

## Uganda's Comparative Agricultural Export Performance: A Shift-Share Analysis Approach.

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### Abstract

The paper sought out to establish the comparative export performance of Uganda's main agricultural exports. The paper adopted a Shift Share Analysis (SSA) methodology, where Uganda's agricultural trade was decomposed into four components (i.e. Global component, Geographical component, Product Composition component and the Performance component). The study focused on the top agricultural exports that contribute an average of 35 percent of the nations export earnings, thus Coffee, Refined Sugar, Tobacco, Black tea, Palm oil and Vegetable fats & oils. These products were studied at the 6-digit HS level. The findings revealed that although Uganda gained market share for its main agricultural exports, such growth was marginal, and that much of the agricultural export earnings were dominated by one agricultural commodity. The study also revealed that in the BRICs trading Bloc, much of the agricultural exports were destined for India and the Russian federation, with less destined to high growth markets like China.

**Key words:** Comparative Export Performance, Shift-Share Analysis, Agricultural Exports & Uganda

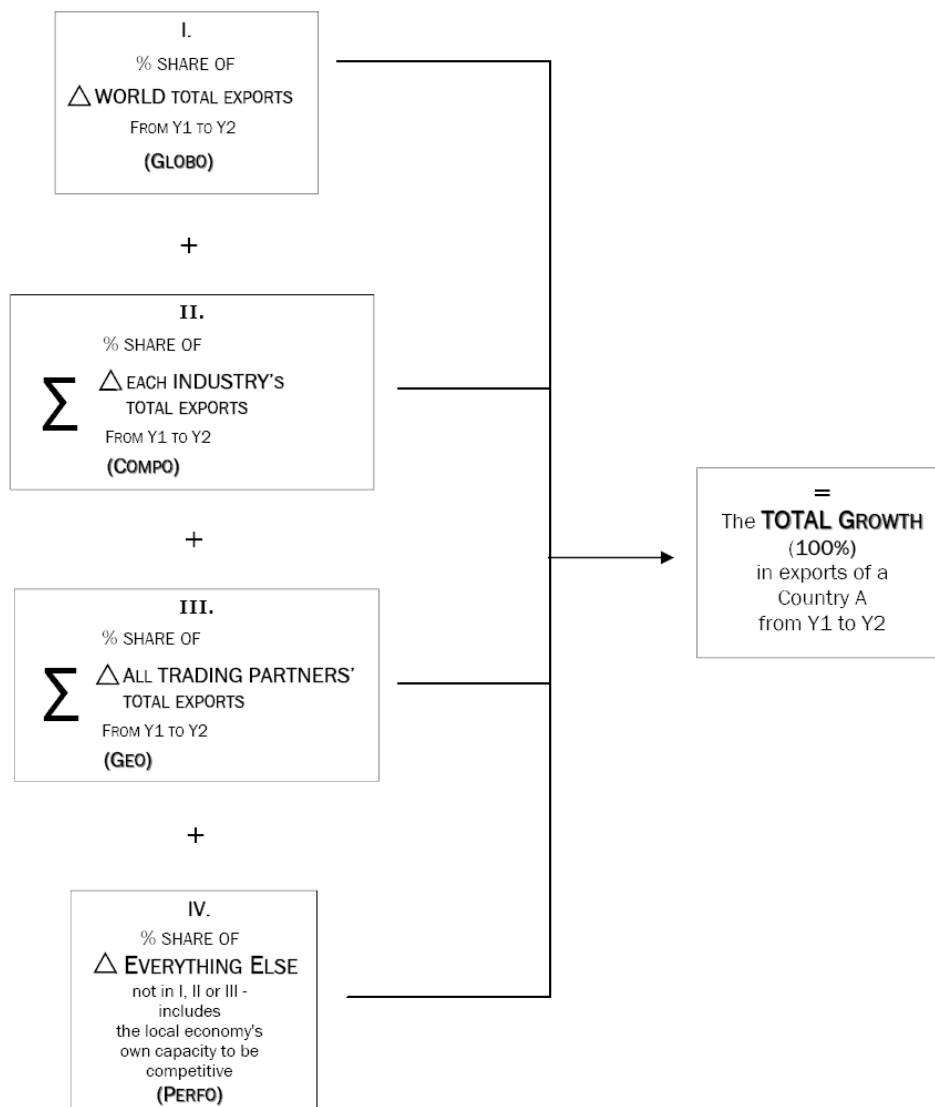
### 1. Introduction

Uganda's comparative advantage lies in agricultural production (Shinyekwa and Othieno, 2011), its favorable soils and climate significantly contribute to its continued agricultural success. The sector is considered the backbone to the nation's economy. This heavy reliance on agriculture is manifested in the significant proportion that the sector contributes to the nations export earnings (see table 1). The sector also contributes a significant proportion to the nation's GDP (37%) and 80 percent of rural employment. Given the importance of the sector, it's only prudent that growth of its exports into promising markets and diversification to promising rather than stagnating commodities is ensured. To date, no empirical study to the best of our knowledge has addressed the extent to which Uganda's agricultural exports are destined for markets whose growth is promising or stagnant. Thus no study in the context of Uganda has addressed Uganda's comparative export performance. It's against this background that the study sought to establish the comparative export performance of Uganda's major agricultural exports, thus establishing the extent to which export growth can be attributed to the overall growth in world trade, geographical diversification or product composition.

### 2. Theoretical Framework

A decomposition of a country's export growth can be indicative of the extent to which a country has outperformed or under performed its competitors in selecting high growth destination markets and product categories (sectors). The proposed method for such decomposition involves carrying out a Shift-Share Analysis or Constant Market Share Analysis (CMSA) when applied to international trade (Piezas-Jerbi and Nee, 2009). According to proponents of the model (Tyszynski, 1951; Leamer and Stern, 1970; Richardson, 1971) despite a country's efforts to sustain and maintain its share of every product in every market, it can still experience a reduction in its market share if it continues to export to markets that grow relatively slowly than the world average or if it continues to export products whose demand is declining (Skinner, 2009). The shift-share methodology is illustrated in the framework below.

### SHIFT-SHARE ANALYSIS IN INTERNATIONAL TRADE



*Adopted from Piezas-Jerbi and Nee (2009)*

Ahmadi-Esfahani and Anderson (2006) note that such an analysis will provide an indication to whether a country’s comparative export performance reflects changing global trends in demand. According to the World Bank, success or failure of a country’s exports relative to world averages can be attributed to any or all of the following three reasons; the nations exports may concentrate in commodities in which the demand is growing relatively fast (slowly), the nation’s exports may be going to relatively growing (stagnant) or, the country might have been able (unable) to compete effectively with supplying nations. Jimenez and Martin (2010) noted “ a country’s export market share and the changes in it over time are often used as measures of competitive capacity abroad”. They use the illustration that ‘ if a nation specializes in exports of goods (towards areas) where demand is particularly buoyant, the market share will increase even though competitiveness doesn’t improve”.

In Uganda’s case, Kyomugisha (2005) notes that the decision to modernize the agricultural sector was aided by a series of institutional reforms that resulted in less government-led interventions to more private investment into the sector, consequently, there is increased agricultural production. According to UNComtrade statistics, Sudan

is Uganda's main export destination, taking in approximately 18 percent of Uganda's total exports. The dominant agricultural exports that Uganda exports to Sudan include; coffee, refined sugar, maize seed & flour, palm oil and vegetable fat, and these exports have witnessed significant growth of 18 percent over the last five years. Diao, Dorosh and Rahman (2007) note that Africa's agricultural growth is dependent "not only in raising productivity and increasing production, but on increasing the competitiveness of Africa's African agriculture in the global market". They further inquire as to "which markets and which products offer the greatest potential".

### 3. Research Methodology and Data sources

The paper adopted the Shift-Share Analysis approach to decompose Uganda's agricultural trade into components that correspond to holding its market share constant in export markets, thus the Constant Market Share analysis approach. When applied to trade, the technique is able to identify the underlying sources of growth or decline in nations trade. The constant market share analysis approach is an indicator of the extent to which a country's comparative export performance reflects changes in global trends in demand (Ahmadi-Esfahani and Anderson, 2006). The method works under the assumption "any change in the country's exports that can not be accounted for by major explanatory factors such as global trade growth, the mix of trading partners or the product composition of traded goods can be interpreted as a change in competitiveness (Piezas-jerbi and Nee, 2009). The methodology is expressed in the equation;

$$V_2 - V_1 = r * V_1 + \sum (r_i - r) * V_i + \sum_i \sum_j (r_{ij} - r_i) * V_{ij} + \sum_i \sum_j (v'_{ij} - V_{ij} - r_{ij} V_{ij})$$

Where

$V_1$  = value of exports in the base period

$V_2$  = value of exports in the final period

$V_2 - V_1$  = change in the value of total exports between two time periods

$V_{ij}$  = value of exports of commodity i to country j in the base period

$V'_{ij}$  = value of exports of commodity i to country j in the final base period

$V_i$  = value of exports of commodity i in the base period.

$r$  = percentage increase in total world exports between two periods

$r_i$  = percentage increase in world exports of commodity i between the two periods

$r_{ij}$  = Percentage increase in world exports of commodity I to country j between the two periods

Uganda's agricultural export growth was decomposed into four components. The first is the Global component, which explains changes due to overall growth in world trade or changes relative to the general growth in world demand for exports. A positive effect indicates that a country has maintained her share of exports in foreign markets relative to the world. The second is the geographical component, which shows whether export specialization was directed towards dynamic export markets. The third component address the product composition, which illustrates whether the concentration of export was directed towards dynamic products in world demand or growth due to the mix of products, exported. Performance is the last component that is indicative of changes in competitiveness (Piezas-Jerbi and Nee, 2009).

The study was based on secondary data obtained from the International Trade Center and UNComtrade. It considered trade flow data for periods 2008-2012. The study categorized the data using the Harmonized System (HS), and specifically the products were analyzed the 6-digit levels (thus allowing for accurate international comparison). Additionally, the analysis grouped Uganda's agricultural exports by key market groupings; COMESA (Common Market for Eastern and Southern Africa), SADC (Southern African Development Community), EU-27 (European Union) and the BRIC (Brazil, Russia, India & China). Six commodities were chosen for the study and these commodities have been broken down to the six-digit harmonized system of commodity classification. Collectively, these commodities contribute an average of 35 percent of the nation's export earnings. They include; Coffee (not roasted, not decaffeinated), Refined Sugar (in solid form), Tobacco (unmanufactured, partly or wholly stemmed or stripped), Black tea (fermented & partly fermented in packages exceeding 3 kg), Palm oil and its fractions (refined but not chemically modified), Vegetable fats & oils fractions (hydrogenated).

### 4. Results

**Table I: The Structure Of Uganda's Top Agricultural Exports**

	Export Value ('000' USD)									
	2008		2009		2010		2011		2012	
<b>All products</b>	<b>1,724,295</b>	<b>%</b>	<b>1,567,614</b>	<b>%</b>	<b>1,618,603</b>	<b>%</b>	<b>2,159,077</b>	<b>%</b>	<b>2,357,493</b>	<b>%</b>
<b>UGANDA TOP AGRIC EXPORTS (HS6)</b>	<b>512,225</b>	<b>30</b>	<b>400,991</b>	<b>26</b>	<b>416,191</b>	<b>26</b>	<b>659,536</b>	<b>31</b>	<b>649,265</b>	<b>27.5</b>
*Coffee (not roasted, nor decaffeinated)	366,307	72	265,998	66	267,409	64	459,147	70	370,686	57.1
*Refined sugar (in solid form)	15,675	3	11,397	3	9,913	2	24,546	4	70,979	10.9
*Tobacco, (unmanufactured)	65,375	13	54,640	14	59,391	14	45,587	7	58,190	9.0
*Black tea (fermented) & partly fermented tea in packages exceeding 3 kg	20,625	4	21,803	5	27,362	7	33,773	5	51,304	7.9
*Palm oil and its fractions refined but not chemically modified	15,282	3	11,289	3	16,847	4	43,203	7	51,162	7.9
*Veg fats &	28,961	6	35,864	9	35,269	8	53,280	8	46,944	7.2

Source: Authors' Calculations based on ITC Trade statistics database (UNComtrade Statistics)

The results in table I above indicate that the main agricultural exports accounted for an average 28.1 percent of Uganda's export earnings between 2008 and 2012. However Coffee (not roasted, nor decaffeinated) was the main agricultural export accounting for an average of 65.8% between 2008 and 2012. Notably, the contribution of Refined sugar (in solid form) and palm oil has increased significantly over the past five years at 72% and 62 % respectively.

**Table II: key destination markets in COMESA for Uganda's major agricultural exports.**

Importers	Exported value ('000' USD)									
	2008		2009		2010		2011		2012	
<b>World</b>	<b>512,225</b>	<b>%</b>	<b>400,991</b>	<b>%</b>	<b>416,191</b>	<b>%</b>	<b>659,536</b>	<b>%</b>	<b>649,265</b>	<b>%</b>
<b>(COMESA) Aggregation</b>	<b>170,105</b>	<b>33</b>	<b>136,932</b>	<b>34</b>	<b>152,431</b>	<b>37</b>	<b>225,074</b>	<b>34</b>	<b>303,895</b>	<b>46.8</b>
<b>Sudan</b>	67,854	<b>39.9</b>	54,390	<b>40</b>	63,012	<b>41</b>	106,542	<b>47</b>	125,295	<b>41.2</b>
<b>Kenya</b>	66,839	<b>39.3</b>	41,857	<b>31</b>	45,640	<b>30</b>	47,198	<b>21</b>	73,678	<b>24.2</b>
<b>Rwanda</b>	17,587	<b>10.3</b>	23,771	<b>17</b>	25,781	<b>17</b>	46,630	<b>21</b>	68,514	<b>22.5</b>
<b>DRC</b>	13,149	<b>7.7</b>	11,404	<b>8</b>	11,578	<b>8</b>	13,447	<b>6</b>	28,640	<b>9.4</b>

Source: Authors' Calculations based on ITC Trade statistics database (UNComtrade Statistics)

**Table III: key destination markets in SADC for Uganda's major agricultural exports.**

Exported value										
Importers	2008		2009		2010		2011		2012	
<b>World</b>	<b>512,225</b>	<b>%</b>	<b>400,991</b>	<b>%</b>	<b>416,191</b>	<b>%</b>	<b>659,536</b>	<b>%</b>	<b>649,265</b>	<b>%</b>
<b>SADC Aggregation</b>	<b>26,158</b>	<b>5.1</b>	<b>24,128</b>	<b>6.0</b>	<b>22,141</b>	<b>5.3</b>	<b>24,042</b>	<b>3.6</b>	<b>34,471</b>	<b>5.3</b>
<b>DRC</b>	13,149	50	11,404	47	11,578	52.3	13,447	56	28,640	83.1
<b>Tanzania</b>	3,251	12	6,898	29	4,403	19.9	7,824	33	3,274	9.5
<b>South Africa</b>	8,674	33	5,341	22	4,274	19.3	2,317	10	2,116	6.1
<b>Swaziland</b>	573	2	202	1	-	-	-	-	249	0.7
<b>Angola</b>	464	2	-	-	1,003	4.5	-	-	192	0.6
<b>Lesotho</b>	-	-	20	0	-	-	-	-	-	0.0
<b>Zimbabwe</b>	47	0	263	1	883	4.0	454	2	-	0.0

Source: Authors' Calculations based on ITC Trade statistics database (UNComtrade Statistics)

**Table IV: key destination markets in EU-27 for Uganda's major agricultural exports.**

Exported Value										
Importers	2008		2009		2010		2011		2012	
<b>World</b>	<b>512,225</b>	<b>%</b>	<b>400,991</b>	<b>%</b>	<b>416,191</b>	<b>%</b>	<b>659,536</b>	<b>%</b>	<b>649,265</b>	<b>%</b>
<b>EU 27 Aggregation</b>	<b>164,960</b>	<b>32</b>	<b>137,622</b>	<b>34</b>	<b>167,859</b>	<b>40</b>	<b>239,725</b>	<b>36</b>	<b>184,424</b>	<b>28</b>
<b>Germany</b>	63,685	39	54,314	39	60,421	36	74,899	31	57,198	31
<b>Italy</b>	24,434	15	17,527	13	23,954	14	35,635	15	31,284	17
<b>Spain</b>	21,755	13	16,111	12	20,071	12	34,004	14	22,483	12
<b>Netherlands</b>	4,954	3	8,861	6	14,154	8	14,781	6	17,466	9
<b>United Kingdom</b>	16,202	10	11,440	8	7,231	4	11,522	5	15,301	8
<b>Belgium</b>	20,944	13	15,018	11	16,467	10	33,585	14	13,633	7

Source: Authors' Calculations based on ITC Trade statistics database (UNComtrade Statistics)

**Table V: key destination markets in BRICs for Uganda's major agricultural exports.**

Exported value ('000' USD)										
Importers	2008		2009		2010		2011		2012	
<b>World</b>	<b>512,225</b>	<b>%</b>	<b>400,991</b>	<b>%</b>	<b>416,191</b>	<b>%</b>	<b>659,536</b>	<b>%</b>	<b>649,265</b>	<b>%</b>
<b>BRIC Aggregation</b>	<b>13,085</b>	<b>2.6</b>	<b>13,106</b>	<b>3.3</b>	<b>12,636</b>	<b>3.0</b>	<b>21,936</b>	<b>3.3</b>	<b>16,185</b>	<b>2.5</b>
<b>India</b>	10,870	83.1	9,581	73.1	7,301	57.8	12,829	58.5	10,937	67.6
<b>Russian Federation</b>	1,766	13.5	2,322	17.7	4,256	33.7	7,579	34.6	4,638	28.7
<b>China</b>	444	3.4	1,203	9.2	1,049	8.3	1,528	7.0	610	3.8
<b>Brazil</b>	5	0.0	-	0.0	30	0.2	-	0.0	-	0.0

Source: Authors' Calculations based on ITC Trade statistics database (UNComtrade Statistics)

An examination of the destination structure of Uganda's main agricultural export trade indicates that most of the agricultural exports were destined for two trading Blocs (i.e. COMESA and the EU-27 at 36% and 39% respectively). In COMESA, most of the exports were destined for Sudan and Kenya, at an average share of 41.8% and 29.1% respectively between 2008 and 2012, collectively accounting for 71% of the COMESA market. In the EU-27 market, the key destination markets were Germany, Italy and Spain, at an average share of 34%, 14% and 12% respectively between 2008 and 2012. However, Germany's dominance is has declined by 8 % over the past years. In the BRICs market, most of the agricultural exports were destined for India and the

Russian Federation (68% and 26%) respectively, however, exports to India have declined by 7.5% between 2008 and 2012.

**Table VI: Uganda's agricultural exports to selected destinations 2008 and 2012**

		2008(V)				
Product (i)	Destination (j)	TOTAL	COMESA	SADC	EU-27	BRIC
	<b>TOTAL</b>	<b>32,400,637</b>	<b>2,012,533</b>	<b>1,188,855</b>	<b>20,340,601</b>	<b>8,858,648</b>
	Coffee (not roasted, not decaffeinated)	8,898,768	144,015	67,624	8,418,365	268,764
	Refined (sugar, in solid form)	4,747,134	344,254	234,820	4,040,790	127,270
	Black tea (fermented & partly fermented tea in packages exceeding 3 kg)	1,219,542	233,632	33,879	592,323	359,708
	Palm oil and its fractions refined (chemically modified)	10,848,526	1,022,593	584,703	3,111,648	6,129,582
	Vegetable fats & oils & fractions (hydrogenated)	2,272,437	123,982	96,821	1,566,139	485,495
	Tobacco	4,414,230	144,057	171,008	2,611,336	1,487,829
		2012(V')				
Product (i)	Destination (j)	TOTAL	COMESA	SADC	EU-27	BRIC
	<b>TOTAL</b>	<b>42,607,397</b>	<b>3,556,633</b>	<b>1,706,540</b>	<b>24,385,526</b>	<b>8,102,906</b>
	Coffee (not roasted, not decaffeinated)	12,042,626	203,621	67,589	11,158,925	612,491
	Refined (sugar, in solid form)	6,899,968	1,060,927	544,524	5,022,756	271,761
	Black tea (fermented & partly fermented tea in packages exceeding 3 kg)	1,724,685	472,618	53,813	668,713	529,541
	Palm oil and its fractions refined (chemically modified)	14,379,317	1,543,447	782,797	2,979,403	9,073,670
	Vegetable fats & oils & fractions (hydrogenated)	1,679,249	173,469	64,816	1,120,040	320,924
	Tobacco	5,881,552	102,551	193,001	3,435,689	2,150,311

Source: ITC Trade statistics database (UNComtrade Statistics)

**Table VII: Percentage change in total exports by selected destinations 2008 and 2012 (r)**

Product (i)	Destination (j)	Percentage change (%) r					
		TOTAL	COMESA	SADC	EU-27	BRIC	UGANDA
	<b>TOTAL</b>	<b>31.50%</b>	<b>76.70%</b>	<b>43.50%</b>	<b>19.90%</b>	<b>-8.50%</b>	<b>36.7%</b>
<b>Coffee (not roasted, not decaffeinated)</b>		<b>35.30%</b>	41.40%	-0.10%	32.60%	127.90%	0.25%
<b>Refined (sugar, in solid form)</b>		<b>45.40%</b>	208.20%	131.90%	24.30%	113.50%	352.82%
<b>Black tea</b>		<b>41.40%</b>	102.30%	58.80%	12.90%	47.20%	148.75%
<b>Palm oil</b>		<b>32.50%</b>	50.90%	33.90%	-4.20%	48%	234.79%
<b>Vegetable</b>		<b>-26.10%</b>	39.90%	-33.10%	-28.50%	-33.90%	62.09%
<b>Tobacco</b>		<b>33.20%</b>	-28.80%	12.90%	31.60%	44.50%	-10.99%

Source: Authors' Calculations based on ITC Trade statistics database (UNComtrade Statistics)

**Classic shift-share calculations for Uganda's Main Agricultural Exports (2008-2012)**

TOTAL CHANGE =  $V' - V$   
 = 10,206,760

(1) GLOBAL COMPONENT =  $r * V$   
 = 10,206,201

(2) SECTORAL COMPONENT =  $\sum_i (r_i - r) V_i$   
 = -6,657

(3) GEOGRAPHICAL COMPONENT =  $\sum_i \sum_j (r_{ij} - r_i) V_{ij}$   
 = 1,530

(4) PERFORMANCE COMPONENT =  $\sum_i \sum_j (V'_{ij} - V_{ij} - r_{ii} V_{ij})$   
 = -3,427

**Converting these contributions to share in total change:**

Global: 99.9 % + Sectorial: -0.07% + Geographic: 0.01% + Performance -0.03%

The results of the Shift-Share analysis showed that 99.9 percent of the increase in agricultural exports could be attributed to a general rise in world exports, whereas 0.07 percent of market share was lost due to the global behavior of the individual agricultural commodities. There was 0.01 percent increase in share attributed to the selected destination markets, and 0.03 percent of the loss in market share would be accounted for by the loss in competitiveness.

**5. Conclusion, Recommendations and limitations**

The study sought out to establish the comparative advantage of Uganda's major agricultural exports and the results indicate that although market share was gained for the selected products, such gain was marginal. This could partly be explained by Uganda's heavy reliance of one agricultural export (i.e. Coffee: not roasted, nor decaffeinated-65.8%). In the BRICs trading bloc, much of the agricultural exports were destined for India and Russia, and very little heading for China. Trade data indicates a huge potential of trade in the Chinese market (see annex A1) and therefore, Uganda ought to explore that possibility.

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## Annexes

**Table A1: showing china’s imports of Uganda’s top agricultural exports between 2008-2012**

Products	Imported value ('000' USD)				
	2008	2009	2010	2011	2012
*Palm oil and its fractions refined but not chemically modified	4,685,841	3,849,531	4,544,295	6,538,781	6,451,857
*Tobacco, unmanufactured, partly or wholly stemmed or stripped	698,633	735,748	693,142	1,009,497	1,178,259
*Refined sugar, in solid form, nes	94,641	71,519	124,755	263,289	219,780
*Veg fats & oils & fractions hydrogenatd,inter/re-esterifid,etc,ref'd/not	304,566	88,805	133,546	375,565	158,360
*Coffee, not roasted, not decaffeinated	40,879	33,689	45,998	98,927	127,785
*Black tea (fermented) & partly fermented tea in packages exceedg 3 kg	9,237	7,593	26,097	32,964	38,791
<b>TOTAL</b>	<b>5,833,797</b>	<b>4,786,885</b>	<b>5,567,833</b>	<b>8,319,023</b>	<b>8,174,832</b>

Source: ITC Trade statistics database (UNComtrade Statistics)