

Revealed comparative advantage and competitiveness of Libya's agricultural-based food products

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Abstract

This study aims to evaluate Libya's agricultural-based food products trade performance and its competitiveness using Vollrath's indices. Indices of twenty product groups were computed for the period 2009 to 2017. Generally, Libya has a relative trade disadvantage. However, HS03 & HS05 (Fish, crustaceans, molluscs, aquatic invertebrate's nes and Products of animal origin" showed an increasing trend in revealed comparative advantage(RXA) and relative trade advantage (RTA). Moreover, Libya has a relative import dependency on thirteen product groups. The results reflect Libya's weak position in agro-food exports. Therefore, products with improving competitiveness should be stimulated while products with clear disadvantages, and specific policies should be applied to reduce to the maximum possible extent of the disadvantages.

Keywords

Agri- based Food; Revealed Comparative Advantage; RTA; RXA; RMA; Competitiveness

Introduction

The main objective of this study is to evaluate the competitiveness of Libya's agricultural-based food products. Competitiveness is the government' and private sectors' main objective for their countries. Domestically, the importance of competitiveness may be important to maximise the population's welfare, while in the private sector, they endeavour to be more competitive by increasing profits, value-added, return, and market share. The term "competitiveness" is one of the most generally used concepts in economics; though, it is not precise enough, that there is no commonly recognised definition of competitiveness. Competitiveness for the company can be defined as the ability to provide products and services as or more effectively and efficiently than the relevant competitors. At the firm level, competitiveness is the ability of the nation's firms to achieve sustained success against (or compared to) foreign competitors, again without protection or subsidies. Competitiveness for the nation means the ability of the nation's citizens to achieve a high and rising standard of living (Krugman, 1994, Snowdon and Stonehouse, 2006, Siudek and Zawajska, 2014).

Background

Libya enjoys a strategic location and is considered the main gate between Africa and Europe. It also enjoys a varied climate, which permits the production of both Mediterranean and desert crops. The quality of fruits and vegetables in Libya is superior to that produced in some other countries in the region. The weather conditions in Libya are very conducive to the production of high-quality horticultural products, which has blessed Libya with a relative advantage over many other exporting countries in the region. Libya can make use of the climatic diversity to produce crops such as citrus fruits, date palms, olives, and out-of-season table grapes and melons. Some vegetables, like potatoes, peppers, and squash, can be grown easily with an advantage due to soil conditions and freedom from soil-borne diseases. Libyan agriculture enjoys an undisturbed environment and offers farmers the opportunity to specialise in organic farming. The production of fruits and vegetables in Libya fluctuates from year to year and consequently does the prices, mainly due to a lack of proper marketing channels, administrative

issues related to storage facilities, lack of export programs, etc. The main avenue for marketing horticultural products in Libya is direct consumption, which results in excessive post-harvest losses, particularly in years of high production. A study conducted in the mid-1980s revealed that post-harvest losses in Libya range from 16 to 52 per cent (NEPAD, 2003). These factors, coupled with Libya's proximity to European markets provide the decent potential for increasing production, ensuring the availability of food for the local population, improving the quality and safety of perishable foods during and after production, fostering exports, improving the income of the farmers and creating new job opportunities (NEPAD, 2003). Despite having some natural advantages for agricultural production, Libya imports more than 75 percent of its agricultural needs (Bureau of Statistics and Census Libya, 2018b), due both to limited natural resources and to expanding demand as a result of the rapidly growing population estimated at 6 million and growing at an annual rate of 3.1 percent (Bureau of Statistics and Census Libya, 2018c).

1.1 Libya's trade

Libya imports about 75% of its food. Libya's primary agricultural water source remains the Manmade River Project (Zidan, 2007); however significant resources are being invested in desalination research to meet increasing water demands. Despite its strategic location, which permits the production of both Mediterranean and desert crops, Libya has difficulty competing in the global market. It will require significant efforts to enhance efficiency and benefit from its climatic diversity to produce crops such as citrus fruits, date palms, olives, and table grapes and melons (under natural conditions in the southern region. Agricultural exports are negligible, despite official efforts to enhance them, and are limited to potatoes, onions, dates, and fish to neighbouring countries (Bureau of Statistics and Census Libya, 2018a).

Figure 1 represents the exports of Libya's agricultural products for 2017 expressed as percentages. The pie chart shows that the fisheries sector HS03 accounts for about 80 per cent of Libya's agricultural based food exports. Animal, vegetable fats and oils, cleavage products; etc. revealed approximately 8 per cent of total agro-food products.

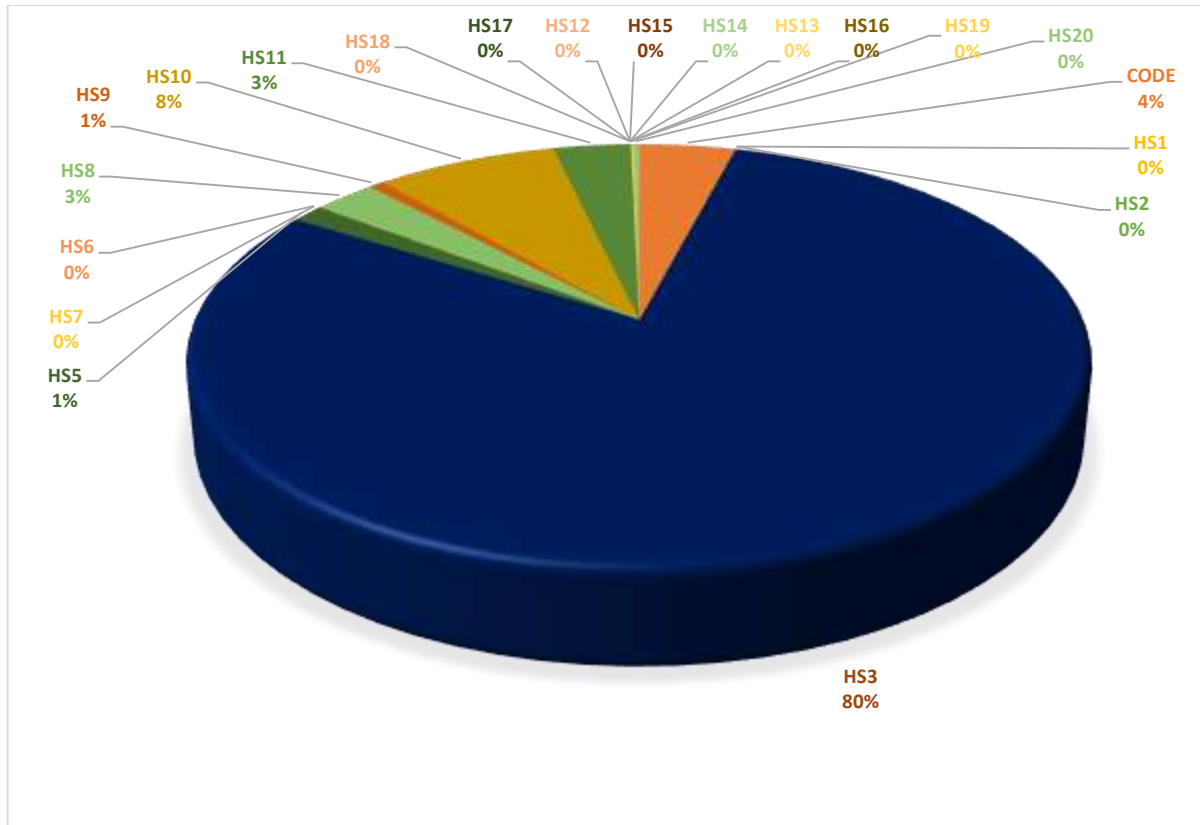


Figure 1 Exports of Libya's Agricultural Products 2017

Figure 2 indicates that the Export of fisheries products has increased significantly to reach the highest value in 2017, with more than USD\$20 thousand (International Trade Centre, 2018). That reflects the importance of this sector as another source of the country's income as the nation depends on oil, and the oil prices recently fall significantly and become unstable (Oil Price, 2018), and that affected the country, and it is crucial to find another source for the income.

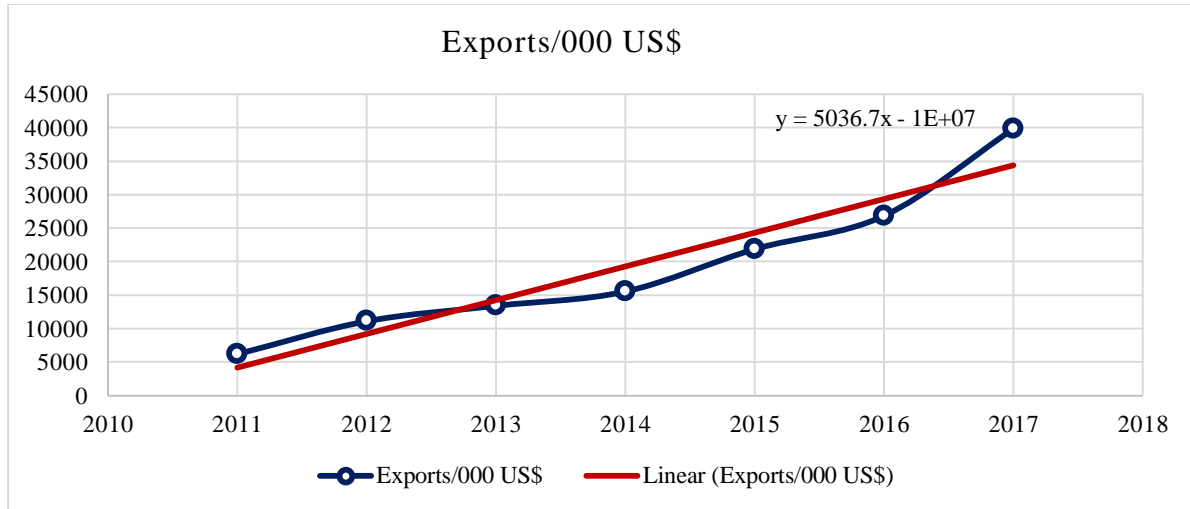


Figure 2 Export Values of Libya's Fisheries Products, 2008-2017

Thus, the potential exports of agro-food products can be further exploited if the competitiveness level of each product is ascertained. The product with strong competitiveness level should be promoted, and those with low competitiveness level should be corrected and improved using proper agriculture policy.

Therefore, this study aims to focus on Libya's trade in agricultural and food products and examines its relative competitiveness in the world. The study purposes to focus on this aspect of Libya's trade because the issue of comparative advantage remains largely unexplored.

Literature review

To explain international trade in agricultural based food products, there are many theoretical concepts available. Recent empirical studies have underlined two essential characters in agro-food trade; first, the role of processed and manufactured food products has increased at the expense of raw and bulk agricultural commodities. Second, similar to other business, agro-food trade is expanding an intra-industry trade nature, meaning that similar products are exported and imported at the same time. The reasons are the utilization of economies of scale from the

specialization of production and consumer preferences for diversities affected by household's real income growth. Though there is much research about many aspects of agro-food trade, there is a small amount of research focusing on links between agricultural, food trade on one side and multifunctional and sustainable rural development on the other. After this, the study attempted to examine Libya's agro-food trade and particularly its revealed comparative advantages. According to H-O theory, a nation's comparative advantage is determined by its relative factor scarcity. Nevertheless, it is well known that assessing comparative advantage and testing H-O theory presents some difficulties (Utkulu and Seymen, 2004) since relative prices under autarky are not clear. Given this fact, Balassa (1965) proposes that it may not be necessary to include all constituents affecting a country's comparative advantage. Instead, he suggested that comparative advantage is "revealed" by observed trade patterns, and in line with the theory, one needs pre-trade relative prices which are not observable. Therefore, deducing comparative advantage from observed data is termed revealed comparative advantage (RCA). In practice, this is a generally acknowledged method for analyzing trade data.

Balassa (1965) derived an index (called the Balassa Index), which measures a country's comparative advantage. The Balassa index tried to identify whether a country has a "revealed" comparative advantage rather determining the underlying sources of comparative advantage. However, since first suggested by Balassa (1965), the definition of RCA has been revised and modified to such an extent that an excess of measures now exists. Some studies measure RCA at the global level, e.g. (Vollrath, 1991), others at a sub-global / regional level (Balassa's original index), and while some others evaluated the measurement as bilateral trade between two countries or trading partners (Dimelis and Gatsios, 1994). However, before Balassa introduced his famous RCA index in 1965, Liesner (1958) had already contributed to the empirical literature of RCA. In this sense, Liesner is the first empirical study in the area of RCA. It is important to note that Liesner initially tried to measure the revealed comparative advantage of the UK with the Common Market (at the time as the comparator).

The position of the agro-food trade of a particular country can be judged in different ways. One way is to analyse an indicator of competitiveness. Competitiveness can be examined at three

different levels: competitiveness of nations, the competitiveness of industries, and competitiveness of firms. Another feature of competitiveness occurs with regards to the longitudinal dimension of the examination. Competitiveness of enterprises can be compared amongst a district of a particular country, or between states (Bojnec and Fertő, 2009).

There are many studies which use revealed comparative advantage RCA. In this study, we will review some of them, both of which have used the reveal comparative advantage on non-agricultural sectors “general trade,” also the researchers on agro-food industries. Hinloopen and Van Marrewijk (2001) provided a systematic analysis of the empirical distribution of the Balassa index. First, they examined the world as a whole as the point of reference and considered all exports of all countries. Second, they selected a group of similar countries for reference purposes and examined export flows for these countries only. They found that there are some disadvantages to the first approach. Not only could it be that nation at very different levels of (economic development) are being compared, disturbing influences in the export flows are also not being controlled for. Hoang et al. (2017) measured static and dynamic competitive advantages of Vietnam’s agricultural sectors using the relative trade advantage index (RTA). The dynamics of RTA indicators are tested in three ways: OLS method, Markov matrix, and trend analysis. Seyoum (2007) analyzed the competitiveness of selected services: business, financial, transport and travel services in developing countries based on three indices of revealed comparative advantage for the period 1998-2003. Definite comparative advantages exist for many developing countries in transport, and travel services. There was substantial room for improvement in financial and business services. Trade liberalization and lack of adequate preparation appeared to have resulted in a weakening of their comparative advantages over the years. However, their revealed comparative advantages remain, by and large, stable and do not show a fundamental shift in structure. Abdmoula and Laabas (2010) used a host of quantitative indicators that summarize the extent of Arab export competitiveness. The data used in the analysis based on trade flows disaggregated at the three-level digits ISTC for the years 2000 and 2006. The results showed that most Arab economies face difficulties in sustaining and developing a competitive trade sector because of lagging industrialization and slow structural transformation, the weak supply of exportable commodities, excess reliance on

natural resources and primary products in low technology sectors, and low level of integration in the global production chains. Ismail et al. (2013) Applied different measures of competitiveness to assess the comparative advantage and competitiveness of the non-ruminants industry in Malaysia. Another study by Benalywa et al. (2019) analyses the comparative advantages of broiler meat products from Malaysia and selected countries. The level of competitive advantage was measured using four different indices: RXA, RTA, In RXA, and RC for a period from 2009 to 2017. For each index, the existence of a correlation between them has been investigated to ascertain which of the four chicken meat products stand out with a definite competitive advantage. (Fertó, 2018) examines global agricultural based food export performance in the light of changes in the worldwide trade with emphasis on the effects of economic crisis using the concept of normalised revealed comparative advantage (NRCA) considering both gross exports and value-added for 61 countries over period 1995 and 2011.

In Libya, the competitiveness of agro-food products remains unexplored; therefore, this study aims to provide evidence of the competitiveness of Libya's agricultural products. The competitiveness analysis of the agro-food sector offers a clearer picture of Libya's trade position in the global market compared to its potential regional competitors. That is vital for Libya's agricultural because of its extraordinarily import dependency. Under free trade, countries will specialise in and be net exporters of goods in which they have a comparative advantage.

Materials and methods

The purpose of this study is to evaluate the performance of Libya's trade in agricultural and food products and its competitiveness in the world.

The nature of comparative advantages in trade data is examined using the concept of revealed comparative advantage RCA, presented by Liesner (1958) and refined and popularised by Balassa (1965). Hence, the methodological approach is known as the 'Balassa index,' which is

widely used in empirical trade literature to identify a country's weak and robust export sectors. The Revealed Comparative Advantage (RCA) index is defined by Balassa (1965) as follows:

$$RCA = X_{ij} / X_{nj}$$

Where X represents exports, i is a country, j is a commodity (or industry, and n is a set of countries (e.g., the EU. An advanced measure of RCA was presented by Balassa (1965) later on. That is the widely accepted and subsequently adapted measure of RCA in the literature. It is expressed as follows:

$$RCA = (X_{ij}/X_{it}) / (X_{nj}/X_{nt}) = (X_{ij}/X_{nj}) / (X_{it}/X_{nt})$$

Where, if RCA is > 1 , then the comparative advantage is revealed, and if RCA is < 1 then a comparative disadvantage is revealed.

Alternatively, Vollrath (1991) offered three alternative ways of measuring a country's RCA. These alternative specifications of RCA are called the relative trade advantage (RTA), the logarithm of the relative export advantage (ln RXA), and the revealed competitiveness (RC).

It is essential to note that the core difference of Vollrath's RXA from Balassa's original RCA index is that it prevents double-counting. In the present study, the indices used are hybrids, in that the set of countries (n) is restricted to the world, whereas the set of commodities (t) refers to all trade.

$$RXA = (X_{ij} / X_{it}) / (X_{nj} / X_{nt})$$

The second Index is the relative import advantage RMA

$$RMA = (m_{ij} / m_{it}) / (m_{nj} / m_{nt})$$

RTA is calculated as the difference between the relative export advantage (RXA and relative import advantage (RMA). It is written as:

$$RTA = RXA - RMA$$

Positive RTA values are an indication that Libya's agricultural based food industry is competitive compared to international peers. Negative values signify a lack of competitiveness, while zero indicates marginal competitiveness. RTA is a relative measure determining the competitive status of the country. Thus, it necessitates establishing the success of each section of the supply chain trading its products about the other sections. This approach enables the identification of the section of the supply chain that is uncompetitive. To this end, import and export data are needed for each part of the chain, with the product in each section of the chain representing that section.

Mikic (2005), argued that there is enormous literature available dealing with both theoretical and empirical principles of RCA. Also, we should stress that there is no nation free from government interventions through a specific policy, which alter trade flows and as a result this cause a high probability that the RCA index misrepresents real comparative advantages. Nevertheless, one should note that government intervention and the level of national, sectoral or firm level competitiveness inversely correlated. In other words, most intervention is not competitive and assumed that intervention could not adequately cover the existing comparative disadvantage. Hence, sectors found as revealing comparative disadvantage should then become even less competitive when interference is removed. The RCA indices, therefore, are still not significant use in tracing out national competitive advantages.

The data used in this study were obtained from Libya's statistics in the International Trade Center ITC. Exports and imports for twenty agro-food products at two-digit level from 2009-2017 were used. In this study, Vollrath's approach was employed to find whether Libya's agro-food products have a comparative advantage or comparative disadvantage.

Results and discussion

For empirical analysis on Libya's agro-food trade and its competitiveness in the world, data from the International Trade Centre (ITC) for the years 2009-2017 have been used. The sample

involves 20 agro-food product groups at the two-digit level. Relative Export Advantage RXA, Relative Import Advantage RMA, and The Relative Trade Advantage RTA were calculated.

The computed Relative Export Advantage (RXA) for Libya in Table 1, shows the results of relative Export Advantage (RXA) among food export industries. As for Libya, it is apparent that HS03 (Fish, crustaceans, molluscs, aquatic invertebrates nes) and the HS05 (Products of animal origin, nes), are the most potential product groups. Even though their indices are less than 1, Libya could reveal a competitive advantage since the RXA for both has increased throughout the study.

Table 1. RXA Indices > 1 for Libya, 2009-2017

CODE	2009	2010	2011	2012	2013	2014	2015	2016	2017	MEAN
HS01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS03	0.00	0.00	0.06	0.04	0.06	0.12	0.35	0.40	0.33	0.15
HS04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS05	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.05	0.07	0.03
HS06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS07	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.09	0.00	0.01
HS08	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.00
HS09	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00
HS10	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.04	0.01

HS11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.01
HS12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS18	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HS19	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
HS20	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01

Source: Author calculation based on data from the International Trade Centre (International Trade Centre, 2018)

The trend lines for the first five products groups are displays in Figure 3 , the coefficient of the trend equation for HS03 is positive indicated that the trend of RXA for HS03 (Fish and crustaceans, molluscs and other aquatic invertebrates) increased significantly since 2010, in the recent years Libya has been a net exporter of fish and fish products (FAO, 2017). Libya's Fisheries represent only 6 per cent of Libya's total agricultural and fishery production, but over 85 per cent of exports (FAO, 2017). In contrast with agriculture, Libya, an exporter fish country where the fisheries sector accounts about 83percent of the total agricultural based food exports in 2017 (Bureau of Statistics and Census Libya, 2018a). Approximately 95 per cent of the total catch is for direct human consumption and the rest for animal feed and other purposes. The most important exports are bluefin tuna, mostly exported to Japan and Korea, and a small quantity of high-value fish to Tunisia, Malta, and Turkey (Bureau of Statistics and Census Libya, 2018a). And the majority of the tuna catch is exported. Likewise, HS05 (Products of

animal origin), not elsewhere specified or included shows a slight increased where the coefficient is positive. However, the rise is not significant.

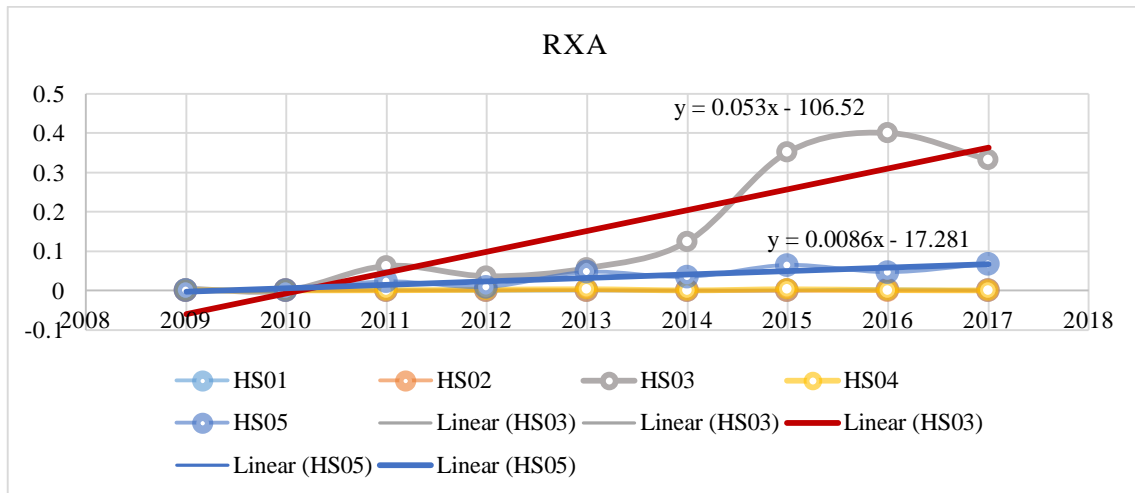


Figure 3. RXA of the first five groups HS01-HS05

The results indicated that there are few agro-food products for which Libya could have a competitive advantage (Live fish, which should be stimulated. And other products with clear disadvantages, (such as live animal, cereals, the meat of bovine, milk, and creams, sugar, cheese, chocolate, jam, etc. for which specific policies should be applied to reduce to the maximum possible extent of disadvantages, if possible in economic efficiency conditions.

Given Libya's heavy dependence on imported agro-foods, Table 2 shows the product groups for which Libya has, in Vollrath's terminology, revealed import advantage ($RMA > 1$) in at least one year during the period 2009-2017. Perhaps a better term for this is import dependency. Again, the indices make apparent Libya's dependence on imported agro-food products. The results in Table 2 are ordered regarding the mean RMA value and indicate that Libya has a relative import advantage "dependency" for 13 product groups of the 20 groups which have been analysed. It is remarkable that HS01 Live animals have a high RMA value reaching 31.31 in 2017 compared with less than 1 in 2010, that can be justified due to the recession faced the

country in 2011 and the war which has a substantial impact on the live animal production in Libya (Animal Production Department, 2018).

Table 2. RMA Indices > 1 for Libya, 2009-2017

CODE	2009	2010	2011	2012	2013	2014	2015	2016	2017	MEAN
HS01	0.45	0.96	3.30	7.12	8.87	12.34	19.36	26.01	31.31	12.19
HS02	0.57	0.52	1.71	1.93	1.37	1.70	2.31	1.65	1.92	1.52
HS03	0.13	0.14	0.12	0.22	0.29	0.29	0.23	0.14	0.21	0.19
HS04	2.99	2.95	8.72	5.21	3.64	5.12	6.24	8.82	6.26	5.55
HS05	0.03	0.01	0.00	0.01	0.03	0.02	0.01	0.02	0.03	0.02
HS06	0.44	0.49	0.59	0.66	0.88	1.88	0.13	1.61	0.89	0.84
HS07	0.22	0.08	1.86	1.17	0.92	1.24	0.51	1.05	1.11	0.90
HS08	0.78	0.97	1.81	1.61	1.89	2.03	1.09	0.92	0.71	1.31
HS09	0.70	0.86	2.30	1.91	1.43	2.30	2.75	3.22	4.67	2.24
HS10	6.27	8.57	11.84	5.35	5.63	6.08	6.53	6.51	11.10	7.54
HS11	5.24	0.39	21.99	3.09	0.47	0.47	0.22	2.74	1.24	3.98
HS12	0.96	2.14	0.32	0.27	0.24	0.30	0.38	0.34	0.46	0.60
HS13	0.24	0.40	0.44	0.51	0.54	0.34	0.31	0.43	0.45	0.40
HS14	0.22	0.63	0.31	0.56	0.38	0.41	0.33	0.40	0.16	0.38
HS15	1.02	0.81	7.86	2.41	1.14	1.06	1.55	5.22	3.31	2.71

Source: Author calculation based on data from the International Trade Centre (International Trade Centre, 2018)

HS16	1.00	1.55	4.03	4.20	3.53	3.61	4.13	6.14	6.44	3.85
HS17	1.40	2.25	6.05	2.84	2.61	3.20	1.73	5.29	4.93	3.37
HS18	0.47	0.47	3.03	2.72	2.45	2.67	2.81	1.65	1.76	2.00
HS19	1.04	0.75	7.11	4.21	3.52	3.98	4.85	5.59	4.19	3.92
HS20	3.39	3.09	8.63	3.00	2.85	4.04	3.83	8.71	4.75	4.67

Table 3 shows that there are two product groups revealed a trade advantage at some time in the period. The highest values are in from 2011 till 2017 for the natural sponges HS05, and live fish code HS03, in 2015- 2017. While most of these positive RTA indices are low, they do suggest that Libya's trade advantage in agro-food products is possibly somewhat higher than that implied by the RXA index alone and that there may be potential for export growth in these product groups

Table 3. RTA Indices > 0 for Libya, 2009-2017

CODE	2009	2010	2011	2012	2013	2014	2015	2016	2017	MEAN
HS01	-0.45	-0.96	-3.29	-7.12	-8.87	-12.34	-19.36	-26.00	-31.31	-12.19
HS02	-0.57	-0.52	-1.71	-1.93	-1.36	-1.70	-2.31	-1.65	-1.92	-1.52
HS03	-0.12	-0.14	-0.06	-0.18	-0.23	-0.16	0.12	0.26	0.12	-0.04
HS04	-2.99	-2.95	-8.72	-5.21	-3.63	-5.12	-6.24	-8.82	-6.26	-5.54
HS05	-0.03	-0.01	0.02	0.00	0.02	0.02	0.06	0.03	0.03	0.016
HS06	-0.44	-0.49	-0.59	-0.66	-0.88	-1.88	-0.13	-1.61	-0.89	-0.84
HS07	-0.22	-0.08	-1.86	-1.17	-0.92	-1.22	-0.50	-0.97	-1.11	-0.89
HS08	-0.78	-0.97	-1.80	-1.60	-1.89	-2.02	-1.09	-0.91	-0.70	-1.30

Source: Author calculation based on data from the International Trade Centre (International Trade Centre, 2018)

HS09	-0.70	-0.86	-2.30	-1.91	-1.42	-2.29	-2.75	-3.22	-4.67	-2.23
HS10	-6.27	-8.57	-11.84	-5.35	-5.63	-6.08	-6.53	-6.50	-11.07	-7.53
HS11	-5.24	-0.39	-21.99	-3.08	-0.47	-0.47	-0.22	-2.74	-1.15	-3.97
HS12	-0.96	-2.14	-0.31	-0.27	-0.24	-0.30	-0.38	-0.34	-0.46	-0.60
HS13	-0.24	-0.40	-0.44	-0.51	-0.54	-0.34	-0.31	-0.43	-0.45	-0.40
HS14	-0.22	-0.63	-0.31	-0.56	-0.38	-0.41	-0.33	-0.40	-0.16	-0.37
HS15	-1.02	-0.81	-7.86	-2.41	-1.14	-1.06	-1.55	-5.22	-3.31	-2.71
HS16	-1.00	-1.55	-4.02	-4.20	-3.53	-3.61	-4.13	-6.14	-6.44	-3.84
HS17	-1.40	-2.25	-6.05	-2.84	-2.61	-3.20	-1.73	-5.29	-4.93	-3.69
HS18	-0.47	-0.47	-3.02	-2.72	-2.45	-2.67	-2.81	-1.65	-1.76	-2.00
HS19	-1.04	-0.75	-7.11	-4.21	-3.52	-3.98	-4.84	-5.58	-4.19	-3.92
HS20	-3.39	-3.09	-8.63	-2.99	-2.84	-4.03	-3.82	-8.70	-4.74	-4.69

Conclusion and policy implications

The primary aim of this study was to explore and investigate the situation of Libya's agricultural based food trade and its competitiveness relative to the world, based on Vollrath's approach of revealed comparative advantage, computed for the period 2009 to 2017, Libya has revealed comparative disadvantage in all the product groups. Nevertheless, only two of 20 product groups: HS03 and HS05 could reveal the export advantage as the RXA increased significantly likewise the results of relative trade advantage RTA conclude that, Libya enjoys a relative trade advantage for only two product groups HS03 and HS05 (Fish, crustaceans, molluscs, aquatic invertebrates and Products of animal origin, nes). Out of twenty, thirteen product groups have RMA values more than one indicated that Libya has a relative import advantage.

Therefore, the trade data and the calculated indices reflect that Libya is exceptionally dependent on agro-food imports.

It is also important to note that Vollrath's indices calculations are based on observed trade data and, consequently; there are possible influences of government interventions in the markets, such as tariffs, quotas or subsidies. Even though we have not measured the impact of government interventions on the RCA indices, it can be seen that these sorts of distortions are at reasonably minimal levels. To get a clearer picture and more meaningful results, more years should be included in the model, and more calculations - using different methodologies and indicators also - should be carried out in the future.

No one denies that the survival of oil-producing countries depends on oil prices in the world market. At present low levels, the slowdown in economic activities is creating a recession in some oil-producing countries. Similarly, in Libya, like all other producer countries, it is also natural that the added value goes down for the oil sector with the decline in prices and therefore declining GDP of the country as well. As a result, Libya requires further reforms that target at the end products as a way to increase non-oil revenues and move forward in the economic diversification policy. One of the alternatives is in the field of agro-food sectors like fisheries, which is a promising economic sector awaits further domestic and foreign investment, the indicators need to activate the new policies for the promotion of sustainable growth. Fish production in Libya currently stands at \$ 22 thousand, (International Trade Center, 2017) and government orientations designed to take advantage of the long and varied coastline of the country to implement more commercial fish farming projects, due to growing global demand for fish products. The aim of Libyan attempts to rely on modern fishing, as the country still relies 99% on the artisanal fisheries through small boats and launches. There is also an urgent need to find a sufficient system of ports to enhance manufacturing processes and treatment of this great wealth. Libya still needs infrastructures such as factories for processing fish before export. Roadmap for Fish products and animal products should be developed; the policy maker should take those sectors into account to enhance the country's revenue from sources other than oil. Libya should complete the infrastructure associated with the fishing systems, and

investment in fish processing to increase value-added as refrigeration and freezing, smoking, canning fish are urgently needed to modernise the fisheries sector.

References

- Abdmoulah, W. & Laabas, B. 2010. Assessment of Arab export competitiveness in international markets using trade indicators. *Arab Planning Institute Working Series*, 1-54.
- Animal Production Department 2018. Animal Production. *In: DEPARTMENT, A. P. (ed.)*. Libya: Ministry of Agriculture, Livestock and Marine.
- Balassa, B. 1965. Trade liberalisation and “revealed” comparative advantage. *The manchester school*, 33, 99-123.
- Benalywa, Z. A., Ismail, M. M., Shamsudin, M. N. & Yusop, Z. 2019. Revealed Comparative Advantage and Competitiveness of Broiler Meat Products in Malaysia and Selected Exporting Countries. *International Journal of Business and Society*, 20, 383-396.
- Bojnec, Š. & Fertő, I. 2009. Agro-food trade competitiveness of Central European and Balkan countries. *Food Policy*, 34, 417-425.
- Bureau of Statistics and Census Libya 2018a. Agricultural Export Statistics. *In: BUREAU OF STATISTICS AND CENSUS LIBYA (ed.)*. Libya.
- Bureau of Statistics and Census Libya 2018b. Agricultural Imports Statistics *In: LIBYA, B. O. S. A. C. (ed.)*. Libya.
- Bureau of Statistics and Census Libya 2018c. National Population Survey. *In: BUREAU OF STATISTICS AND CENSUS LIBYA (ed.)*. Libya.
- Dimelis, S. P. & Gatsios, K. 1994. *Trade with Central and Eastern Europe: the case of Greece*, Centre for Economic Policy Research.
- Fao 2017. faostat.fao.org
- Fertő, I. 2018. Global Agri-food Trade Competitiveness. *AGRIS on-line Papers in Economics and Informatics*, 10, 39-47.
- Hinloopen, J. & Van Marrewijk, C. 2001. On the empirical distribution of the Balassa index. *Weltwirtschaftliches Archiv*, 137, 1-35.

- Hoang, V. V., Tran, K. T. & Tu, B. V. 2017. Assessing the agricultural competitive advantage by the RTA index: A case study in Vietnam. *AGRIS on-line Papers in Economics and Informatics*, 9.
- International Trade Center 2017. Trade Map 2017 ed.
- International Trade Centre 2018. Trade Map. 2018 ed.
- Ismail, M. M., Arshad, F. M., Yusop, Z. & Noh, K. M. 2013. *Competitiveness of Food and Feed Industry in Malaysia*, Serdang, University Putra Malaysia Press.
- Krugman, P. 1994. Competitiveness: a dangerous obsession. *Foreign affairs*, 73, 28-44.
- Liesner, H. H. 1958. The European common market and British industry. *The Economic Journal*, 68, 302-316.
- Mikic, M. 2005. INDICATORS, COMMONLY USED TRADE. *ARTNeT Capacity Building Workshop on Trade Research 22-25 March 2005*
- Nepad 2003. Comprehensive Africa Agriculture Development Programme(CAADP).
- Oil Price. 2018. *Oil Price Charts* [Online]. Available: <https://oilprice.com/oil-price-charts> [Accessed 21/6 2018].
- Seyoum, B. 2007. Revealed comparative advantage and competitiveness in services: A study with special emphasis on developing countries. *Journal of Economic Studies*, 34, 376-388.
- Siudek, T. & Zawojnska, A. 2014. Competitiveness in the economic concepts, theories and empirical research. *Acta Scientiarum Polonorum. Oeconomia*, 13, 91-108.
- Snowdon, B. & Stonehouse, G. 2006. Competitiveness in a globalised world: Michael Porter on the microeconomic foundations of the competitiveness of nations, regions, and firms. *Journal of international business studies*, 37, 163-175.
- Utkulu, U. & Seymen, D. Revealed Comparative Advantage and Competitiveness: Evidence for Turkey vis-à-vis the EU/15. European trade study group 6th annual conference, ETSG, 2004. 1-26.
- Vollrath, T. L. 1991. A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. *Review of World Economics*, 127, 265-280.
- Zidan, A. M. 2007. The impact of the great man made river project on Libya's agricultural activities and the environment.