Magical Mirror: Improving Foreign Trade Statistics in the Middle East via "Mirror Exercises"

by Helen Brusilovsky and Nili Karsai, ICBS (Israel Central Bureau of Statistics)

The purpose of this article is to shed light on some basic methodological aspects of official Foreign Trade Statistics, as reflected in the case of bilateral trade in goods between Israel and its neighbors – Egypt, Jordan and the Palestinian Authority, and in the cooperation between their foreign trade statisticians.

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

Foreign Trade statisticians have to deal with such a confusing mirror when confronting problems of asymmetry in the bilateral trade data of the countries. This article explains the phenomenon and the reasons for it, and shows a methodological tool, "Mirror Exercises", used as a solution to the problem. Exercises held in the Middle East are used as a case example of this method. This article tells the story of bilateral trade between Israel and its neighbors: Egypt, Jordan and the Palestinian Authority, and of the fruitful cooperation between statisticians in the respective National Statistics Offices (NSOs).

For general information on how official foreign trade statistics see Box 1

Box 1: **How official foreign trade statistics in goods are collected?**

Official foreign trade statistics reflect the current value of the flow of imports and exports. 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 from custom brokers, who mainly work in customs brokerage firms or in large import/export firms.

In some cases, such as trade between EU countries, the main data source is VAT tax authority's administrative files, based on VAT vouchers submitted by firms.

For customs authority and other government 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 obtaining various authorizations, permits, and licenses.

The WCO (World Customs Organization) 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 the "harmonized system" or 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).

Bilateral foreign trade characteristics of Israel and Egypt, Jordan, and the Palestinian Authority

Commercial relations between Middle East countries exist for thousands of years. Here we will refer to the trade since the peace treaties and agreements between Israel and Egypt, Israel and Jordan, and Israel and the Palestinian Authority.

Regional trade in the Middle East is important because common interests in trade help stabilize relationships between countries at the macro-economic level. This affects diplomacy, politics, and other fields, even if the trade volume is small.

Some basic demographic and economic indicators for Israel and its neighbors are shown in the table below, and might enhance understanding of bilateral trade.

Data for 2013	Jordan	Egypt	Palestinian Authority	Israel
Population (millions)	6.5	82.1	4.5	8.1
GDP per capita (US$)	5,213	3,314	2,992	36,066
Total import of goods (billion US$)	21.5	66.7	5.2	72.0
Total export of goods (billion US$)	7.9	28.8	0.9	66.8
Balance of trade in goods (billion US$)	-13.6	-37.9	-4.3	-5.2

Source: UN database

The Israeli GDP per capita is significantly higher than its partners (this might be partially explained by Israeli High-Tech and ICT activities). Israel's total foreign trade is larger than these partners.

The peace treaties between Israel and Egypt (1978) and Israel and Jordan (1994), led to the signing of trade agreements. "Qualifying Industrial Zone" agreements (QIZs) are tripartite agreements between Israel, Jordan, or Egypt and the United States. They allow for exports from Jordan or Egypt to USA under free trade conditions of products manufactured there, even though Egypt or Jordan had no free trade agreement with the United States. (This permit was granted on the condition that the Israeli inputs used exceed 10.5% of the product price) These trade agreements have boosted the foreign trade of Egypt and Jordan.

Trends in Israeli-Egyptian Trade

Trade in goods: Israel - Egypt*

Value in million of US$ (y-axis: 0 to 400)

x-axis: 1980 to 2014

Legend: — exports from Israel — imports to Israel

*Israel Central Bureau of Statistics (ICBS) data

In 2014, the main exports from Israel to Egypt were: chemical products, paper and paper products, plastics, and cotton. The main imports from Egypt to Israel were: chemical products; plastics and articles thereof, edible vegetables, roots and tubers.

For almost three decades, trade between Israel and Egypt remained in a low level. In 2004, the QIZ agreement was signed and this led to immediate growth. Natural gas was the main commodity that Israel imported from Egypt. This was important for Israel, because almost 40% of the natural gas used in Israel came from Egypt. As of February 2011, the gas supply from Egypt to Israel was stopped due to several attacks on the pipeline in the Sinai Desert. In spring 2013, the pipeline resumed regular operation. However, due to persistent natural gas shortages in Egypt, the gas supply to Israel has been suspended.

Trends in Israeli-Jordanian Trade

Trade in goods: Israel - Jordan*

Value in million of US$ (y-axis: 0 to 400)

x-axis: 1995 to 2014

Legend: — exports from Israel — imports to Israel

*Israel Central Bureau of Statistics (ICBS) data

In 2014, Israeli exports to Jordan consisted mainly of chemicals, inputs for the textile industry, and agricultural machinery. The main imports from Jordan to Israel were: plastics and articles thereof, live animals, and electrical machinery and equipment.

The QIZ trade agreement signed in 1998 was followed by years of constant growth in bilateral trade. The slowdown in exports from Israel to Jordan has been partially attributed to the free trade agreement signed between Jordan and the United States, which reduced the attractiveness of the QIZ's free trade zone agreements shared by Israel, Jordan, and the United States.

Trends in trade between Israel and the Palestinian Authority (PA)

Trade between Israel and the PA has an unusual and distinctive characteristic: over 70% of PA's imports are from Israel, and almost 90% of its exports are to Israel. Regarding exports from Israel, a substantial share of Israeli exports (5%) are to the PA. Statistics on foreign trade between Israel and the PA are mainly recorded through special VAT vouchers and refunds submitted by firms to the VAT tax authority. Unfortunately, there are no HS classification data in the vouchers. Therefore, Israeli statistics are compiled for the importer/exporter on the basis of the Standard Industrial Classification of all Economic Activities (ISIC).
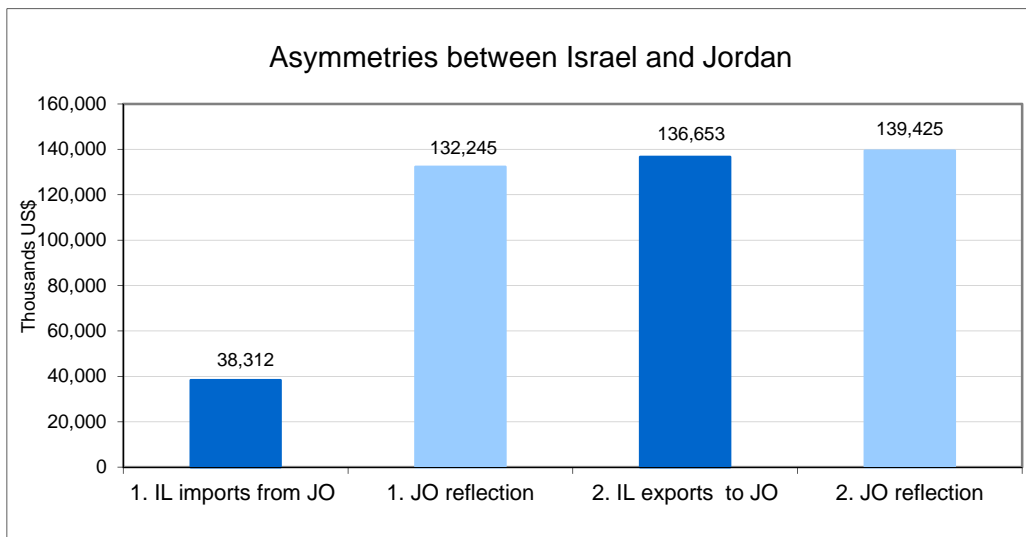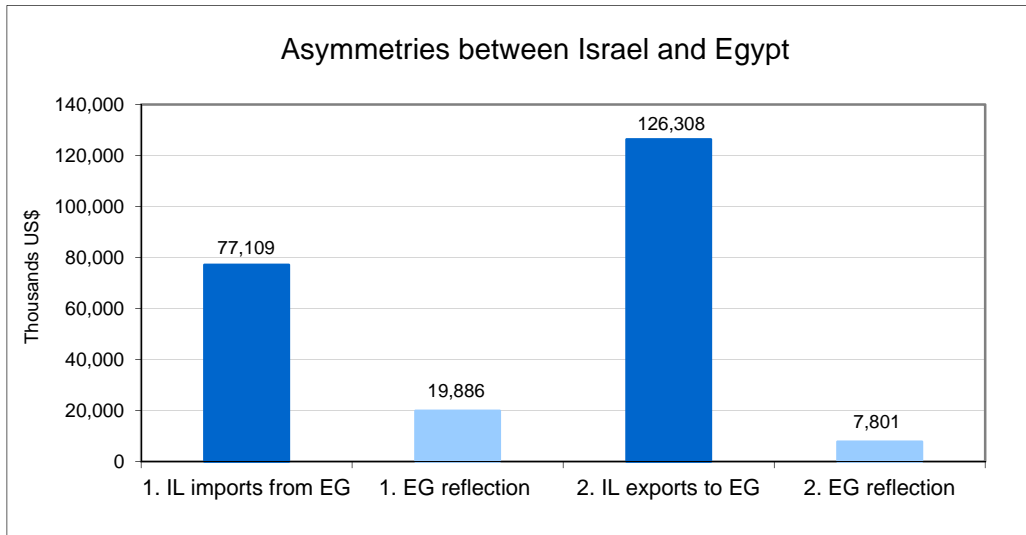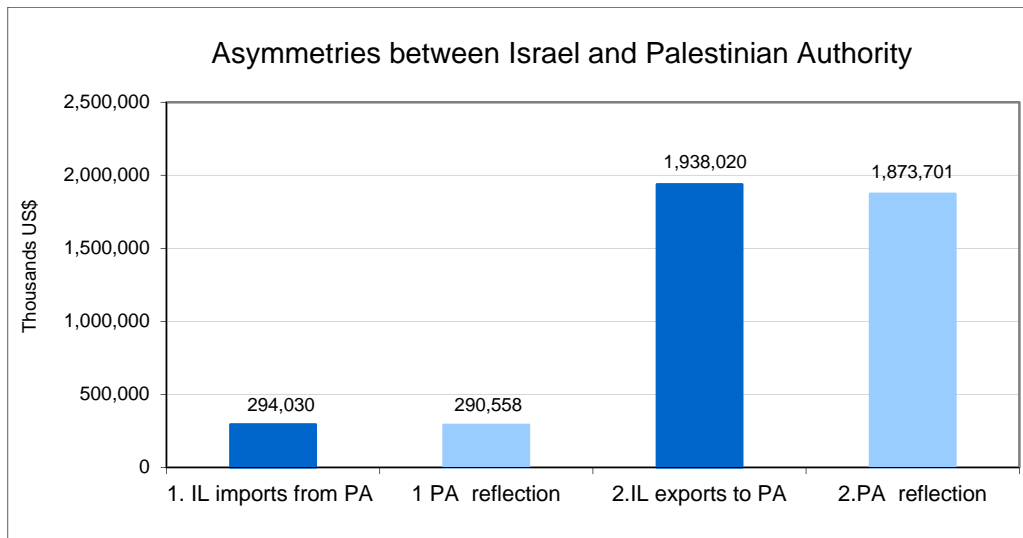

Trade in goods: Israel - Palestinian authority*

*Israel Central Bureau of Statistics (ICBS) data

Exports from Israel to the PA are mainly low technology and medium-low technology manufacturing and energy products (electricity, fuels, and food products). Imports from the Palestinian Authority to Israel depend on the needs and demand of the Israeli economy.

What is the statistical problem?

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. That is, the person in front of the mirror and the figure reflected in the mirror should be identical. In real life, however, there are statistical discrepancies in official data collection which lead to discrepancies. The asymmetries found between Israel and its neighbors are presented in the three graphs below (Veronese 2013). In each graph dark columns represent data as reported by Israel. Fair columns represent reflected data as reported by the partner country.

Asymmetries between Israel and Egypt

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

Asymmetries between Israel and Jordan

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

Asymmetries between Israel and Palestinian Authority

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

In theory each pair of columns should be equal. However, discrepancies can be noticed, especially between Israel and Egypt.

Why are data discrepancies?

Foreign trade statistics are produced in accordance with international recommendations, which allow for the use of different concepts. When comparing data for countries that use different concepts, there are "built-in" discrepancies. In addition, data discrepancies are caused by differences in methods of implementation as well as by actual errors. Box 2 shows some basic concepts of foreign trade statistics methodology that are important for understanding the subject:

Box 2 **Basic concepts in official foreign trade statistics**

Value: Value data are recorded in two possible ways: **FOB** (Free on Board), which includes the transaction value of goods; or **CIF** - (Cost Insurance and Freight), which includes also the value of insurance and freight. Exports are usually recorded as FOB, whereas imports are usually recorded as CIF.
Trade system: 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 the free zone or customs warehouse are excluded. **Geographical coverage**: The statistical territory adopted by the countries may differ from one country to another (such as including or excluding free trade zones).
Confidentiality: There may be confidentiality restraints on specific data. This can affect the statistics.
Misclassification: Despite the use of the international "Harmonized System" codes, there are still differences in interpreting and applying these codes.

How can the problem be solved? Cooperation needed!

Discrepancies should be reduced as much as possible, because accurate statistics facilitate actual trade.

Asymmetries in bilateral trade statistics are detected by a methodological tool called "mirror exercises", which is designed to reconcile trade data by identifying, explaining, and assessing the causes of the discrepancies. In "mirror exercises" partner countries provide each other with very detailed statistical data based on the "Harmonized System". The flow of exports from country A to country B is compared to the reflected flow in the imports received by country B, and vice versa. When discrepancies are found a "data mining" process starts in an attempt to identify the specific reasons for the gaps.

"Mirror exercises" were conducted between Israel, Egypt, Jordan, and the Palestinian Authority, organized within the EU "*Medstat*3" project (Euro-Mediterranean Statistical Cooperation Project, No. 3) by a professional regional working group whose members were statisticians from the respective NSOs. The group members met several times during 2009-2013.

The main reasons for data discrepancies were (Tyrman 2013):

The four partners do not use the same trade system. For example, Israeli data on exports to Egypt were twice as high as the import records reflected in Egypt, because the Israeli goods that were destined for the Quality Industrial Zone (QIZ) had not been included in the Egyptian statistics.

The Palestinian Authority and Israel use VAT data to record their bilateral trade. In VAT vouchers, only a non-detailed description of the goods is available and therefore it is difficult to obtain a detailed 6-digit level classification of goods. For this reason Israel published the figures according to the economic activity classification of the importer/exporter firms, whereas the PA transforms the description in the voucher into HS codes.

No records were registered in the data on Egyptian exports to match the data on Israeli imports of "natural gas in a gaseous state" and "petroleum coke".

The records of Jordan's exports, in "apparel and clothing" goods, to Israel were much higher than the Israeli import records, because Israel reordered only the value added of the goods in imports after processing instead of the full value of the goods.

Some discrepancies between Israel and Jordan were due to the fact that Jordan was a transit country for "gold and waste of precious metals" goods, but Jordan was recorded as the final destination in Israeli records.

How were the data discrepancies reconciled?

After months of collaborative work (face-to-face meetings and correspondence), there were several qualitative improvements. As a result, better implementation of international standards, coverage, harmonization and

treatment of specific transactions were achieved. Main improvements achievements were:

Major asymmetries in Israeli and Egyptian data on fuel products were reconciled by analyzing trade data from a new data source. The classification gaps 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. Discrepancies due to different concepts relating to goods in the QIZ zone were reconciled.Data on final destination of exports were corrected.

Conclusion

0fficial foreign trade statistics are "two-sided mirror" statistics. When comparing trade data between countries which allow for the use different concepts, there will be "built-in" discrepancies. Therefore, users of the data are encouraged to check the bilateral statistical figures of <u>both countries</u>. It is recommended that users learn the meta-data behind the figures.

In order to produce quality data on bilateral trade, cooperation between statisticians from the two countries is needed. "Mirror exercises" reconciliation study enables both countries to benefit from accurate reflections of their corresponding trade flows. "Mirror exercises" were conducted between Israel, Egypt, Jordan, and the Palestinian Authority under the auspices of the EU "*Medstat*3" project during the period 2009-2013. Several qualitative improvements were made as a result of this study. The project also had a human aspect. Notably, the personal interactions between the Middle-Eastern statisticians were just as important as the professional work. In addition, these interactions led to the upgrading of the statistical system at the national and international levels.

References

Tyrman, H. (2013) **Synthesis of the asymmetry studies on trade between EU and the Southern and Eastern Mediterranean countries**. Paris: EU Medstat III.

UN, Department of Economic and Social Affairs.(2011).**Statistical papers, International Merchandise Trade Statistics: Concepts and Definitions** (Series M No.52 ,2010). New York: UN

Veronese, N. (2013). **Quality report on external trade statistics in Southern & Eastern Mediterranean countries**. Paris: EU Medstat III.

A link to Israel Central Bureau of Statistics (ICBS) Web-site, Foreign trade statistics: http://www.cbs.gov.il/reader/?MIval=cw_usr_view_SHTML&ID=461