REVEALED COMPARATIVE ADVANTAGE AND COMPETIVENESS OF UGANDA'S EXPORTS WITH REST OF THE WORLD

Sebaggala Richard[1]

This paper was developed by author when attending a specialized course in Quantitative Trade policy Analysis at Trade Training Centre in Africa (TRAPCA), East and Southern Africa Management Institute in Arusha, 31st/ 03-11th/ 04/2008.

[1] The author is a lecturer of Economics at Ndejje University and Uganda Christian University. The views expressed in this paper are not necessarily held by the training centre and are the sole responsibility of the author. The author would like to thank Trade Training Center in Africa for the opportunity to attend a specialized course in Quantitative Trade policy analysis which enabled me to write this paper. The author would also like to thank academic coordinator of TRAPCA for is encouragement to make this paper a success.

Abstract

This paper seeks to examine the comparative advantage and competitiveness of Uganda's exports with the rest world and how this has changed over the period between 2000 and 2005 with a trade-based index of the Revealed Comparative Advantage (RCA). Data used in this study was obtained from the United Nations Commodity Trade Statistics Database (UNCOMTRADE), based on Standard International Trade Classification. The results revealed that Uganda has a comparative advantage in indigenous sectors such as food and live animals, beverages and tobacco, crude materials, inedible except fuels and animal and vegetable oils and fats. Food and live animals sector has a strikingly high comparative advantage with a revealed comparative advantage. In construct, manufacturing sectors producing mineral fuels, lubricants and related materials, chemicals, manufactured goods, machinery and transport equipment and miscellaneous manufactured articles have a comparative disadvantage. However, these sectors revealed improvement in comparative advantage with the exception of mineral fuels, lubricants and related material. The paper recommends among others, protection and improvement in those sectors that recorded competitiveness. Strengthening the competitiveness of these products against rivalry countries could help in reinforcing and developing the potentials of the Uganda's products in the world market.

1.0 Introduction

For developing countries to improve their economic performance, high priority should be given to industrial development (Pack, 1988; Singh, 1982). This view was widely supported by early development economists who believed that large investments in industrial sectors combined with import substitution policies would enable developing countries to benefit from external economies of scale and technical progress (Meire and Seers, 1984). However, the failure of the in-ward looking policies to stimulate the desired industrial growth, development and transform the economies to be competitive generated considerable criticisms, and led to reform fatigue in many economies provoking policy reversals and slow-down in the initial speed of in-ward looking strategy. Thus, since the 1980s, the development strategy of developing countries has changed in favour of export orientation and trade liberalization in order to overcome the inherent limitations and adverse effects of the import substitution industrialization strategy (Dedrick *et al*, 2001).

Proponents of trade liberalization argue that liberal trade policy, giving the right price signals, increases the competitive pressure on the producing industries to improve their efficiency and competitiveness. As a result these industries will be able to compete on the world market, increase exports, and thus increase the welfare of their societies (Sharma, 1999). To date, virtually all developing countries and most ex-centrally managed economies have liberalized their economies. Uganda is one of the countries in the world that has implemented significant economic reforms, including a liberalization of the trade regime, over the last decade and a half and presents an interesting case study (DENIVA, 2006).

Almost two decades have passed since developing countries have started adopting liberalization policies. It is therefore appropriate to study the empirical evidence on the impact of trade liberalization on the export sector of developing countries. Evidence has shown weak response of African economies to Structural Adjustment Programmes (SAPs) indicated by the decline in the share of exports and imports of African countries. For instance, the share of exports of Africa decreased from 4.6 per cent of world exports in 1980 to 1.5 per cent in 1995 (UNCTAD, 1995: 24-25). The drastic decline in market share in global trade suggests the failure of Africa to compete successfully in primary and in manufactured products. The sluggish supply response of the production sectors to SAPs in Sub-Saharan African countries has raised concerns both in academic and in policy-making circles in the international community.

Whereas Africa's export performance has been summarized as being poor, recent evidence by Morrissey and Mold (2002) using data from UNCTAD between 1990 and 2002 have discovered that the export volumes for non-oil exporters actually increased by over 130%. This impressive supply-side performance imply that world trade is and will continue to be a critical factor in sustaining economic growth and reduction of poverty among African countries. There is a general agreement in the international trade literature that export growth matters in economic growth, and this has been supported by remarkable record of high and sustained growth of East Asian countries. In particular, the wave of growth in four tigers (Hong Kong, South Korea, Singapore and Taiwan) and the newly industrialized countries (such as Malaysia, Indonesia and Thailand) has been used to support the argument that carefully managed openness to trade through an Export Led Growth is a

mechanism for achieving rapid growth (Gilies and Williams, 2000). Thus it is imperative for each country particularly developing countries to examine where their comparative advantage lies.

In case of Uganda, there has been very limited research carried out on its competitiveness. The most available evidence has used export share of commodities in country's exports and Real Effective Exchange Rate (REER) index as measure of Uganda's competitiveness. These analyses however, have been challenged on the grounds that even commodities with small export share (1 percent) revealed more competitiveness using Balassa Index of revealed comparative advantage (Nesterenko, 2006) and the failure of REER to capture changes in competitiveness at sectoral and regional level respectively (Prasad, 2004). This paper seeks to examine the comparative advantage and competitiveness of Uganda's exports with the rest world using the United Nations Commodity Trade Statistics Database (UNCOMTRADE), based on Standard International Trade Classification (SITC Revision 1). This is very essential for marginalized economies like Uganda who needs to enhance their export competitiveness to survive in the world market. For example, any sector or industry assistance policy should be considered only if the sector or industry is efficient, or if there are steps that the government could take to enable it to be efficient. Moreover, in a market economy, most economic reforms focus on setting the right prices, and minimizing trade barriers and market distortions. Uganda has tried to do these in last two decades. Therefore, assessment of the comparative advantage and competitive advantage in the production of traded goods this far is needed to facilitate policy reform, thereby aiding decision making in resource allocation and planning trade policy.

This paper is organized in the following manner: Section 2 and 3 provides detailed theoretical and empirical literature on application of the Revealed Comparative Advantage (RCA) index, the concept, measurement and determinants of competitiveness, and also describes the measure of revealed comparative advantage that will be used to assess comparative advantage and competitiveness of Uganda's exports with rest of the world. The results of the study are presented in the section 4 and finally, section 5 concludes the paper.

2.0 Theoretical background

The proponents of free trade argue that it is an avenue for economic gain and prosperity. The reduction of trade barriers creates competitive pressures and the potential for technology transfer so as to lead to productivity gains and restructuring of an economy (Amita Batra and Zeba Khan, 2005).

The benefit of trade however, comes with increased specialization in production of goods where a country has a comparative advantage. In one strand of the literature it is in fact argued that the growth of a country may be permanently reduced by a 'wrong' specialization (Imre Ferto and Károly Attila Soós, 2006). This argument originally developed by Ricardo has received a lot of scholarly attention and as developing countries move towards opening their economies a number of studies on comparative advantage have emerged.

Traditionally, methods of identification and evaluation of potential trade opportunities have ranged from intuitive and serendipitous approaches to more systematic estimations. Project appraisal techniques evaluated the

financial and economic profitability, internal rates of return, and net present values of investments. However, in the 1980s, attention turned from the evaluation of projects to the structural and sectoral policy adjustments needed to enable an economy to pursue production and trade efficiently, i.e. along the lines of its "Comparative advantage". Comparative advantage is a term originally coined by Ricardo in the eighteenth century to explain trade specialization patterns among countries as a function of a nation's resource endowments[2]. Domestic natural resources and factors of production being fixed, a country which possessed them could produce a good more cheaply than a country which had to import them. In simple terms, countries that have a comparative advantage in the production of a good should be found to export a higher proportion of that good relative to other countries (Addidon-Smyth, 2005). Thus, comparative advantage in essence became a cost-based notion of a country's economic competitiveness, based on the fixity of basic inputs into the production process.

According to Yeats (1992) studies on comparative advantage can broadly be categorized into two; the Revealed Comparative Advantage (RCA) thought pioneered by Ballasa in 1965 and Heckscher-Ohlin thought, which, mainly concerned with relative labor and capital inputs of specific goods. The existence of little information on labor and capital inputs in developing countries has lead to adoption of the revealed comparative advantage as an empirical approach to measuring comparative advantage. And since the RCA measure was first used by Balassa in 1965 it has been widely applied in economic empirical work to evaluate the patterns of trade and specialization of countries in commodities which

[2] According to Addison-Smyth (2005), the term has been used to describe the tendency for countries to export those commodities that they are relatively adept at producing, *vis-à-vis* the rest of the world.

they have a competitive edge (see, Utkulu *et al*, 2004; Uchida & Cook, 2004; Prasad, 2004; Sharman and Dietrich, 2004; Addison-Smyth, 2005; Mirzaei, Yazdani & Mostatavi, 2006; Nesterenko, 2006).

The RCA alone however, tends to only show goods that countries tend to specialize in trade. It doesn't reveal the source of comparative advantage (Vanek, 1968). Further more, the problem of using the RCA indices is that in reality the trade pattern may be distorted by government policies there by miss representing the comparative advantage. Notwithstanding these shortcomings, this measurement framework is important in identifying if a country has a comparative advantage in a product group.

3.1 The concept of competitiveness and its measurement

Competitiveness has been defined as the degree to which, under open market conditions, a country can produce goods and services that meet the test of foreign competition, while simultaneously maintaining and expending domestic real income (OECD, 1992). Adams, Cangnes and Shachmurove (2004), defines competitiveness as the ability under present conditions of a country's products to command world market. Asscha, Hong and Slootmaekers (2007) argue that a country gains international competitiveness if it is able ton export products and services at a relatively cheaper price and therefore grab a larger export market share. A country loses international competitiveness if it loses export market share. Nevertheless, the concept competitiveness is still evolving and there is little professional consensus on it s precise definition. It has been difficult to define because it is a less theoretically pure concept than comparative. Therefore, the concept has been given numerous interpretations both

macroeconomic and microeconomic (Siggel, 2007). The first macroeconomic interpretation use the World Competitiveness Index computed and published yearly by the World Economic Forum and Institute of Management Development (WEI/IMD, annual since 1995). The index is the basis for an international ranking of countries in terms of their business climate. It is a composite of a large number of attributes condensed into a single index (Siggel, 2007). The method's theoretical base particularly its aggregation however, is problematic

.

The second interpretation of macroeconomic competitiveness, define an economy to be competitive if it harbors a large number of internally competitive enterprises and industries. This idea underlies the concept used by Dollar and Wolf (1993) who defined a competitive country as one that succeed in international trade via high technology and productivity, with accompanying high income and wages.

The third macroeconomic interpretation according Siggel is Real Exchange Rate (RER) as well as the Real Effective Exchange Rate (REER) proposed by researchers from International Monetary Fund (Lipschitz, McDonald, 1991; Marsh, Tokarick, 1994). The RER measures the degree of currency misalignment based on the purchasing power parity assumption. When there is undervaluation, international competitiveness of domestic producers is enhanced and when there is undervaluation, it reduces. This approach ha also been criticized on the ground that it is essentially a monetary indicator, capturing the distortion of the currency value, rather than factors of real competitiveness.

The weakness of the macroeconomic approaches in measuring competitiveness has motivated researchers to adopt microeconomic

concepts and indicators of competitiveness in the recent past. They are preferred because they have a more solid theoretical background. For example, they focus on the essential features of producers in competition for market share and profits or the ability to export. This ability can be measured by the size or increase of market share, by export performance, by price ratios, cost competitiveness or by more complex and multi-dimensional indicators (see Siggel, 2007).

The measurement of international competitiveness may be approached from two prominent methods: Porters method (1990) and competitiveness indicators originally developed by Balassa (1977, 1986). Porter's method evaluates competitiveness along the supply chain. For example, it not only evaluates the competitiveness of the farmer but that of all the participants in the supply chain. This method therefore allows identify and analyze the structure of a sector and to point out the strengths and weakness. Thus critical success factors can be identified to which participants in a chain have to pay attention in order to develop and sustain competitive advantage as successfully as possible.

According to Porter, there are six broad attributes of a nation that shapes the environment in which local firms can compete that promote the creation of competitive advantage. These are factor conditions, demand conditions, related and supporting industries, firm strategy, structure and rivalry, government and role of chance. Chance events are occurrences that have little to do with circumstances in a country and are often largely outside the power of firms and also the national governments to influence. These include events such as wars, political decisions by foreign government, large increases in demand, shift in world financial markets

and exchange rates, discontinuity of technology and input demand (Rooyen, Esterhuizen and Doyer, 2005)

The Balassa competitiveness indicators are *ex post* concepts and do not ask "why", though there is often an implied explanation (Adams *et al*, 2004). Balassa relates RCA measures to such underlying factors as capital intensity and human resource development. Many studies have determined a country's competitiveness by comparing a commodity share in its exports to the commodity's share in world exports, referred to as its revealed comparative advantage (Mahmmod, 2000, Adam et al, 2004; Utkulu and Seymn, 2004, Nesterenko, 2006; Caribbean Trade and Investment Report, 2005). If the RCA is greater than one it is taken as evidence of international competitiveness. It compares how well a country has done in export of some particular set of goods; let's say agricultural products, compared to how well it has done in exporting the total of all its goods. If for example, Uganda has a 15 percent share of the world agriculture market but only a 10 percent share of the world market for trade all goods, then it is assigned a coefficient of 1.5 as its competitive advantage in agriculture products. An increase in this coefficient between periods indicates that a country increased in its competitive advantage of the commodity under consideration (Vollrath, 1985). This study adopted this approach and also compared Uganda's RCA between 2000 and 2005. Other studies have used the Relative Trade Advantage Index (RTA) (Havrila and Gunawardana, 2003, Hatirli, Ozkan and Fert, 2004). This index was firstly used by Scott and Vollrath (1992). It is given by the difference between the Relative Export Advantage (RXA) and the Relative Import Penetration Index (RMP).

3.2 Determinants of competitiveness

The determinants of the competitiveness or competitive advantage of a local system relative to the production of a good depend on the hypotheses made on the good considered, or the technology, the type of competition and on many other factors (Bacci, 2002). The set of hypotheses constitute different theoretical frameworks representing economic, of which two extreme cases can be defined.

The first set of hypotheses is the hypothesis of homogenous good, perfect information and hence similar technology of production everywhere, limited mobility of the factors of production, perfect competition and perfect flexibility of prices and wages. Bacci (2002) noted that under this case, the capacity to export of a local system totally depends on the prices of the local productive factors and its growth is determined by a rise in the quantity of the available factors, namely the stock of capital and the available labour force. This implies that international competitiveness is a matter largely of costs and the factors that affects these costs (Adams *et al*, 2004).

The second hypotheses, is the hypotheses of differentiated goods such as niche products, for which cost is not a fundamental competitive advantage, but rather its quality, in sense of uniqueness, be it due to the incorporated technology or to the beauty of design and the perfection of its production (Bacci 2002). Thus, factors such as traditions, culture, know-how of the workers, availability of raw materials with specific characteristics and the story of the territory where the good is produced are important determinants of the competitive advantage of the products, hence of the region. This case has been supported by studies trying to measure and explain China's competitiveness (Hssche *et al*

(2007, Bacci, 2002). For example, cultural factors and FDI spillovers have been significant factors in explaining Chinese competitiveness and other East Asian countries.

Notwithstanding, literature on endogenous growth has documented the significant importance of intangible resources, such as the human capital and the technological capacity. A study by Dunmore (1986) has argued that government policies such as exchange rates, interest rates, tax policy are more important and pervasive than natural endowments in determining competitiveness.

3.3 Measuring Export competitiveness: The RCA index

Measures of comparative advantage are among the most useful guides to optimal resource allocation in an open economy such as Uganda where international trade is vitally important. Economists have been applying the principles of specialization and comparative advantage to explain the theory of international trade for which the concepts of relative cost and price differences are basic. The production and export of tradable goods, including agricultural exports, are normally guided by the international differences in cost of production and prices of products measured in terms of comparative advantage and international competitiveness.

The RCA index, introduced by Liesner (1958) and popularized by Balassa (1965) is grounded in conventional international trade theory (Ferto and Hubbard, 2002). Initially Balassa suggested two ways to measure it. The first method is the share of total trade in the commodity group:

$$X_{ij} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}}$$

X and M represent exports and imports, i and j the commodity and the country respectively. The index measures the significance of net flows in any commodity group, and ranges between -1 (no exports by country j in commodity i) and 1 (no imports by country j in commodity i). It shows the scale of trade flows in a commodity group. It also represents the degree of intra-industry trade in the group of products. However, this measure is not widely used because of the difficulty in interpretation and the fact that a country may use import restrictions, thus the measure would not reflect the actual competitiveness of the product.

The second method to measure trade structure proposed by Balassa is the export performance ratio, which does not take into account imports, thus is free of trade restriction bias (Lim 1997). It shows the degree with which a commodity can compete on the world market even when trade partners use protectionist measures.

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

$$RCA_i = \left[\frac{X_{i,Uganda}}{\sum X_{i,Uganda}}\right] / \left[\frac{X_{i,World}}{\sum X_{World}}\right]$$

Where:

RCA_i = revealed comparative advantage for good i

$X_{i,Uganda}$ = exports of good i by Uganda

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

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

$\sum X_{World}$ = total world exports

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

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

3.2 Data

The data used for this study was provided by United Nations Commodity Trade Statistics Database (UNCOMTRADE), based on Standard International Trade Classification (SITC Revision 1). Data on exports for 2000 and 2005 was obtained. The exports under this classification are categorized according to commodity type. There are nine headline SITC categories as summarized in the table below[3].

Table 1: Standard international Trade Classification

SITC Code	Commodity description
0	Food and live animals
1	Beverages and tobacco
2	Crude materials, inedible, except fuels
3	Minerals fuels, lubricants and related materials
4	Animal and vegetable oils, fats and waxes
5	Chemicals and related products
6	Manufactured goods classified chiefly by material
7	Machinery and transport equipment
8	Miscellaneous manufactured articles
9	Commodities and transactions not classified elsewhere

World Integrated Trade Solution (WITS) software developed by World Bank, in close collaboration with the United Nations Conference on Trade and Development (UNCTAD) allows sub-dividing the above categories into their sub components. These more detailed breakdowns are important, as there are a number of quite diverse categories within each broad SITC category. This study to gain a deeper insight into the extent of

[3] This study considered data for the first eight categories because data for the last category as indicated in table 1 was insignificant.

Uganda's RCA within each broad categories, further decomposition of SITC was performed.

4.0 Results

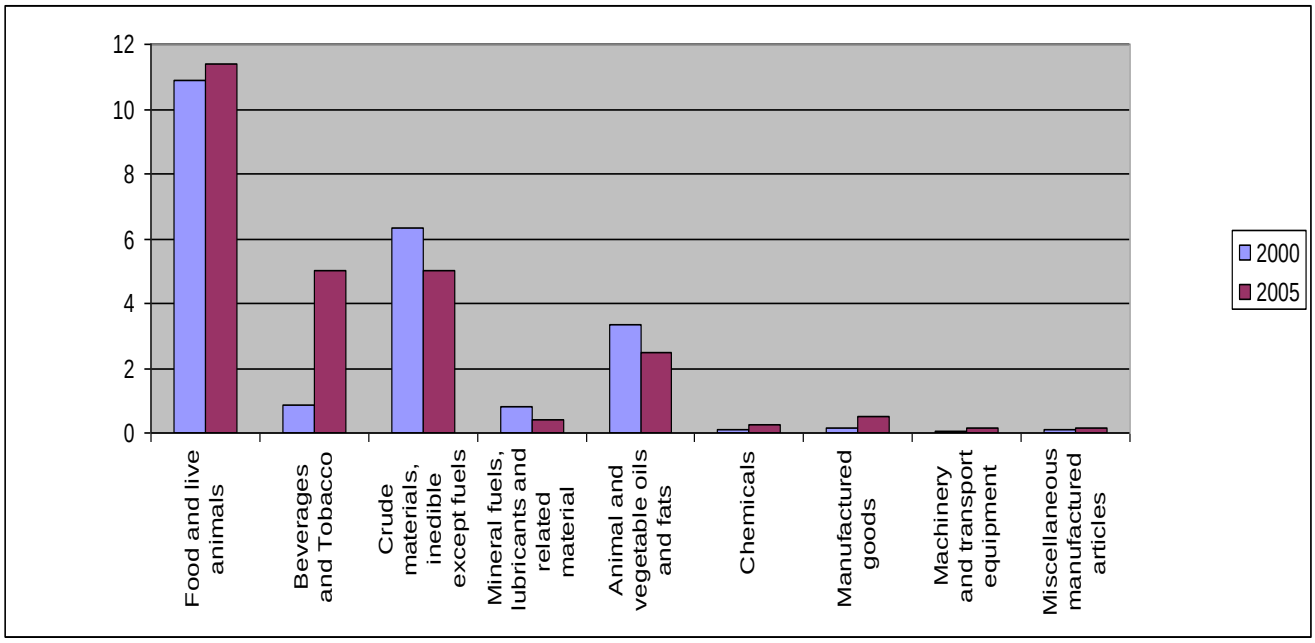
The year 2005 was the latest year for which complete trade data were available for Uganda and the rest of the world. Therefore data was analyzed for the year 2005. In order to get an appreciation for trade dynamics, the year 2000 was also examined. Revealed comparative advantage was established for eight sub-categories, as well as for the sub-components for each sub-category as will be shown in subsequent pages.

The results revealed that four sectors had a comparative advantage. These included food and live animals (SITC 0), beverages and tobacco (SITC 1), crude materials, inedible except fuels (2) and animal and vegetable oils and fats (SITC 4). The comparative advantage for food and live animals is very high compared to other sectors that that revealed advantage with RCA of 11.4.

The most competitive Uganda products in 2005 were food and live animals. It is should noted that food and live animals comprised of 57% of Uganda exports in 2005. Thus, the share of a commodity in the country's exports may sometimes explain much about its competitiveness. It is not shocking that Uganda has comparative disadvantage in producing mineral fuels, lubricants and related materials, chemicals, manufactured goods classified chiefly by material, machinery and transport equipment and miscellaneous manufactured articles. This could be partly explained by Heckscher-Ohlin model conclusion which stated that relatively labour-

intensive economies exports labour-intensive goods and imports capital-intensive goods. The results are summarized in figure 1 and table 2 below.

Figure 1: RCA: Uganda and Rest of the world, 2000 and 2005



Addison-Smyth (2005)noted that comparative advantage is a very 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. Therefore, comparing the results of the 2005 with those of five years back as indicated in table 1 depict the dynamics of Uganda's comparative advantage in the products under consideration. The results show that of four product categories Uganda had comparative advantage, two product categories registered an increased degree of revealed comparative advantage (food and live animals and beverages and tobacco) and two revealed a reduction in

degree of revealed comparative advantage (animal and vegetable oils and fats and crude materials, inedible except fuels).

Food and live animals strengthened from 10.9 to 11.4, an improvement of 4.6 percent. However, beverages and tobacco registered the highest increase in the degree of revealed comparative advantage from 0.88 to 5.0, an improvement of 468.2 percent. Animal and vegetable oils and fats, and crude materials declined by 24.9 percent and 21 percent respectively. Interesting however, the other product categories, much as Uganda had comparative disadvantage, they revealed improvement with the exception of mineral fuels, lubricants and related material, where the RCA has weakened from 0.8 to 0.42, a decrease by 47.7 percent. For instance, manufactured goods improved from 0.14 to 0.5 (257.1%), chemical from 0.11 to 0.27 (145.5%), machinery and transport equipment from 0.07 t0 0.16 (128.6%) and miscellaneous manufactured articles from 0.08 to 0.17 (112.5%).

Table 2: Share of the products in Uganda's exports and world and RCA in Uganda, 2000 and 2005

SITC	Description	Share of the products in Uganda's exports (2005)	Share in world exports (2005)	RCA 2000	RCA 2005	% Change in RCA
0	Food and live animals	0.57	0.05	10.9	11.4	4.6
1	Beverages and Tobacco	0.05	0.01	0.88	5.0	468.2
2	Crude materials, inedible except fuels	0.15	0.03	6.33	5.0	-21
3	Mineral fuels, lubricants and related material	0.05	0.12	0.80	0.42	-47.5
4	Animal and vegetable oils and fats	0.01	0.004	3.33	2.5	-24.9
5	Chemicals	0.03	0.11	0.11	0.27	145.5
6	Manufactured goods	0.07	0.14	0.14	0.5	257.1
7	Machinery and transport equipment	0.06	0.38	0.07	0.16	128.6
8	Miscellaneous manufactured articles	0.02	0.12	0.08	0.17	112.5

The positive percentages for products which had RCA < 1 or =1 in 2000, show improvement in revealed comparative disadvantage in production of those products while negative percentage show worsening revealed comparative disadvantage in producing the products in that industry.

4.1 Revealed Comparative Advantage by industry type

Many times, a particular commodity aggregation might affect the estimates of revealed comparative advantage indices and consequently, mask the competitive edge enjoyed by a particular country, which could be become apparent in finer commodity (McDonald, Nair, Rodriguez and Buetre, 2005). This study, therefore, to gain a deeper understanding of Uganda's export sector; the broad sectors above were further decomposed into industries. Each broad sector is examined in the details below. This was done because much as the broad sectors are informative,

they cover developments within the SITC sectors. In the tables below, the positive percentages for industries which had RCA < 1 or =1 in 2000, show improvement in revealed comparative disadvantage in production of those products while negative percentage show worsening revealed comparative disadvantage in producing the products in that industry.

Food and live animals

Within the food and live animal sector, Uganda has a comparative advantage in the production of coffee, tea, cocoa, spices and manufacture (RCA 6.63) and Fish and fish preparations in 2005. In 2000 it should be noted that Uganda had comparative disadvantage in producing fish and fish preparations (0.93). This implies that fish and fish preparations strengthened considerably in 2005 by 154 percent. However, Uganda RCA of coffee, tea, cocoa, spices and manufacture weakened by 33 percent as can be seen in table 3 below.

Table 3: RCA: Uganda and rest of World: Food and Live Animals

Description	**RCA 2000**	**RCA 2005**	**% Change in RCA**
live animals	0.003	0.01	233.3
Meat & meat preparations	0.001	0.01	900
Diary products & eggs	0.01	0.01	0
Fish & Fish preparations	0.93	2.36	154
Cereals and cereal preparations	0.20	0.53	165
Fruit & vegetables	0.14	0.12	-14
Sugar, sugar preparation & honey	0.1	0.60	500
Coffee, tea, cocoa, spices & manufacture	9.88	6.63	-33
Feed-stuff for animals excluding unmil	0.01	0.07	600
Miscellaneous food preparations	0.17	0.03	-82

Beverages

Within this sub sector category, tobacco and tobacco manufactures has a revealed comparative advantage. The results also reveal that Uganda's relative specialization has strengthened in production of tobacco and tobacco manufactures by 10 percent. However, as the table 4 below illustrates, Uganda has comparative disadvantage in production of beverages and this is worsening as shown by reduction in RCA from 0.4 to 0.26, a 35 percent reduction.

Table 4: RCA: Uganda and rest of World: Beverages

Description	**RCA 2000**	**RCA 2005**	**% Change in RCA**
Beverages	0.4	0.26	-35
Tobacco and tobacco manufactures	2.46	2.7	10

Crude materials, inedible, except fuels

This sub sector has three industries that revealed comparative advantage. They include hides, skins and fur skin, undress (RCA 2.0), textile fibers, not manufactured (RCA 4.5) and crude animal and vegetable material (4.11). The figures show that the economy is disadvantaged in the production of crude fertilizers and crude mineral, oil seeds, oil nuts and oil kernels, wood, lumber and cork, and metalliferous ores and metal scrap.

The comparative advantage of textile fibers, not manufactured strengthened between 2000 and 2005 by 38 percent while that of crude animal and vegetable material strengthened by 116 percent. This implies that within this category, Uganda gained more comparative advantage

in producing crude animal and vegetable material between 2000 and 2005. However hides, skins and fur skin revealed comparative advantage reduced by 60 percent.

Table 5: RCA: Uganda and rest of World: Crude materials, inedible, except fuels

Description	**RCA 2000**	**RCA 2005**	**% Change in RCA**
Hides, skins and fur skin, undress	5.0	2.0	-60
Oil seeds, oil nuts and oil kernels	0.29	0.71	145
Wood, lumber and cork	0.001	0.01	900
Textile fibers, not manufactured	3.27	4.5	38
Crude fertilizers and crude mineral	0.03	0.02	-33.3
Metalliferous ores and metal scrap	1.00	0.41	-59
Crude animal and vegetable material	1.90	4.11	116

Mineral fuels, lubricants and related materials

This sub sector has four industries and of these two are have RCA greater than one in 2005. In 2000, electric energy had surprising revealed comparative advantage of 33 and this reduced to 6.50 in 2005. The high RCA for electric energy in 2000 was as result of Uganda's high share of almost 0.7 (70 percent) in the world exports of electric energy. This however, dropped to 13 percent in 2005. This represents a 80 percent reduction in revealed comparative advantage. The other commodity that had RCA greater than one was petroleum and petroleum products (RCA 1.1). This when compared to 2000, it important to note that Uganda gained comparative advantage in production of petroleum and

petroleum products from RCA less than 1 (0.42), an increase of 162 percent. The other two industries coal, coke and briquettes, and gas, natural and manufactured, Uganda produced none in 2000. In 2005, gas, natural and manufactured was produced but showed very strong revealed comparative disadvantage of 0.00001. The results are illustrated in table 6 below.

Table 6: RCA: Uganda and rest of World: Mineral fuels, lubricants and related materials

Description	RCA 2000	RCA 2005	% Change in RCA
Coal, coke and briquettes	-	-	-
Petroleum & petroleum products	0.42	1.10	162
Gas, natural & manufactured	-	0.00001	-
Electric energy	33	6.5	-80

Animal and vegetable oils and fats

Within this sub sector, results revealed that animal and vegetable oils and fats industry has a strong revealed comparative advantage and this revealed comparative advantage strengthened between 2000 and 2005 by 734 percent but with a revealed comparative disadvantage in fixed vegetable oils and fats in 2005 as shown in table 6 below. However, the RCA for fixed vegetable oils and fats dropped from 1.15 to 0.27, a 77 percent reduction.

Table 7: RCA: Uganda and rest of World: Animal and vegetable oils and fats

Description	RCA 2000	RCA 2005	% Change in RCA
Animal and vegetable oils and fats	0.63	5.27	734
Fixed vegetable oils and fats	1.15	0.27	-77

Chemicals

This sub sector of the SITC categories is particularly important when examining the position of the manufacturing sector of Uganda. The results reveal that two industries have RCA greater than one: explosives and pyrotechnic products and perfume materials, toilet and cleansing. The rest, the economy is disadvantaged as shown in the table below.

Table 8: RCA: Uganda and rest of World: Chemicals

Description	**RCA 2000**	**RCA 2005**	**% Change in RCA**
Chemical elements and compounds	0.3	0.24	-23
Crude chemicals from coal, petroleum	-	0.10	-
Dyeing, tanning & colouring materials	0.17	1.00	488
Medicinal and pharmaceutical products	1.05	0.28	-73
Perfume materials, toilets & cleansings	5.10	8.63	69
Fertilizers, manufactured	0.03	0.01	-67
Explosives and pyrotechnic products	-	6.67	-
Plastic materials, etc.	0.74	0.35	-53
Chemical materials and products	0.01	0.00002	-99.8

The results in table above also show that in 2000, Uganda did not produce crude chemicals from coal, petroleum and explosives and pyrotechnic products.

Manufactured goods

Within this sub sector, one industry had a revealed comparative advantage, iron and steel. This comparative advantage strengthened by 40.4 percent between 2000 and 2005.

Table 8: RCA: Uganda and rest of World: Manufactured goods

Description	RCA 2000	RCA 2005	% Change in RCA
Leather	2.0	0.5	-75
Rubber manufacturers	0.6	0.2	-66.7
Wood and cork manufacturers	0.25	1.0	300
Paper, paper boards	0.67	0.6	-10.5
Textiles yarn, fabric	0.95	0.67	-29.5
Non-metallic mineral manufactures	0.14	0.57	307.1
Iron and steel	1.88	2.64	40.4
Non-ferrous metals	0.54	0.07	-87
Manufactures of metal	1.64	0.86	-47.6

The results also show that in 2000 Uganda had comparative advantage in producing leather and manufacturers of metal but this advantage vanished in 2005. This implies that leather and manufacturers of metal comparative advantage weakened considerably in 2005 by 75 and 47.6 percent respectively.

Machinery and transport equipment

Within this sub sector, results revealed that electrical machinery, appliances etc, not else specified and transport equipment has a revealed comparative advantage and this comparative advantage strengthened between 2000 and 2005 for electrical machinery by 3.36 percent and weakened for transport equipment by 20 percent as shown in table 9 below. Machinery, other than electric although revealed a comparative disadvantage in both years, it showed some improvement by 20 percent between 200 and 2005.

Table 9: RCA: Uganda and rest of World: Machinery and transport equipment

Description	RCA 2000	RCA 2005	% Change in RCA
Machinery, other than electric	0.5	0.6	20
Electrical machinery, appliances etc, not else specified	1.19	1.23	3.36
Transport equipment	1.41	1.21	-20

5.0 Conclusions and recommendations

In this paper, the researcher investigated comparative advantage of Uganda exports with the rest of the world and its development between 2000 and 2005. The evaluation of comparative advantage is based on the Balassa index of revealed comparative advantage and the analysis is carried out using data based on Standard International Trade Classification (SITC Revision 1).

The results provide useful insights into Uganda's export competitiveness. For example, the results indicate that Uganda had a revealed comparative advantage for four aggregated product categories and these are food and live animals, beverages and tobacco, crude materials and animal and vegetable oils and fats in 2005. Food and live animals and beverages and tobacco registered increase in the degree of revealed comparative advantage between 2000 and 2005.

Results further indicate a moderate competitive performance of Uganda's sectors since fifty percent of the estimated parameters confirm comparative advantage. However, this is promising when compared to that of 2000, 37.5 percent. In otherwords Uganda's competitive

performance increased by 12.5 percent between 2000 and 2005. At disaggregated level or industry level, results indicate a week competitive performance of Uganda's products since of 46 industries covered, only 13 revealed a comparative advantage (28.3 percent) in 2005.

These findings are reasonably helpful for policymakers, as it identifies the need for increasing the competitiveness of Uganda's export sectors. A broad based effort is needed to raise Uganda's export competitiveness. For instance, competitiveness is the ability to produce products that meet the test of international competition and since competitiveness is only applicable to firms and not countries because countries do not compete with each other the way corporations do (Krugman, 1994), Ugandan firms need to show strong commitment to quality improvement. Nevertheless, although firm's economic strengths and success are primarily determined by their internal management, the characteristics of the national business environment can substantially influence firm's performance. This paper therefore calls for government's efforts to further improve the business working environment, provide incentives that stimulate production at competitive level and programs that strengthen the sectors that have recorded competitiveness.

Finally, this study is first of its kind in Uganda, and given that further studies using alternative indices to balassa revealed comparative index will provide more insight into Uganda's export competitiveness. It will also be useful to carry out similar comparisons against specific trading partners like European Union and Asian countries to provide a specific reference for assessing Uganda's export competitiveness.

References

Amita Batra and Zeba Khan, (2005). "Revealed Comparative Advantage," An analysis for India and china. Indian Council for Research on International Economic Relations, No.168.

Balassa, B. (1965). "Trade Liberalization and 'Revealed' Comparative Advantage", *The Manchester School*, 33, 99-123.

Dedrick, J et al. (2001). Economic liberalization and the Computer Industry: Competing Outcomes in Brazil and Mexico. World Development 29 (7): 199- 1214.

DENIVA, (2006). Impact of the Economic Partnership Agreements (EPAs) with the European Union on the Ugandan Economy. A Synthesis of Existing EPA Impact Studies. CUTS/DENIVA Project Capacity Building of Eastern and Southern African Civil Society during the Economic Partnership Agreement Negotiations.

Dunmore J.C (1986). Competitiveness and Comparative Advantage of U.S. Agriculture. Economic Research Service, USCDA.

Fertő, Imre and Hubbard, L. J. (2002), Revealed Comparative Advantage and Competitiveness in Hungarian Agri-Food Sectors. *Discussion Papers*, MT–DP. 2002/8, Institute of Economics, Hungarian Academy of Sciences, Budapest.

Hatirli S.A, B.Ozkan and C. Fert (2004). Competitiveness of Turkish Fruits in the World Market. ISHS Acta Horticulturae 655: XV International Symposium on Horticultural Economics and Management.

Havrila .I and P. Gunawardana (2003). Analyzing Comparative Advantage and Competitiveness: An Application to Australia's Textile and Clothing Industries. Blackwell Publishing Ltd/University of Adelaide and Flinders University of South Austrialia.

Imre Ferto and Károly Attila Soós, (2006). Trade Specialisation in the European Union and in European Former Communist Countries. Hungarian Academy of Sciences, *Institute of Economics Journal* 108:1513-22.

Krugman, Paul (1994). Competitiveness: A Dangerous Obsession. Foreign Affairs 73(42).

Liesner, H.H. (1958), "The European Common Market and British Industry", *Economic Journal*, 68, 302-16.

Lim (1997). Analysis of North Korea's Foreign Trade by Revealed Comparative Advantage. *Journal of Economic Development*, Volume 22, Number 2, December 1997.

McDonald Daniel, Roneel Nair, Gil Rodriguez and Benjamin Buetre (2005). Trade Flows between Australia and China: An opportunity for free trade agreement. *Australian Bureau of Agricultural and Resource Economics Conference Paper 05.1.*

Meire and Seers 1984. Pioneers in Development (ed.), Oxford University Press,Oxford.

Morrissey, Oliver, and Andrew Mold (2006). "Explaining Africa's Export Performance – Taking a New Look." *Paper presented at the 9th Annual Conference on Global Economic Analysis, 15-17 June, Addis Ababa, Ethiopia 2006.*

Nesterenko Oksana (2006). Competitiveness of Ukrainian Products. A thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in Economics. National University "Kyiv-Mohyla Academy" Economics Education and Research Consortium Master's Program in Economics.

Pack, H. (1988). Industrialization and Trade. In: H. Chenery and T.N.S. Srinivasan (eds.), Handbook of Development Economics vol.1. Amsterdam: Elsevier Science Publishers B.V. pp. 333-80.

Prasad Raymond N. (2004). Fiji's Export Competitiveness: A comparison with selected Small Island Developing States Economics Department Reserve Bank of Fiji, Working Paper 2004/06.

Rooyen C.J van, D. Esterhuizen and O.T. Doyer (2005). How competitive is Agribusiness in the South African Food Commodity Chain? University of Pretoria/Agricultural Business Chamber. South Africa Journal of Economics Volume 69 Issue 3, pg 529-549.

Sharma, K. (1999). Trade Liberalisation and Manufacturing Performance in Developing Countries: New Evidence From Nepal. Commack: Nova Science Publishes, Inc.

Sharma1 Abhijit and Michael Dietrich (2004). The Indian economy since liberalization: the structure and composition of exports and industrial transformation (1980 – 2000) Paper to be presented at the DRUID Summer

Conference 2004 on Industrial dynamics, innovation and development Elsinore, Denmark, June 14-16, 2004.

Siggel Eckhard (2007). The Many Dimensions of Competitiveness: International Competitiveness and Comparative: - A Survey and Proposal for Measurement. Center for Economic Studies and the Ifo Institute for Economic Research.

Siggel. E and G. Ssemogerere (2004). Uganda's Policy Reforms, Industry Competitiveness and Regional Integration: A comparison with Kenya. Discussion Paper, Equity and Growth through Economic Research (EAGER).
Singh, A. (1982). Industrialization in Africa: A Structuralist view. In: M. Fransman(ed.),Industry and Accumulation in Africa. London: Henemann.

Uchida Y. and Cook P. (2004). 'The Transformation of Competitive Advantage in East Asia: an Analysis of Technological and Trade Specialization.' *Centre on Regulation and Competition. Working Paper Series*. Paper No. 63.

UNCTAD (1995). Handbook of International Trade and Development Statistics 1995. Vienna. UNCTAD.

Utkulu Utku and Dilek Seymen, (2004). Revealed Comparative Advantage and Competitiveness: Evidence for Turkey *vis-à-vis* the EU/15. *A paper presented at the European Trade Study Group 6th Annual Conference, ETSG 2004, Nottingham, September 2004.*

Vanek, J. (1968). The factor proportions theory: the n-factor case. Kyklos 4, *749–756.*

Yeats, A.J. (1992). "What do Alternative Measures of Comparative Advantage Reveal about the Composition of Developing Countries Exports?" *Indian Economic Review*, Vol. XXVII.