted under the auspices of the EU's "Medstat III Programme" several qualitative improvements were made and there was an upgrade of the foreign trade in goods statistics at the national level of the four partners.

The Medstat project also had a human aspect, notably, the personal interactions between the Middle-Eastern statisticians were just as important as the professional work.

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