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Competitiveness of the Sudan Live Sheep Exports in the Saudi Market[1]

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Abstract: The strong and growing demand for live sheep in the Saudi market enhanced the state of competition among the exporting countries of Sudan, Syria, Jordan, Romania, Australia, New Zealand and others. The aim of this paper was to assess the competitiveness of the Sudanese live sheep exports in the Saudi market vis-à-vis the competitors. Revealed Comparative Advantage (RCA) analytical approach was applied to achieve the paper objective. Data from the Food and Agricultural Organization of the United Nations (FAO) and the United Nations International Trade Statistics Yearbook (UNITS), for the period 1992-2013, were used to calculate the RCA index. The results showed an increasing trend in the market share of Sudanese live sheep in the world market, despite the clear fluctuations, as it increased from 4% in 1992 to 22% in 2013. Also, the results of the calculated RCA index for live sheep exports indicated that Sudan had a revealed comparative advantage as a major exporter of this commodity compared to other competitors (RCA>100) as well as a comparative advantage over the other Sudanese export commodities. Such comparative advantage was due to low relative costs of production, dependence on natural grazing and differences in non-price factors. This is regardless of the fluctuations in the RCA index

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in some years. Based on the findings, the paper recommends giving priority in the strategy for promoting live sheep exports through, for example, revoking all types of taxes levied on animals moved from areas of production en-route to export outlets, improving the infrastructure such as establishing modern quarantines and stringent health measures. These measures would strengthen and enhance the revealed comparative advantage. Moreover, the revealed strong competitive advantage should be exploited to promote the Sudanese live sheep in international markets in general and the Saudi market in particular.

Key words: Live sheep; Saudi market; Comparative advantage; Competitive advantage; Competitiveness; Revealed Comparative Advantage (RCA).

INTRODUCTION

Competitiveness is a widely used term in economics. The concept originated in business schools as relative rather than absolute. Many definitions have been used for the term competitiveness, the most important of them, and at the same time being the foundation of other definitions, is that summarized by the United States Commission on Industrial Competitiveness. It defines competitiveness as "the ability of a country, under free and fair market conditions, to produce goods and services that meet the test of international markets and simultaneously to maintain and expand the real income". The objective of this paper is to study the competitiveness of Sudan live sheep exports in the Saudi market.

In Sudan, the livestock sector plays an important role in the country's export earnings. The average annual export earnings of the livestock sector reached 176 million US dollars, representing about 4.5% of the total Sudan export earnings and about 36% of the total value of the agricultural exports during the period 1992-2013, (Bank of Sudan, 1992-2013) (Fig. 1). Fig. 1 also shows an upward trend of both the livestock and agricultural exports during the period referred to. Live sheep are exported to many countries but mostly (about 96 %) to Saudi Arabia (Table 1).

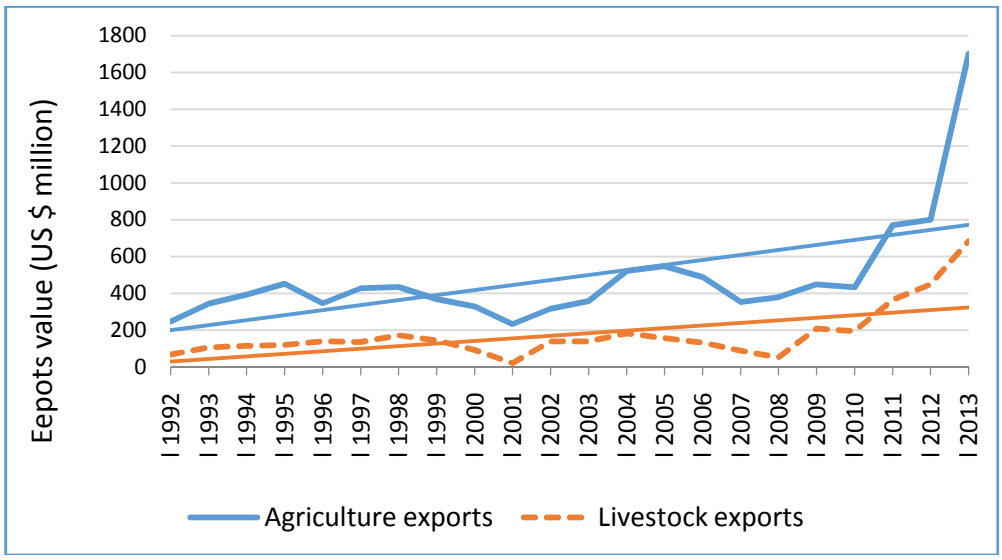

Fig 1. Contribution of Livestock Exports to Total Agricultural Exports (US $ million) (Bank of Sudan 1992-2013)

Table 1. Average Annual Sudanese Exports of Live Animals (1992-2013)

Item	Live Animals (head)		
	Total Exports	Exports to KSA	%
Cattle	5,123	0	0
sheep	1,360,806	1,303,516	95.8
Goats	64,083	46,396	72.4
Camels	117,483	4,618	3.9

Source: * Federal Ministry of Animal Resources, Khartoum, Sudan, 1992-2013.

** Saudi Ministry of Economy and Planning, Central Department of Statistics and Information (CDSI), Foreign Trade Statistics, Imports Statistics, Riyadh, Kingdom of Saudi Arabia, 1992-2013.

KSA ranks sixth with respect to red meat per capita consumption around the world with increasing demand mainly attributed to increasing population and increasing numbers of people coming for the religious

visits of *Omra* and *Hajj* (Riyadh Chamber of Commerce, 2017). The Saudi market is a free and open market with no trade barriers or restrictions other than those imposed by the World Trade Organization (WTO). KSA is the largest Gulf state importer of live sheep. It imports live sheep from all over the world including Sudan. Its imports of live sheep increased from about 148 thousand tons in 1992 to about 190 thousand tons in 2013. Sudan contribution to live sheep imports by KSA increased from 8.2% to 65% during the stated period according to the Saudi Ministry of Economy and Planning. Globalization, trade liberalization and new trade rules imposed by WTO represented a major challenge facing Sudan exports in general and live sheep exports in particular.

High demand for live sheep in the Saudi market resulted in strong competition among the exporting countries including Sudan. The main factors of competition among sheep exporters in the Saudi market comprise price, availability, quality, sustainability of supply, market access, promotion and ease of delivery. Given this situation, it is imperative that Sudan's live sheep trade and industry be analyzed to enable policy makers develop a better understanding of Sudan's competitive position and what actions need to be taken to maintain and improve export performance in the Saudi market. Hence, this paper attempts to assess the competitiveness of the Sudanese live sheep exports in the Saudi market and draw conclusions and recommendations accordingly.

MEASURES OF COMPETITIVENESS AND COMPARATIVE ADVANTAGE

The difference between comparative advantage and competitive advantage can be explained by considering the way each is measured (Zereyesus, 2003). Comparative advantage evaluates economic efficiency of alternative productive uses of scarce land, labor, capital and water resources. Measures of economic efficiency include net social profitability (NSP), value added (VA), domestic resource cost (DRC) and resource cost ratio (RCR). On the other hand, trade shares are frequently used to compare competitive advantage among regions or nations. However, the measurement of competitive advantage goes further than

the mere measurement of trade shares. According to Porter (1990), it also encompasses industrial organization analysis and financial ratio analysis. This method allows identification and analysis of the structure of a sector and identifies its strengths and weaknesses. Porter also points out that productivity is the most useful concept for determining international competitiveness. The best productivity index that reflects this advantage is total factor productivity (TFP). According to this index, a country is competitive if its industries have an average level of TFP greater than its trading competitors. TFP is a measure of growth and overall efficiency.

Competitiveness is also assessed by a host of indices that reflect trade performance and exchange rate management. For the latter, the real effective exchange rate or the purchasing power parity (PPP) of a national currency is the preferred tool of competitiveness assessment by economists and financial analysts. However, trade performance indicators do not lend themselves to measuring competitiveness but they reveal the structure and characteristics of foreign trade. These indices include structure (commodity and destination) of exports and commodity growth and dynamics, as well as intra-trade, concentration, intra-regional trade, intensity and revealed comparative advantage (API, 2003).

The fact that competitiveness is a multi-faceted phenomenon makes it difficult to summarize in a single index. This led some institutions to use composite indices to apprehend this concept. The annual report of the World Economic Forum (WEF) and International Management Development (IMD) use a large set of variables (quantitative and qualitative) to measure competitiveness. These indices are used to classify countries from most competitive to less competitive. They are also used to track the competitiveness record of countries (API, 2003).

Buckley *et al*. (1988) also identified a useful distinction between three different measures of competitiveness, namely: Competitive performance, Competitive Potential and the Competitive Process. Competitive performance is the measurement of indicators of competitiveness of specific firms, sectors, or countries. Competitive Potential is the measurement of sources of Competitive performance whereas Competitive Process is a mechanism whereby Competitive Potential is translated into Competitive Performance.

METHODOLOGY AND DATA SOURCES

Methodology

The revealed comparative advantage (RCA) index of Balassa, (1965) measures a country's comparative advantage on the assumption that a country's pattern of trade reflects inter-country differences in relative costs of production as well as differences in non-price factors. It is an accepted method for empirical trade analysis. The Balassa RCA index identifies whether a country has a revealed comparative advantage, rather than determine the underlying source of comparative advantage. RCA measures a country's exports of a commodity (industry) or sector relative to its total exports and to the corresponding exports of a set of countries. It is the share of the international market for a product or sector of a country divided by its share of the international market for all products (commodities). Moreover, the index shows the relation between the export market share of a country for a commodity or industry and its export market share for total trade in a set of countries. Formally, the index is expressed, according to Chen (1995); McFetridge (1995); Leishman *et al*. (1999); Hassan (2003); Utkulu and Seymen (2004); Lyford and Welch (20040; Banterle (2005) and AOAD (2005) as:

$$RCA_{cit} = \frac{X_{cit} / X_{wit}}{TX_{ct} / TX_{wt}} * 100 \qquad (1)$$

Where,

RCA_{cit} = revealed comparative advantage index in year (t) for country (c) for commodity (i),

X_{cit}= exports value of country (c) for commodity (i) in year (t),

X_{wit}= exports value of the world (w) for commodity (i) in year (t),

TX_{ct}= total exports value of country (c) in year (t),

TX_{wt}= total exports value of the world (w) in year (t).

t = 22years;i = 1 commodity (live sheep);c = 8 countries

Before knowing the export performance of a country's live sheep using the RCA index approach, the country's share of live sheep exports, in terms of value, in the world market and the world total trade and its direction during the period of the study needs to be calculated. This was done as follows:

First, export market share (EMS) of live sheep in the year *t* was calculated by dividing the country's exports value of live sheep (X_{1t}) by the world exports value of live sheep (X_{w1t}),

$$EMS_{\text{live sheep}} = X_{1t} / X_{w1t} \quad (2)$$

Second, the country's EMS in the world total trade in the year *t* is calculated by dividing total country exports (TX_{1t}) by the total exports of the world (TX_{wt}),

$$EMS_{\text{world total trade}} = TX_{1t} / TX_{wt} \quad (3)$$

Third, dividing the country's EMS of live sheep (equation 2) by its EMS in world total trade (equation 3) results in the RCA index of live sheep in year *t* as indicated by equation 4,

$$RCA_{\text{live sheep}} = \frac{X_{1t} / X_{w1t}}{TX_{1t} / TX_{wt}} * 100 \quad (4)$$

The value of the RCA index can be more or less than 100, i.e. a value of more than 100 shows a country's export market share (EMS) for a commodity as being higher than the Export Market Share(EMS) for its total trade. In this case, the country is specialized in the production and export of that specific commodity. Thus, in the context of a country's economic system, that commodity is competitive, compared to other commodities, and its comparative advantage is revealed due to low relative costs and differences in non-price factors. On the other hand, if the value is less than 100 the country is not specialized in that commodity and no comparative advantage is revealed, i.e. the country is said to have a comparative disadvantage (Utkulu and Seymen, 2004). More specifically, an RCA index value of 120 for live sheep, for instance, indicates that a country's live sheep EMS for a given year is 20% higher than its share in total world exports of all commodities. Similarly, an index value of 80 reveals that a country's exports of live sheep are 20% lower than its share of total world exports of all commodities.

Data sources

As the required data for calculating the indices under study is not available in one source, two formal sources were tapped. Secondary, time series data, about the country's agricultural trade were obtained from Food and Agriculture Organization of the United Nations (FAO) while total country trade data were obtained from the United Nations International (Merchandise) Trade Statistics Yearbook (UNITS).

RESULTS AND DISCUSION

In light of an increasingly competitive international environment, it is useful to examine where Sudan's competitive advantage stands in reference to live sheep trade. Given the difficulty of analyzing pre-trade prices, an indirect method of using post-trade data was adopted to determine the comparative advantage of Sudan's live sheep exports. This part of the paper deals with studying and analyzing comparative advantage of Sudanese live sheep exports in the Saudi market using the revealed comparative advantage index (RCA) of Balassa as described earlier. The RCA index was used for inspecting the export performance of live sheep for the Sudan and the competing countries in the Saudi market for the period 1992-2013.The major competitors in the Saudi live sheep market are Sudan, Syria, Jordan, Romania, Australia, New Zealand and others.

It was found that the share of the Sudanese live sheep (X_{1t}/ X_{w1t}) of the international market, despite the fluctuations, showed an increasing trend. It increased from 4% in 1992 to 22% in 2013. The share of the international market of the value of the Sudanese total trade (TX_{1t}/ TX_{wt}) was also fluctuating during the period of the study. It increased approximately from 0.01% in 1992 to 0.08% in 2010 then decreased again to 0.04% in 2013.The same pattern of fluctuations was noticed for the share of live sheep and total trade of the competing countries (Elsammani 2016)

Fig. 2 shows the trend of the RCA indices of Sudan live sheep exports compared to competing countries. Sudanese RCA increased from 51279 in 1992 to a maximum of 103622 in 1999 then decreased to 292 in 2001 because the Saudi authorities banned the imports of livestock and livestock products from the African horn including Sudan due to the outbreak of the Rift Valley Fever (RVF) disease. In 2002, the RCA index

increased to 38181 and then decreased again in the following years to a minimum of 7711 in 2007 and 5944 in 2008 because of the suspicion of the infection of Sudanese livestock by foot and mouth disease (FMD). In 2009 and subsequent years RCA of Sudanese live sheep started to increase again till it reached 84245 by the year 2012 and then decreased to 26267 in 2013. From the figure, it is clear that, despite the fluctuations, Sudan out-competed other countries in almost all normal exporting years. Babiker and Mohamed (2011), using the policy analysis matrix (PAM) approach, arrived at a similar result as they reported that exported live sheep and mutton coefficient of international competitiveness (CIC) implied profitable live sheep and mutton exports as well as being internationally competitive.

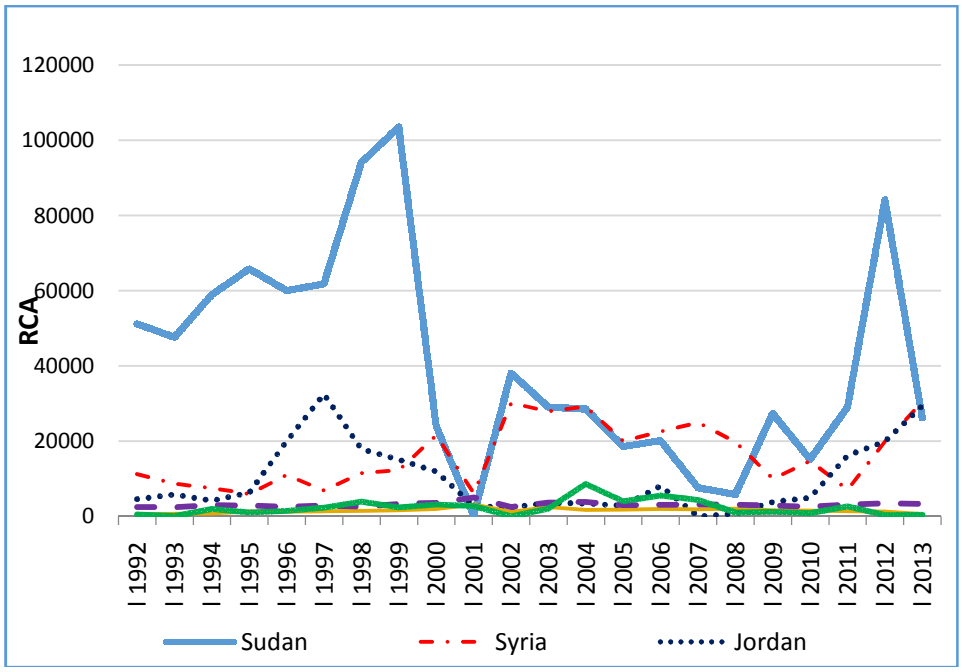

Fig. 2. RCA Indices of Live Sheep for Major Exporting Countries (1992-2013)

Table (2) shows periodic 5-years averages of the calculated RCA indices for live sheep exports from Sudan and competing countries for the period 1992-2013. The table clearly shows that the RCA indices of Sudan live

sheep exports are greater than 100 during all periods of study, irrespective of the fluctuations, indicating that Sudan has a comparative advantage and is specialized in the export of live sheep compared to other commodities. This is due to the relatively low costs of production and differences in non-price factors. Babiker (2015) stated that rangelands provide about 86% of feed for livestock, crop residues and by-products 10% and irrigated forage and concentrates 4%. Also, Wilson (2018) reported that almost all animals are owned by smallholder farmers or traditional pastoralists. Livestock feed is often in deficit in relation to needs and crop by-products and range vegetation are fibrous and of low nutritional value. Livestock are affected by a multitude of diseases but receive little health care. Access to finance by producers is difficult and credit is limited and expensive if obtainable. Services to the sector are not adequately funded and generally poorly equipped.

Table 2 also shows that during the period 1992-2006, all competing countries had an RCA above 100 except for New Zealand during the period 2002-2006. In 2007-2013, five out of seven competing countries have RCA above 100, indicating their comparative advantage in exporting live sheep. These countries are Syria, Jordan, Australia, Romania, and Uruguay. The high RCA values for Sudan and those five competing countries can be explained by their small EMS in the world total trade for live sheep. Also, it indicates a sizeable Saudi import market. However, there are gaps among the RCA indices of these countries. Sudan has significantly greater RCA indices than other competing countries during all periods. Syria ranked second to Sudan outperforming other countries followed by Jordan, Romania, Uruguay and Australia, respectively.

During the five periods, New Zealand has RCA above 100 only in1992-1996 and 1997-2001 periods *i.e*. 1203 and 367, respectively. Turkey on the other hand, has an RCA of 3613 in 1992-1996, 879 in 1997-2001 and 135 in 2002-2006. A value of less than 100 for New Zealand and Turkey in some periods indicates that during these periods those two countries were not specialized in live sheep exports and hence have no revealed comparative advantage *i.e*. they were having a comparative disadvantage. From Table 2 it could be concluded that the close competitor of Sudan live sheep exports in Saudi market is Syria, which may be attributed to its geographical location. The RCA index for Somalia was not calculated since the data on total trade for Somalia were not available.

Table 2. Periodic RCA Indices for Live Sheep Exports (1992-2013)

Period	Sudan	Syria	Jordan	Australia	New Zealand	Turkey	Romania	Uruguay
1992-1996	56805	8901	8187	940	1203	3613	2649	1006
1997-2001	56813	11714	16033	1951	367	879	3511	2906
2002-2006	26973	25973	4040	1866	58	135	3234	5042
2007-2011	17100	15310	6400	1724	42	91	2974	2001
2012-2013	55256	25212	24730	970	16	1	3402	388

Source: Calculated by the authors from FAO (1992-2013) and UNITS (1992-2013) data

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The revealed comparative advantage (RCA) approach was adopted to analyze the Sudanese live sheep exports competitiveness in the Saudi market for the period 1992-2013. The results of the calculated RCA index indicated that Sudan had a revealed comparative advantage as a major exporter of this commodity compared to other competitors including Syria, Jordan, Australia, New Zealand, Turkey, Romania and Uruguay. Also, the results indicated a comparative advantage over the other Sudanese export commodities. These results were similar to other results reported using the policy analysis (PAM) approaches. Such comparative advantage was due to low relative costs of production and differences in non-price factors. Based on the study findings, the paper recommends giving priority in the strategy for promoting live sheep export through, for example, revoking all types of taxes levied on animals moved from areas of production en route to export outlets. This recommendation was also stressed by Behnke (2012) who cited that "Multiple high taxes were the marketing problem most frequently cited by sheep traders interviewed in primary and secondary markets. The paper also recommends improving the infrastructure such as establishing modern quarantines and stringent health measures. These measures would strengthen and enhance the revealed comparative advantage. Moreover, the revealed strong competitive advantage should be exploited to promote the Sudanese live sheep in international markets in general and Saudi market in particular.

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تنافسية صادرات الأغنام الحية السودانية في السوق السعودي[2]

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المستخلص :أدت قوة الطلب المتنامي على الأغنام الحية في السوق السعودي إلى قوةالمنافسة بين الدول المصدرة مثل السودان، سوريا، الاردن، رومانيا، استراليا، نيوزيلندا وآخرين.هدفت هذه الورقة الى تقييم تنافسية صادرات الأغنام الحية السودانية في السوق السعودي مقارنة بالمنافسين. تم تطبيق أنموذج الميزة النسبية الظاهرة لتحقيق أهداف الورقة. استخدمت بيانات منظمة الامم المتحدة للأغذية والزراعة (الفاو) وإحصاءات التجارة الدولية للسلع التابعة للأمم المتحدة لحساب مؤشر الميزة النسبية الظاهرة للأغنام الحية للفترة 1992-2013م. أظهرت النتائج اتجاها متزايداً للحصة السوقية للأغنام الحية السودانية في السوق العالمي، على الرغم من التقلبات الواضحة ، حيث ارتفعت من 4% عام 1992 الى 22% عام 2013. كما أشارت نتائج حساب مؤشر الميزة النسبية الظاهرة لصادرات الأغنام الحية للسوق السعودي إلى أن السودان يمتلك ميزة نسبية ظاهرة كمصدّر رئيس لهذه السلعة مقارنة بالمنافسين الآخرين، حيث بلغ مؤشر المنافسة أكثرمن 100 (RCA>100) وكذلك ميزة نسبية لصادرات هذه السلعة مقارنة بالصادرات السودانية الأخرى. هذه الميزة النسبية، ناتجة عن الانخفاض النسبي في تكاليف الانتاج للاعتماد على المرعى الطبيعي والفروقات في عوامل المنافسة غير السعرية.هذا بصرف النظر عن ظاهرة التقلبات في مؤشر المنافسة في بعض السنوات. واستنادا الى النتائج التي توصلت اليها، توصى الورقة بإعطاء اولوية في استراتيجية ترقية صادرات الاغنام الحية بإلغاء كل انواع الضرائب المفروضة على هذه الحيوانات اثناء حركتها من مواقع الانتاج الى منافذ التصدير، تحسين البنية التحتية بإنشاء محاجر حديثة، وترقية المعايير الصحية. كما يجب استغلال الميزة التنافسية القوية للترويج للأغنام السودانية في الأسواق العالمية عموماً والسوق السعودي بوجه خاص.

[2] مستلة من أطروحة الدكتوراة للمؤلف ألاول