

## **International Trade Competitive Advantage of Yemen in the Market of USA**

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**ABSTRACT:** This paper examines competitive advantage of Yemeni international trade in the market of the USA. Because Yemen is under the special situation from 2011 after the „arab spring“, in our analyses we will just use the 2 digits SITC for selected seven years from the period 2000-2011. For this purpose in our analysis we have used Balassa’s index as a measure of competitive advantage (CTA). Though this approach is worldwide used in literature, we aware that this index has some empirical lack but it give us a feature of gross sectoral competitiveness of examined country or group of countries. According to our empirical analyses we found that Yemen has during the selected period an international trade competitive advantages, according to Balassa’s index in the global level, in a few groups of commodities, which are concentrated in the energy and the phishing sectors.

**Keywords:** Competitive Advantage, International Trade, EU, USA, Yemen

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### **I. INTRODUCTION**

Regardless the current catastrophic situation of Yemen, which until now 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 (2005). 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 (1965) 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.(2003). The main objective of this paper is to examine competitive advantage of international trade of the Yemen republic in the market of the USA 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 have 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.

### **II. LITERATURE REVIEW**

Balassa’s index of “revealed comparative advantage” Balassa, B., (1965) is widely used in scientific economic papers and studies since more than five decades. This measure with some modification has been used by Balassa B., and Noland M., (1989) in their paper “revealed comparative advantage in Japan and the USA” where they examined the changing comparative advantage of Japan and USA. RCA in their paper has been derived for 57 primary and 167 manufactured product categories and has further been aggregated for 20 commodity groups. The authors found that Japanese pattern of specialization have during the period 1967-1983 changed dramatically with Japanese shifting from specialization in unskilled labor intensive goods to human capital intensive products while its comparative advantage increased in natural resources intensive products. The USA maintained its specialization in physical and human capital intensive goods, while increasing its

comparative advantage in natural resources intensive products. Both countries increased their comparative advantage in high technology products. Many of the above mentioned authors have used RCA index as a measure of international specialization and others as a measure of competitiveness or competitive advantage. In this context we use this index as a measure of competitive advantage (CTA). However, the issue of competitiveness is a wider term than international specialization. At least the competitiveness would be conceived in the context of firm as it conceived by Zorkóciová, O., Ďuranová, L., (2015) or competitive advantage of nations as it conceived by Porter, M. E. (1990) and others. In the same context, the Porter's concept of competitiveness of nation has been adopted by Obadi and Korcek (2015) when they analysed the international competitiveness of the EU and USA economies. Although Balassa index is widely used for identification of international trade specialization or sectoral competitiveness, it is a subject of critics. Therefore, in the literature there are many other alternative indices and methods exist for the same purpose. To the critics of Balassa index, have joined in the last years some authors, such as Leromain, E. and Orefice, G. (2013), which tried to construct a "New Revealed Comparative Advantage Index". They recognized that "Balassa Index (1965) is widely used in the literature to measure country-sector Revealed Comparative Advantage. However, being computed on observed trade flows, it mixes up all the factors influencing trade flows. In particular, Balassa Index cannot isolate exporter-sector (ex-ante) specific factors which are the source of comparative advantage in the spirit of the traditional trade model. Furthermore, Balassa Index suffers some empirical distribution weaknesses, mainly time instability and poor ordinal ranking property (Yeats 1985; Hinloopen and Van Marrewijk 2001) ". They have build up on their paper, and presented "a dataset providing a new econometric based measure for Ricardian RCA".

### III. METHODOLOGY AND DATA

Comparative advantage is very much a dynamic concept in the sense that a country's ability to produce certain goods changes through time, in response to a variety of endogenous and exogenous factors such as changes in factor endowments, including technology and human capital. There are a number of ways to examine whether or not a country has a comparative advantage. One common method is to determine how specialized a country is in the production of a good through constructing 'Balassa index' (1965). This examines the proportion of a good produced or exported, or the numbers employed in each industry, relative to other countries<sup>1</sup>. 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 USA, we measure RCA of Yemen on the global level as the comparator. In the light of an increasingly competitive international environment, it is useful to examine where Yemen's comparative advantage lies. 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 2005). 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 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 EU and the USA..

The formula to measure a country's revealed competitive advantage (RCA) is given by:

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

Where:

$RCA_i$  = revealed comparative 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

$\sum X_{i,w}$  = 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.

Through applying the formula above to Yemen, USA and world trade data, it is possible to identify the sectors and industries in which Yemen has a comparative advantage and competitive and has a potential to increase its export to the markets of USA.

<sup>1</sup> Diarmaid Addison-Smyth, 2005

**Data and SITC**

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 7. 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.

**IV. EMPIRICAL RESULTS**

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 world<sup>2</sup>. 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. The following table illustrates RCA of Yemen with respect to the USA on the global level and for selected years among the period 2000-2011. This result is not surprising, as the commodities 33 SITC and 34 SITC account for more than 98% of total Yemeni exports.

**Table 1:** RCA coefficients of Yemen with respect to the USA on the bilateral level 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, 2012

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 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). In view of the different and few commodities in the selected years which Yemen has revealed competitive advantages with respect to USA on bilateral level, the table above shows only percentage changes only for two commodities. Nevertheless, the change was in 2004 in the product of edible vegetables and certain roots and tubers (SITC 07). (See, table 1.).

<sup>2</sup> Revealed Comparative Advantage and Competitiveness: Evidence for Turkey *vis-à-vis* the EU/15, see Utku Utkulu and Dilek Seymen(2004) and For a similar empirical study of Hungary *vis-à-vis* the EU, see Fertö and Hubbard (2003).

## V. CONCLUSION

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. Thank 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 it is 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 should be done; starting from the political reforms, solving the political questions and democratization the society, stabilization 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, 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:

### ***The export to the USA:***

In addition to the known commodities where Yemen has a comparative advantage with respect to the USA (see the table 1), there are possibilities to increase the Yemen export in the following commodities:

- Animal and vegetable oils and fats, waxes (SITC-43)
- Textile fiber. and their wastes (SITC-26)
- Leather manufactures, dressed furskins (SITC-61) and
- Dyeing, tanning and colouring materials (SITC-53)
- Special transactions, commodity not classified according to class (SITC-93)

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**Appendix:**

**Table 1.** 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, 2012

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