



Competitive Advantage of Yemeni Export in the US Market

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Abstract

This paper explores competitive advantage of Yemeni export in the market of the USA. Yemen has been placed under a special situation since the “Arab Spring” in 2011; therefore, our analyses study the eleven years prior to the war, between 2000 and 2011, and employ 2-digit SITCs to identify the various products for the selected study period. Balassa’s index has been utilized to measure revealed competitive advantage (RCA). This approach is universally popular and is widely reported in literature; however, we are cognizant to the fact that this index may not be empirically relevant. Despite this drawback, Balassa’s index has a feature for gross sectoral competitiveness of the examined country or a group of countries. According to our empirical analyses using Balassa’s index, we identified Yemen to have competitive advantages at the global level during international trade in the selected study period. The competitive advantage was restricted to a few groups of energy and non-energy commodities.

Subject Areas

Business Analysis, Business Theories, Economics, International Economics, International Relations

Keywords

Competitive Advantage, Yemeni Export, EU, USA

1. Introduction

Regardless the current catastrophic situation of Yemen, which until now is resulted by civil war, we have tried to analyze the international trade competitive advantage in the USA market during the period before the war. Comparative advantage is the term used to describe the tendency for countries to export those

commodities that they are relatively adept at producing, *vis-a-vis* the rest of the world. In other words, if a country can produce a good at a lower relative cost than other countries, then with international trade, that country should devote more of its scarce resources to the production of the good (Addison-Smyth [1]). Through trade, that country can obtain other goods at a lower price (opportunity cost), in exchange for the good in which it has a comparative advantage.

Comparative advantage is a widely used concept in international trade since Ricardian classical theory of trade. Thus, according to the mentioned Ricardian theory, we can say that the stronger comparative advantage lead to larger gains from trade. In the same spirit with some simplification of variables Bella Balassa [2] has come with new term called revealed comparative advantage. Competitive advantage is widely believed by economists to be a key determinant of international production and trade patterns. But non-economists typically think otherwise. In business schools and business circles much greater emphasis is placed on the role of competitive advantage as a predictor of the economic fortunes not just of firms, but of nations as a whole (Neary, J.P. [3]).

The main objective of this paper is to examine competitive advantage of Yemeni export in the US market as a sectoral comparative analysis.

This paper is divided to main 5 sections, the second section, which is after the introduction, is focus on literature review, which has concerned in the more or less similar issues like our examined topic. The third section is about the methodology, methods and data used in our analysis and finally the empirical findings and conclusion are presented in the third and fourth sections respectively.

2. Literature Review

The comparative advantage or competitiveness of a country can be determined by employing various techniques. The most popular technique continues to be Balassa's index of "revealed comparative advantage"—Balassa, B. [2]. This technique has been in vogue for the past five decades and most scientific economic studies have used it. A few studies have used this method to measure a country's Revealed Comparative Advantage and Competitiveness *vis á vis*, other trade partners or trade blocks (Utkulu U. and Seymen D. [4], Obadi, S.M. [5] [6] and [7]). Similarly, a few other studies have used this index to quantify a country's revealed comparative advantage as a whole and its internal regions (Yue, C. and Hua, P. [8] and Clark, D. P. *et al.* [9]).

Balassa B. and Noland M. [10] used a modified method of Balassa's index in their paper "Revealed comparative advantage in Japan and the USA." In this study they surveyed the changing comparative advantage scene in Japan and USA. They measured RCA for 57 primary and 167 manufactured product categories and classified all their products into 20 commodity groups. They noted a drastic change in Japanese pattern of specialization during 1967-1983, when the Japanese shifted from unskilled labor intensive goods to human capital intensive products. During this same period, its comparative advantage increased in natu-

eral resources intensive products. However, the USA continued to retain its specialization in physical and human capital intensive goods, with increase in its comparative advantage for natural resources intensive products. Both countries were observed to have higher comparative advantage for high technology products.

Bhattacharyya, R., [11] too used the RCA index in his study. He used the index to study the comparative advantage of India in vegetable, fruits and flower trade in the Asian, EU and North American (USA & Canada) markets as compared to selected other South East Asian countries. Serin, V. & Civan A., [12] conducted a similar study in Turkey for tomato, olive oil, and fruit juice industries. They analyzed the influence in the EU market for 1995-2005. Fertó, I. and Hubbard, L.J. [13] investigated the competitiveness of Hungarian agriculture in relation to that of the EU. Their study used four indices to measure comparative advantage for the period 1992 to 1998. Muendler, M. A., [14] examined Brazilian agriculture, specifically mining and manufacturing sectors, between 1986 and 200. He applied a correlation between the comparative advantage series and trade-related variables.

Most studies used RCA index as a measure of international specialization. Only a few have used it as a measure of competitiveness or competitive advantage. This study uses this index as a measure of competitive advantage (CTA). Nevertheless, competitiveness has a wider platform than international specialization. Usually, competitiveness is reviewed in the context of firm or competitive advantage of nations. Such an approach was pioneered by Porter, M. E. [15] and others.

Balassa index is widely popular for identification of international trade specialization or sectoral competitiveness; however, its appropriateness is under debate. Literature abounds with several other alternative indices and methods.

Most critics of Balassa's index, including Leromain, E. and Orefice, G. [16], have tried to construct a "New Revealed Comparative Advantage Index". They noted that "Balassa's Index" (1965) was more popular in literature to measure country-sector Revealed Comparative Advantage. However, because it is measured on observed trade flows, it tends to mix up all the factors influencing trade flows. One of the major drawbacks is that Balassa's Index fails to isolate exporter-sector (ex-ante) specific factors, which are the source of comparative advantage in the spirit of the traditional trade model. Furthermore, Balassa's Index is noted to have some empirical distribution weaknesses, mainly time instability and poor ordinal ranking property (Yeats [17]; Hinloopen and Van Marrewijk [18]).

3. Methodology and Data

Several methods have been employed to determine whether or not a country has comparative advantage. "Balassa index" (1965) is one such popular method. This index takes into account the goods produced or exported, or the numbers em-

ployed in each industry, relative to other countries. Although this is a widely accepted approach to analyzing trade data and comparative advantage, the definition and empirical adaptation of RCA are subject to controversies and thus some alternative measures now exist. Since we are interested in the revealed comparative advantage of Yemen with respect to the EU and USA, we measure RCA of Yemen on the global level as the comparator.

It is important to determine Yemen's comparative advantage because the international market is highly competitive. Comparative advantage is the term used to describe the tendency for countries to export those commodities that they are relatively adept at producing, *Vis-a-vis* the rest of the world. In other words, if a country can produce a good at a lower relative cost than other countries, then with international trade, that country should devote more of its scarce resources to the production of the good, as discussed by Addison-Smyth [1]. Through trade, that country can obtain other goods at a lower price (opportunity cost) in exchange for the good in which it has a comparative advantage.

In simple terms, a country having a comparative advantage for the production of a particular good should be found to export a higher proportion of that good relative to other countries. Therefore, this study seeks to determine Yemen's comparative advantage by using international trade data to compare exports in particular industries with the rest of the world and particularly with the EU.

The formula (equation) to measure a country's revealed competitive advantage (RCA) is as follows:

$$RCA_i = (X_{i,c} / \sum X_{i,c}) / (X_{i,w} / \sum X_w) \quad (1)$$

where

RCA_i = revealed competitive advantage for good i .

$X_{i,c}$ = exports of good i by country c

$\sum X_{i,c}$ = total exports by country c

$X_{i,w}$ = world exports of good i

$\sum X_w$ = total world exports

If $RCA_i > 1$, then country has a comparative advantage in good i .

If $RCA_i < 1$, then country has a comparative disadvantage in good i .

In simple terms, a country that has a comparative advantage in the production of a good should be found to export a higher proportion of that good relative to other countries. Therefore, this study seeks to determine Yemen's comparative advantage by using international trade data to compare exports in particular industries with the rest of the world and particularly with the USA.

Through applying the Equation (1) to Yemen, USA and world trade data, it is possible to identify the sectors and industries in which Yemen has a competitive advantage and has a potential to increase its export to the US market.

Used data

From the United Nations COMTRADE Database, it is possible to get a detailed breakdown of Yemeni merchandise exports and imports by SITC (United Nations' Standard International Trade Classification), which is the means by

which exports are classified according to commodity type. There are nine headline SITC categories as shown in the box below.

These more detailed breakdowns are important, as there are a number of quite diverse categories within each broad SITC heading. In our analyses we will just use the 2 digits SITC for selected seven years from the period 2000-2011. The full list of sub-sectors is included in the Appendix, **Table S1**. Using this classification, it is possible to examine Yemeni trade patterns across a range of commodity types. For trade data for the rest of the world, the UN COMTRADE database was used, with detailed data available up to 2011.

4. Research Findings

Following the contributions by Balassa, the present empirical analysis is based on the measurement of RCA. Since we are interested in the competitiveness of Yemen in the markets of the USA, we calculated an index of RCA presented in the earlier section with respect to the EU and USA as the comparator both on global and bilateral levels. On the global level, the global competitiveness of Yemen and the USA are compared assuming that Yemen, the USA are exporting to and importing from the world¹. On the bilateral level, however, trade between Yemen and the USA are taken into account only.

In order to calculate RCA in the sense of global competitiveness of Yemen with respect to the USA, we used annual two-digit SITC Rev.3 data (61 product groups) covering Yemen's exports on the world level for the years 2000 and 2011 from the United Nations COMTRADE Database, and also annual two-digit SITC Rev.3 data (66 product groups) covering US exports on the world level for the same period of 2000-2011 from the United Nations COMTRADE Database also (**Table 1**).

This result is not surprising, as the commodities 33 SITC and 34 SITC account for more than 98% of total Yemeni exports.

It is clear from the results of the empirical analysis that in the selected years, Yemen has a revealed comparative advantage with respect to the USA in seven

Table 1. Coefficients of RCA of Yemeni international trade with respect to the USA in selected years.

SITC code	Description	2000	2002	2004	2006	2008	2010	2011
03	Fish, crustacean and molluscs, and preparations thereof	0.0	0.0	0.0	0.0	10.0	0.0	0.0
07	Coffee, tea, cocoa, spices, and manufactures thereof	9.2	7.2	7.2	5.6	351.7	7.8	0.0
33	Petroleum, petroleum products and related materials	78.6	84.8	84.8	38.0		169.1	6.4
34	Gas, natural and manufactured	0.0	0.0	0.0	0.0	0.0	0.0	80.9
71	Power generating machinery and equipment	0.0	0.0	0.0	0.0	3.6	0.0	0.0
93	Special transactions, commodity not classified according to class	0.0	0.0	0.0	0.0	5.1	0.0	0.0
96	Coin nongold noncurrent	5.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Author's calculation base on UN COMTRADE Database, [17]

¹Revealed Comparative Advantage and Competitiveness: Evidence for Turkey *vis-à-vis* the EU/15, see Utku Utkulu and Dilek Seymen [4] and for a similar empirical study of Hungary *vis-à-vis* the EU, see Fertő and Hubbard [13].

commodities from about fifteen commodities Yemen exports to the USA. However, in five commodities Yemen has comparative advantage only in one year from seven selected years. Some of these commodities were not exported in the other years and others (for example Gas, natural and manufactured (SITC 34) were exported for the first time. The highest levels of RCA of Yemen in the selected years were in the petroleum and petroleum products (SITC 33), Gas, natural and manufactured (SITC 34) and Coffee, tea, cocoa, spices, and manufactures thereof (SITC 07).

5. Conclusions

One of the characteristics of the last international economic crisis is its negative impact on all economies in all world regions. The impact was either directly or indirectly. The impact on Yemeni economy as on almost economies of developing economies was indirect—through the trade flows. The impact on Yemeni export during the deep crisis (2008-2009) was huge in relative to Yemeni small economy. Thanks to the launch of exporting the Yemeni natural gas (LNG), the Yemeni total export has recovered in 2010 and 2011.

Indeed, the global trading system, whilst offering opportunities, is by no means perfect. It gives inadequate attention to the specific needs and vulnerability of poor states (Yemen being one of them), which face special disadvantages associated with poor industrial infrastructure, remoteness, which has led to inappropriate implementation time frames. In spite of otherwise declared, problems for Yemeni export also arise due to the non-tariff barriers that are applied by many countries under the guise of quality standards and quarantine procedures. Lack of capacity and facilities in testing and accreditation has led to legitimate Yemen's exports being sidelined, and has allowed the entry of sub-standard imports "dumped" on the Yemen market.

For increasing the competitiveness of the Yemeni products and then exports, there are a number of things that should be done, starting from the political reforms, solving the political questions and democratization of the society, stabilization of the security situation in the country, then reduction of administrative bureaucracy and corruption from all economic life, then drawing an effective economic and trade policy which emphasized on the export promotion and generating a competitive and fairly business environment. On the other hand, building the effective institutions for inspections is not only for products of export, but also for imported products.

So, from this study it implies that, presently the export possibilities to the USA are occurred, in addition to the known export commodities, as follows:

- 1) Petroleum, petroleum products and related materials,
- 2) Gas, natural and manufactured,
- 3) Fish, crustacean and molluscs, and preparations thereof,
- 4) Coffee, tea, cocoa, spices, and manufactures thereof.

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Appendix:

Table S1. RCA of Yemen with respect to the USA on the bilateral level in selected years, by product group and % changes in index.

	2000	2002	2004	2006	2008	2010	2011
00	0.133	0.125	0.000	0.000	0.000	0.000	0.000
03	0.183	0.136	1.674	0.194	10.019	0.308	0.000
04	0.000	0.003	0.000	0.000	0.000	0.003	0.004
07	9.177	7.153	33.652	5.598	351.676	7.817	0.330
33	78.594	84.831	59.185	38.039	0.000	0.000	6.397
34	0.000	0.000	0.000	0.000	0.000	169.063	80.855
53	0.000	0.000	0.000	0.000	0.590	0.007	0.000
65	0.000	0.000	0.001	0.000	0.000	0.000	0.000
66	0.007	0.000	0.000	0.000	0.000	0.002	0.000
71	0.007	0.000	0.000	0.000	0.440	0.000	0.000
72	0.000	0.000	0.000	0.000	3.569	0.006	0.002
73	0.000	0.000	0.000	0.000	0.082	0.000	0.000
74	0.000	0.000	0.003	0.000	0.168	0.000	0.000
75	0.000	0.000	0.034	0.000	0.021	0.002	0.006
76	0.000	0.000	0.001	0.020	0.052	0.000	0.000
77	0.000	0.000	0.007	0.000	0.000	0.000	0.000
78	0.000	0.000	0.000	0.000	0.009	0.000	0.000
83	0.000	0.000	0.008	0.000	0.055	0.084	0.012
84	0.000	0.000	0.001	0.006	0.000	0.000	0.000
85	0.000	0.000	0.000	0.000	0.241	0.011	0.001
87	0.000	0.000	0.005	0.002	0.110	0.003	0.000
89	0.097	0.012	0.095	0.010	0.000	0.000	0.000
93	0.843	0.152	0.624	0.240	0.832	0.174	0.071
96	5.000	0.000	0.000	0.000	5.148	0.088	0.001

Source: Author's calculation based on UN COMTRADE Database [17].



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