The Competitiveness of Uganda's Non-traditional Agricultural Exports: The Case of Flowers Exports

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Abstract
Flowers exports make a significant proportion of Uganda's non-traditional agricultural export (NTAE) earnings. This study aimed to gain deeper insights into the extent to which the competitiveness of Uganda's floricultural exports is associated with market distribution, commodity composition and competitiveness effect; and thus establish whether Uganda's NTAEs are based on favourable commodity compositions, and are destined for relatively faster-growing markets. The data was extracted from the UN Comtrade database; and the base period was 2015–2018. For analysis, the study employed the Constant Market Share method that enables the identification of factors driving changes in export performance, and thus determine which factors are contributing positively or negatively to export growth. It also used the Revealed Comparative Advantage (RCA) index, which enabled a simple and straightforward comparison of competitiveness. The study finds that Uganda heavily relies on a single export market (Netherlands) for its earning from roses and unrooted cuttings. In the chosen base period, Uganda's market share in the Netherlands increased by 2.4%, while that of roses' exports declined by 9.2%. The favourable export performance of unrooted cuttings and slips were predominantly attributed to the commodity effect, which accounted for 62.9% of the export growth; while the unfavourable export performance of Uganda roses in the same base period was attributed to the competitiveness in the period (-221.6%). The results of the RCA showed that while both commodities enjoyed a comparative advantage in the base period, that of roses was steadily declining. The study was motivated by the need to increase gains from export diversification in the context of NTAEs, from the perspective of a country that predominantly relies on traditional agricultural commodities for its exports.

Keywords: export performance**,** non-traditional agricultural exports, flowers' exports, Uganda, constant market share analysis, revealed comparative advantage.

1. Introduction and Background

Uganda has for long relied upon traditional agricultural exports such as coffee, cotton, and tea for its export earnings. However, volatility and declining world prices has created the urge for diversification into non-traditional agricultural exports (NTAEs) (Rwigema, 2004). Subsequently, Uganda prioritized the promotion of NTAEs as a macroeconomic policy imperative (Kasente, Lockwood, Vivian & Whitehead, 2002). The production and export of NTAEs were intended to reduce Uganda's dependence on a few export commodities, and hedge against large fluctuations in traditional

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commodity prices (Dijkstra, 2001). Uganda is dependent on one standard commodity (coffee) for a significant proportion of its export earnings. Unfortunately, coffee exports are vulnerable to commodity price fluctuations, affecting export earnings (Addison, Ghoshray & Stamatogiannis, 2015). Dijkstra (2001) says that the combination of a favourable climate and cheap rural labour enables it to produce a substantial range of NTAEs that are internationally competitive (due to low production costs). However, the growth of NTAEs is yet to match the contribution of traditional agricultural exports. Product lines such as coffee (not roasted and non-decaffeinated) have continuously dominated its export earnings (see Figure A1). Additionally, in Uganda, export revenues from NTAEs are characterized by inconsistencies and fluctuations.

Floriculture exports dominate Uganda's NTAEs sector. Nakaweesi (2017) reports that Uganda's floricultural industry is over 20 years old, and flowers make up the top five NTAE commodities. According to the International Trade Center (2018), Uganda earned $57.6m from exporting flowers (unrooted cuttings and roses) in 2017, reflecting a growth in export earnings of 23.5 percent between the years 2010–2017. Subsequently, flower exporters have received substantial tax incentives from the Uganda government to increase production (*The East African*, 2017). Table 1 shows the world's top 10 importers of flowers for the period 2013–2017.

Table 1: Top Ten Importers of Unrooted Cuttings and Slips in 2017

	Importers	Imported Value ('000 US$)				
		2013	2014	2015	2016	2017
	World	**483,431**	**486,372**	**450,730**	**467,452**	**480,695**
1.	Netherlands	124,476	111,837	110,365	111,398	115,613
2.	USA	87,383	93,122	97,802	93,074	97,243
3.	Germany	46,667	49,580	44,466	44,313	42,232
4.	Canada	28,180	27,449	27,242	28,008	30,152
5.	Italy	24,173	25,951	21,403	32,624	25,108
6.	Denmark	11,950	17,304	13,972	16,925	16,369
7.	Japan	13,946	14,409	13,335	14,775	14,936
8.	Spain	7,988	9,118	9,009	11,911	11,106
9.	France	5,794	5,897	7,292	8,232	9,153
10.	Belgium	15,661	12,960	7,911	7,078	8,529

Source: ITC calculations based on UN COMTRADE and ITC statistics.

Table 1 shows substantial world demand for floricultural products ($480m in 2017), with three markets (The Netherlands, USA and Germany) importing 50% of the world's supply. Table 2 shows that, with the exception of the Netherlands, developing countries have continuously gained ground as significant suppliers of cut-flowers (Ever, Amoding & Kirshnan, 2014); and this is especially true for unrooted cuttings and slips. Table 2 further shows that developing countries rank among the top 5 suppliers, and contributed almost 29.7 percent to world exports of unrooted cuttings and slips in 2017. Hughes (2002) attributes this north-south shift in supply to predominantly be due to two factors. The first is the year-round cultivation owing to a favourable climate (Martinho, 2012) in developing economies of Africa, South America, and the Caribbean. Secondly, during the 1980s, development organizations mandated that developing nations enhance their export

sectors, specifically focusing on export crops, to generate foreign exchange for addressing debt repayment. However, when compared regionally, Kenya ranks higher than Uganda at $52m in 2017, vis-à-vis Uganda's $30m in the same year.

Table 2: Major World Suppliers of Unrooted Cuttings and Slips

		Imported Value ('000 US$)				
		2013	*2014*	*2015*	*2016*	*2017*
	World	**459,718**	**470,475**	**454,919**	**447,647**	**479,260**
1	Netherlands	67,368	62,368	57,818	58,145	71,834
2	Kenya	51,692	62,068	44,327	44,092	52,304
3	Guatemala	28,142	23,625	25,523	27,374	35,395
4	Uganda	25,750	27,629	27,786	26,973	30,206
5	Ethiopia	22,378	24,097	22,637	24,964	24,901

Source: ITC calculations based on UN COMTRADE and ITC statistics.

Uganda, just like several Sub-Saharan African (SSA) countries, is a beneficiary of preferential market access into Europe and the United States, and has thus taken the opportunity to achieve diversification of its export commodities (Singh, 2002). The production and exports of NTAEs were meant as interventions to reduce Uganda's dependence on a few export commodities, and hedge against large fluctuations in traditional commodity prices (Dijkstra, 2001). Despite efforts to improve production and export competitiveness, NTAEs are yet to match and exceed the contribution of traditional commodity exports. The vulnerabilities associated with traditional commodities have made NTAEs increasingly appealing, and consequently Uganda has invested substantially to improve its competitiveness internationally. Since the introduction of flowers in Uganda as a non-traditional export, empirical studies are yet to ascertain the changes in their export structure (the structural effect). Without that, determining whether Uganda's NTAEs are based on favourable commodity compositions and are destined for relatively faster-growing markets is a matter of guesswork. To wit: to what extent is export performance affected by the choice of export markets (commodity distribution) or commodity composition? A loss or gain in aggregate market share is still plausible for a given export despite growth in export volumes and value that are attributed to product compositions and export market(s) choices.

This phenomenon is accentuated by Pandiella (2015: 5), who opines:

> … even if a country maintains its share in individual markets, it can still have a decrease in its aggregate market share if the country is specializing in markets that grow more slowly than world markets or in products for which demand is growing more relatively slowly than average.

The general objective of this paper was to decompose the change in the market share of Uganda's flowers exports, and thus identify the contribution of each component to competitiveness. Specifically, the paper sought to: (i) establish the structure of Uganda's floriculture exports; (ii) ascertain the extent to which the competitiveness of Uganda's floricultural exports is associated with market distribution, commodity composition and competitiveness effect; and (iii) establish whether Uganda's

floricultural exports have comparative advantage (disadvantage) in their key export markets: all of which have not gained the attention of previous studies.

The rest of the paper is structured as follows. The subsequent section offers an examination of both theoretical and empirical literature. Afterwards, the methodology section details the theoretical and empirical models utilized in the study, as well as the data and variables employed. Following this, section four analyses and discusses the empirical findings. Lastly, section five provides a conclusion and discusses the potential policy implications.

2. Literature Review
2.1 Theoretical Review
A universally accepted definition of competitiveness is yet to be established, given that the concept applies to a wide range of disciplines, including business strategy, economics, and engineering (Waheeduzzaman & Ryans, 1996; Eckhard, 2006). Scott and Lodge (1985) regard international competitiveness as "… a country's ability to create, produce, distribute and service products in international trade while earning rising returns on its resources." Wenzel and Wolf (2016) define it as "… a country's ability to benefit from the global exchange of goods and services." On the other hand, Porter (2011) refers to competitiveness as "… the productivity with which a nation uses its human, capital and natural resources." This study will adopt the definition of export competitiveness in trade at a country level rather than at firm level. According to Huo (2014), the "… competitiveness of a country represents its ability to maintain a preferable relative position in trade with the rest of the world." Huo (ibid.) further opines that competitiveness can increase, decrease or remain stagnant. When measured internationally, competitiveness can be either micro or macro.

Micro international competitiveness considers a firm or an enterprise as the unit of analysis, while macro global competitiveness takes a nation as the unit of analysis (Scott & Lodge, 1985). However, Eckhard (2006) reveals an ambiguity in the definition of the concept by highlighting, for instance, a prominent point of departure that relates to the level of analysis. Benkovski and Worz (2018) opine that by measuring changes in export share, especially since rising shares reveal a strong performance, one can establish a country's international competitiveness. Buckley, Pass and Prescott (2010) also consider the 'percentage share of world output' in addition to export market share; the rationale being that "… a fall in the percentage share of world exports is an indication of declining competitiveness." Most export competitiveness measures rely upon export metrics derived from trade flow data, and the commonly used measures of export competitiveness have relied upon two metrics: the constant market share analysis, and the revealed comparative advantage index (Buckley et al., 2010; Rifin, 2010; Kaur & Nanda, 2011; Huo, 2014).

2.2 Empirical Review
Various empirical studies have investigated NTAEs in Sub-Saharan Africa. Gabre-Madhin and de Vette (2004) examined the development of Uganda's horticulture and floriculture sectors, and revealed that emphasis should be placed in

international markets, especially markets where it has preferential access such as the European Union. In addition, the study points out the need for market diversification to reduce the reliance on a few single markets. Similarly, Donohue (2003) examined the socio-economic impact of the floriculture industry in Uganda and found that the majority of Uganda's floriculture exports are destined for the European market, particularly the Netherlands and the United Kingdom; and hence recommended the need to explore other markets such as the US or Asia. Likewise, Ignacio (2007) used a case study of Uganda's floriculture industry to establish the impact of standards and technical regulations on the export competitiveness of developing countries. The findings showed that compliance with international standards and regulations remains a major challenge for small-scale farmers and exporters in the country.

Similarly, in the context of the floriculture industry in Kenya, Ethiopia, and Uganda, Nyangito (2004) examined the performance of African agricultural exports and the conditions of their external market access in the context of international trade reforms. Their findings revealed that flowers exports have significantly improved over the years; however, competitiveness is hindered by high tariffs and technical barriers to trade in international markets. Rudaheranwa (2005) focused on the impact of transport barriers on Uganda's trade, and found that the competitiveness of Uganda's non-traditional agricultural exports (such as flowers) is negatively affected by high transportation costs, poor infrastructure, and lengthy border clearance procedures. In another study, Evers, Amoding and Krishnan (2014) examined the role of global value chains in the floriculture industry in Uganda, and their findings pointed out the integral role of global value chains (GVCs) to increase the participation of Uganda's floriculture exporters in international markets.

In Uganda, Atingi-Ego and Sebudde (2004) sought to study Uganda's equilibrium real exchange rate (ERER) and its implications for non-traditional export performance. The study applied the behavioural equilibrium exchange rate (BEER) model, and the findings revealed that the actual real exchange rate was persistently overvalued compared to the estimated ERER, which could negatively affect the country's non-traditional export performance. The study further showed that a sustained overvaluation of the real exchange rate could lead to a decline in the competitiveness of Uganda's non-traditional exports as they become relatively more expensive in the global market.

In Zambia, Mwansakilwa, Tembo and Mugisha (2013) examined the growth and competitiveness of NTAEs; adopting two indicators to measure competitiveness: revealed comparative advantage (RCA), and net export index (NEI). Their findings revealed that Zambia has a revealed comparative advantage (RCA) in the exports of fresh vegetables, fruits, flowers, and cotton; indicating that the country has a comparative advantage in producing and exporting these products. Similarly, the NEI values for non-traditional agricultural exports from Zambia to the European

Union (EU) and South Africa were found to be generally low, indicating that Zambia faces significant competition in these markets. However, the NEI values for some products—such as fresh vegetables and flowers—were high, indicating that Zambia's exports of these products are competitive in the markets. The authors further revealed the lack of adequate market information, and limited competitiveness in the global market.

In Kenya, Meme (2015) examined the export performance of the horticultural sub-sector in Kenya using the revealed comparative advantage (RCA) index, and the relative export advantage (RXA) index. The findings showed that Kenya had a revealed comparative advantage (RCA) in horticultural exports, indicating that it had a competitive advantage in producing and exporting horticultural products compared to other countries. In addition, it found out that Kenya had a relative export advantage (RXA) in horticultural exports to the EU, indicating that its horticultural exports were competitive in the European market.

Hallam (2004) authored a report on the market for NTAEs, looking into the competitive environment in international markets for agricultural products. The report notes that the global market for non-traditional agricultural products is highly competitive, with numerous producers and exporters vying for the market share. Quite uniquely, the report highlights the role of certification schemes, such as organic or fair-trade certifications, in building consumer confidence and increasing the marketability of non-traditional agricultural export products.

NTAEs have dominated the export diversification debate in developing countries such as Uganda. For instance, Dijkstra (2001) have argued that export diversification through non-traditional agricultural products has the potential to promote economic growth and reduce the dependence on traditional exports in Uganda. O'Connell and Golub (2008) also push for the case of export diversification into higher value-added products, such as flowers, for export competitiveness of LDCs. Similarly, Delgado (1995) argues that agricultural diversification is essential for promoting economic growth and reducing poverty in SSA. This involves shifting away from traditional staple crops towards higher-value crops such as fruits, vegetables, and cash crops. In Rwanda, using flowers as a case study, Rwigema (2004) carried out an analysis of the non-traditional agricultural export potential of the country, and found that it was highly feasible given its access to regional and international markets.

On the basis of the literature above, it is evident that although scholars have examined several facets of the competitiveness of NTAEs like the floriculture sector, they have hardly established whether Uganda's NTAEs are based on favourable commodity compositions, and are destined for relatively faster-growing markets. In other words, the empirical studies are yet to link the competitiveness of Uganda's floriculture exports to effects such as commodity composition, market distribution, or world trade in general. This paper contributes to an in-depth

understanding of the competitiveness of Uganda's NTAEs by establishing whether competitiveness is based on favourable commodity compositions, or on being destined for lucrative international markets.

3. Methodology
3.1 Model Specification
3.1.1 Constant Market Share Analysis

The constant market share analysis (CMSA) (Fleming & Tsiang, 1958; Richardson, 1971) is used to analyse international trade by decomposing change in the market share of a given country into a series of components, and consequently isolating the contribution of each element in determining the final result. The CMSA was chosen because it enables to identify factors that drive changes in a country's export performance, and to determine which factors are contributing positively or negatively to export growth (Sari, 2010; Cai & Leung, 2008). According to Gonzalez (2015), the CMSA is an arithmetic breakdown that distributes the growth of a country's market share over a period of time into a structural component, essentially isolating the impact of specialization by product and geographical area, as well as other factors reflecting changes in individual market shares.

The product/commodity effect measures the total change in a market share resulting from the concentration of a country's export of a given commodity to its total exports, essentially the impact of product specialization. If a country specializes in products with growing / promising foreign demand, then the product effect will be positive (Bonanno, 2016). The market distribution effect considers the destinations (choice of markets) of a given country's exports, which will be positive if the country's exports are destined for growing markets, and/or where demand is growing. The constant market share analysis is expressed as:

$$\Delta X = PE + ME + \varepsilon$$

Where:
ΔX = the change in total exports from period 0 to period 1.
PE = the product or commodity effect due to the composition of exports.
ME = the market effect of distribution effect due to the destinations of the exports.
ε = the competitiveness effect.

3.1.2 Revealed Comparative Advantage (RCA) Index (Balassa, 1965)

Commonly referred to as the Balassa index, the revealed comparative advantage (RCA) computes the revealed advantages or disadvantages of a specific country in a given product or service by examining its trade flows, and on this basis, its ability to identify a nation's vital sectors. Consequently, it has gained international acceptance as a measure of global competitiveness (Wei & Chunming, 2012; Kuldilok, Dawson & Lingard, 2013).

In justifying its application to research with regard to the revealed comparative advantage, Arsyad, Amiruddin, Suharno and Jahroh (2020) opine that it has been used in previous studies to analyse the competitiveness of different products and countries in international trade. In addition, they note that it provides a simple and straightforward way to compare the competitiveness of a particular product. The RCA index is generally expressed as:

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

Where: X_{ij} = exports of product j from country i
X_{it} = total exports from country i
X_{nj} = total exports of product j from the reference area (e.g., world)
X_{nt} = total exports from the reference area

3.2 Description of the Data
The unit of analysis was floriculture exports aggregated at the national level, and the data used in the analysis was derived from the UN Comtrade database; and the trade flow data extracted at the 6-digit level of the Harmonized System, thus ensuring accurate international comparability between importing and exporting countries. Unrooted cuttings and slips and roses dominate Uganda's exports of flowers (95% of all flowers' exports in 2018). The study, therefore, only focused on the above two categories as presented in Table 3. For the application of the CMSA model, this paper chose the period 2016–2018: it was in this period that Uganda's flower exports grew by 17.5 percent.

Table 3: Population of the Study

Exports		Specifics	HS Code
1	Flowers	a) Unrooted cuttings and slips	'060210
		b) Roses, whether or not grafted	'060240

Source: International Trade Center and UN COMTRADE

Export metrics were used to measure competitiveness, and therefore export data was sought. The UN Comtrade database operates a comprehensive web-based database of trade flows, and thus comprised the primary data sources. The data collected was analysed at the 6-digit level. At the 6-digit level, product descriptions are harmonized internationally; thereby enabling accurate international comparisons.

4. Results
4.1 The Structure of Uganda's Unrooted Cuttings and Slips
     (HS Code 060210) Exports
An average of 75.2 percent (2016–2018) of Uganda's exports of unrooted cuttings and slips are destined for a single export market, that is, the Netherlands. As Table 4 indicates, other minor export markets are made to Germany, the United States of America, Kenya; and while exports to Greece show a declining trend, those to South Africa, Norway and Japan, Canada, and Spain grew.

**Table 4: Top Export Markets for Uganda's Flower Exports:
Unrooted Cuttings and Slips (HS code 060210)**

Importers	Exported Value (US$ '000)		
	2016	*2017*	*2018*
World	**26,973**	**30,206**	**35,510**
1. Netherlands	19,337	23,049	27,559
2. Germany	1,715	1,692	1,383
3. United States of America	1,855	1,006	1,293
4. South Africa	249	355	1,012
5. Norway	359	546	836
6. Japan	135	126	743
7. Kenya	711	602	641
8. Italy	932	331	622
9. Canada	438	403	507
10. Spain	147	179	204
11. Greece	92	492	189

Source: International Trade Center and UN COMTRADE

4.1.1 Unrooted Cuttings and Slips

Tables 5, 6 and 7 show the constant market share analysis results for Uganda's unrooted cuttings, and reveals that there was growth in the exports of unrooted cuttings all through 2016–2018. In the period 2016–17, the competitive effect was the greatest influencer in the export performance of Uganda's exports of unrooted cuttings, accounting for 98.8% of the growth in exports. This growth was followed by the size of the product that accounted for 23.7% of this growth. This growth was offset by the distribution effect, which offset this growth by -22.5%.

**Table 5: Uganda's Market Share for Unrooted Cuttings and Slips
(HS Code 060210) for the Period 2016–2018**

	Exported Value (US$ '000)								
	2016			**2017**			**2018**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Importing Countries	*World Export*	*Uganda's Exports*	*Uganda's Market Share (%)*	*World Export*	*Uganda's Exports*	*Uganda's Market Share (%)*	*World Export*	*Uganda's Exports*	*Uganda's Market Share (%)*
Netherlands	121,070	19,337	15.97	120,431	23,049	19.14	150,243	27,559	18.34
USA	93,074	1,855	1.99	97,243	1,006	1.03	105,747	1,293	1.22
Germany	46,275	1,715	3.71	41,353	1,692	4.09	49,895	1,383	2.77
Canada	27,989	438	1.56	30,166	403	1.34	33,984	507	1.49
Italy	32,622	932	2.86	25,111	331	1.32	33,649	622	1.85
Poland	7,074	9	0.13	6,793	1	0.01	9,535	11	0.12
Denmark	15,532	-	-	16,959	-	-	19,294	-	-
Japan	14,803	135	0.91	14,947	126	0.84	14,712	743	5.05
Belgium	7,075	-	-	8,536	-	-	9,101	-	-
Spain	11,921	147	1.23	11,375	492	4.33	12,143	189	1.56
Others	99,586	2,405	2.41	117,705	3,106	2.64	133,602	3,203	2.40
Total (∑)	**477,021**	**26,973**		**490,619**	**30,206**		**571,905**	**35,510**	

Source: Authors calculations based on UN COMTRADE and ITC statistics

For the period 2017–2018, the size of the product effect accounted 94.3% of the export growth of unrooted cuttings and slips, and the competitive impact followed this at 39%. However, the distribution effect offset this growth at -33.4%. For the overall period 2016–18, the size of the product effect, the competitive impact, and the distribution effect contributed 62.9, 29.8% and 7.4%, respectively, to the export performance of Uganda's unrooted cuttings and slips.

Table 6: Determination of Constant Market Share Hypothetical Export Values for Unrooted Cuttings and Slips (HS Code 060210): 2016–2018

Importing Countries	Exported Value (US$ '000)					
	(10)	(11)	(12)	(13)	(14)	(15)
	(3) × (4)	(5)–(10)	(6) × (7)	(8) × (12)	(3) × (7)	(8) × (14)
Netherlands	19,233	3,816	28,755	(1,196)	23,996	3,563
USA	1,935	(929)	1,094	199	2,108	(815)
Germany	1,534	158	2,042	(659)	1,849	(466)
Canada	471	(68)	454	53	532	(25)
Italy	718	(387)	444	178	961	(339)
Poland	9	(8)	1	10	12	(1)
Denmark	–	–	–	–	–	
Japan	136	(10)	124	619	134	609
Belgium	–	–	–	–	–	
Spain	140	352	525	(336)	150	39
Others	2,837	269	–	3,203	3,226	(23)
Total (∑)	**27,012**	**3,194**	**33,438**	**2,072**	**32,969**	**2,541**

Table 7: Determination of the Effects for Export Growth of Unrooted Cuttings and Slips (HS Code 060210): 2016–2018

Analysis	2016–2017	%	2017–2018	%	2016–2018	%
Total Gain (Actual 2–Actual 1)	3233	**100**	5304	**100**	8537	**100**
Size of the Product Effect (Calculated Hypothetical-Actual 1)	769	**23.7**	5,005	**94.3**	5,365	**62.85**
Distribution Effect (Hypothetical Total Calculated Hypothetical 1)	-730	**-22.5**	-1,772	**-33.4**	630	**7.38**
Competitive effect (Actual 2–Hypothetical Total)	3193	**98.79**	2071	**39.0**	2542	**29.8**

4.2 The Structure of Uganda's Roses, Whether or Not Grafted (H.S. code 060240) Exports

In the period 2016–2018, there was a decline in Uganda's exports of roses, of which the bulk were destined for a single market (The Netherlands). Despite a reduction in the major export markets, there was substantial growths in exports to Japan (1550%) and the US. (5866%). Similarly, sporadic export tendencies were significant in a couple of markets; the Russian Federation, Turkey, Sudan, and the UAE.

Table 8 shows top export markets for Uganda's roses and reveals an increase in exports of Uganda's roses in the period 2016–2017. Tables 9, 10 and 11 show the constant market share analysis results for Uganda's roses, and they reveal that the increase resulted from the size of the product effect and distribution effect, accounting for 64.6 % and 54%, respectively. The competitive effect, however, offset the increase by -18.6%. In the subsequent period (2017–2018), the competitive effect accounted for the most significant decrease in exports of roses (93%). The size of the product effect followed this decrease at 18.5%. However, this decline was offset by the distribution effect at 11.5%. For the overall period 2016–2018, the decline in export performance resulted from the competitive effect, accounting for 221.6%. The size of the product effect and the distribution effect offset this decline in export performance at -43% and -78.6, respectively.

Table 8: Top Export Markets for Uganda's Roses, Grafted/Un-grafted
(HS Code 060240)

Importers	Exported Value (US$ '000)		
	2016	2017	2018
World	**24,481**	**27,442**	**22,198**
1. Netherlands	23,423	26,521	20,875
2. United Kingdom	999	676	738
3. Japan	22	223	363
4. United States of America	3	9	179
5. Russian Federation	5	-	21
6. Turkey	12	-	14
7. Sudan	-	1	7
8. United Arab Emirates	-	1	2

Source: International Trade Center and UN COMTRADE

Table 9: Uganda's Market Share for Roses, Grafted/Un-grafted
(HS code 060240) for the Period 2016–2018

Importing Countries	2016			2017			2018		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	World Export	Uganda's Exports	Uganda's Market Share (%)	World Export	Uganda's Exports	Uganda's Market Share (%)	World Export	Uganda's Exports	Uganda's Market Share (%)
Netherlands	51,971	23,423	45.07	58,713	26,521	45.17	58,163	20,875	35.89
Denmark	25,418	–	–	27,264	–	–	26,559	–	–
Germany	20,108	–	–	17,471	–	–	18,123	–	–
Canada	13,076	–	–	14,333	–	–	13,735	–	–
Poland	7,307	–	–	6,968	–	–	6,485	–	–
Belgium	3,722	–	–	3,369	–	–	3,416	–	–
Italy	3,182	–	–	3,143	–	–	4,060	–	–
USA	2,721	3	0.11	3,013	9	0.30	2,983	179	6.00
Lithuania	2,512	–	–	3,452	–	–	3,144	–	–
Serbia	1,900	–	–	2,348	–	–	2,450	–	–
Others	36,648	1,055	2.88	41,665	912	2.19	36,201	1,144	3.16
Total (∑)	**168,565**	**24,481**		**181,739**	**27,442**		**175,319**	**22,198**	

Source: Authors calculations based on UN COMTRADE and ITC statistics

Table 10: Determination of the Constant Market Share Hypothetical Export Values for Roses, Whether or not Grafted (HS code 060240): 2016–2018.

Importing Countries	10 (3) × (4)	11 (5) – (10)	12 (6) × (7)	13 (8) × (12)	14 (3) × (7)	15 (8) × (14)
Netherlands	26,462	59	26,273	-5,398	26,214	(5,338.70)
Denmark	0	–	–	–	–	–
Germany	0	–	–	–	–	–
Canada	0	–	–	–	–	–
Poland	0	–	–	–	–	–
Belgium	0	–	–	–	–	–
Italy	0	–	–	–	–	–
USA	332	–323	9	170	3	175.71
Lithuania	0	–	–	–	–	–
Serbia	0	–	–	–	–	–
Others	1,199	(287)	792	352	1,042	102
Total (∑)	**27993**	**(551)**	**27074**	**(4876)**	**27259**	**(506112)**

Source: Authors calculations based on UN COMTRADE and ITC statistics

Table 11: Determination of Effects for Export Growth for Roses, Whether or not Grafted (HS code 060240): 2016–2018.

Analysis	2016–2017	%	2017–2018	%	2016–2018	%
Total Gain (Actual 2– Actual 1)	2961	**100**	5,244	**100**	2,283	**100**
Size of the Product Effect (Calculated Hypothetical-Actual 1)	1,913	**64.62**	-969.40	**18.5**	980.9	**-43.0**
Distribution Effect (Hypothetical Total Calculated Hypothetical 1)	1,599	**53.99**	601.40	**(11.5)**	1,794	**-78.6**
Competitive effect (Actual 2–Hypothetical Total)	(551)	**-18.61**	-4,876	**93.0**	(5,058)	**221.6**

Source: Authors calculations based on UN COMTRADE and ITC statistics

4.3 Revealed Comparative Advantage Results
4.3.1 Roses (HS-060240)
Table 12 shows the revealed comparative advantage (RCA) index calculation for Uganda's export of roses (HS-060240) for the years 2015 to 2018.

Table 12: RCA Calculations for Uganda's Roses

	Exported Value (US$ '000)			
	2015	2016	2017	2018
E_{ij}-Uganda exports of roses	23,059	24,481	27,442	22,198
E_{it}-Uganda total exports	2,267,009	2,482,313	2,901,296	3,087,274
E_{ij}/E_{it}	**1.0**	**1.0**	**0.9**	**0.7**
E_{wj}-World exports of roses	160,977	168,115	181,376	174,637
E_{wt}-Worlds total exports	16,415,641,494	15,917,841,059	17,561,036,930	19,310,111,006
E_{wj}/E_{wt}	**0.0010**	**0.0011**	**0.0010**	**0.0009**
RCA	**1,037.2**	**933.8**	**915.8**	**795.0**

Source: Authors calculations based on UN COMTRADE and ITC statistics

In 2015, Uganda's RCA index for roses was 1,037.2, indicating a significant comparative advantage. This advantage declined in the following years, with an RCA index of 933.8 in 2016, 915.8 in 2017, and 795.0 in 2018. This decline indicates that Uganda's competitiveness in exporting roses has been reduced relative to other countries in the world. The data also shows that Uganda's export of roses was relatively small compared to the world's total.

4.3.2 Unrooted Cuttings (HS-060210)

Table 13 shows the RCA calculations for Uganda's exports of unrooted cuttings (HS-060210) in the period of 2015–2018. It reveals that Uganda had a comparative advantage in unrooted cuttings throughout the period, with the RCA values above 1.0. The RCA value of Uganda's unrooted cuttings declined slightly in 2016, but started to rise again in 2017 and 2018. Uganda's share of the world's exports of unrooted cuttings was low, but has been increasing over the years.

Table 13: RCA Calculations for Uganda's Unrooted Cuttings

	Exported Value (US$ '000)			
	2015	**2016**	**2017**	**2018**
E_{ij}-Uganda's exports of unrooted cuttings	27,786	26,973	30,206	35,510
E_{it}-Uganda total exports	2,267,009	2,482,313	2,901,296	3,087,274
E_{ij}/E_{it}	**1.2**	**1.1**	**1.0**	**1.2**
E_{wj}-World exports of unrooted cuttings	450,925	464,282	479,945	538,576
E_{wt}-Worlds total exports	16,415,641,494	15,917,841,059	17,561,036,930	19,310,111,006
E_{wj}/E_{wt}	**0.0027**	**0.0029**	**0.0027**	**0.0028**
RCA	**446.2**	**372.5**	**380.9**	**412.4**

Source: Authors calculations based on UN COMTRADE and ITC statistics
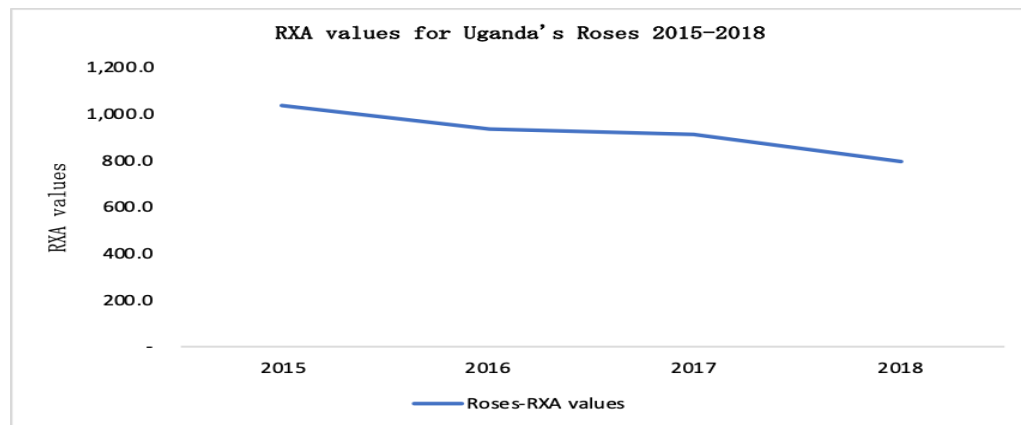

Figure 1: Graph Showing RCA values for Uganda's Roses: 2015–2018
Source: Authors calculations based on UN COMTRADE and ITC statistics

Figure 1 shows the revealed comparative index values for Uganda's roses exports for the period 2015–2018; indicating a substantial decline. Figure 2 shows the revealed comparative index values for Uganda's unrooted cuttings in the period 2015–2018, and reveals a sharp decline at the start (2015–2016), followed by a substantial rise in the period 2016–2018.
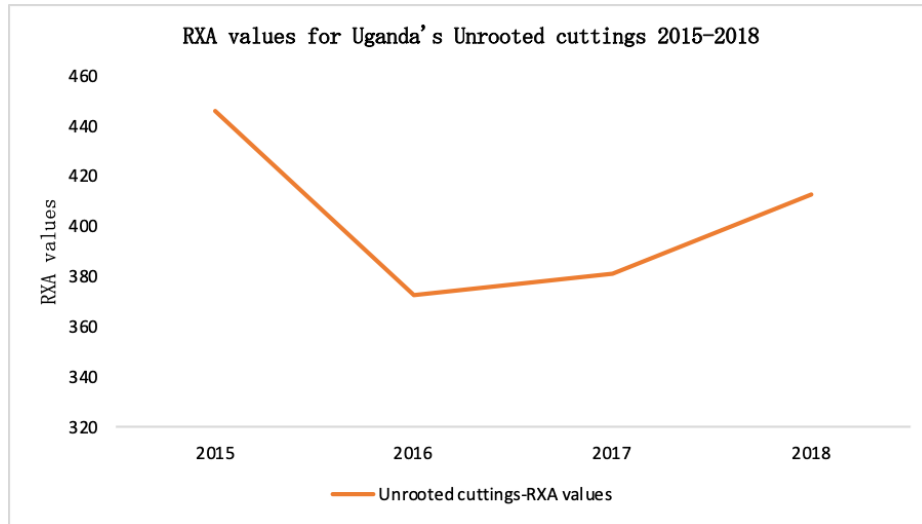

Figure 2: RCA Values for Uganda's Unrooted Cuttings: 2015–2018
Source: Authors calculations based on UN COMTRADE and ITC statistics

5. Conclusion and Policy Implications

Uganda's exports of flowers (roses and unrooted cuttings) are concentrated in a single export market. Thus, it is hardly diversified, i.e., the nation relies on the Netherlands for export earnings from flowers. Although the Netherlands is one of the largest buyers of flowers globally, the reliance on one buyer exposes Uganda to the volatility associated with demand fluctuations in international markets. For unrooted cutting and slips, Uganda's share of the Netherlands imports rose from 15.9% to 18.3% in 2016–2018, while that of roses declined from 45% to 35.8% in the same period.

For the period 2016–2018, the export growth of Uganda's unrooted cuttings and slips can be predominantly attributed to its size of product effect, which accounted for the greatest proportion (62.9%) of its export growth. This was followed by the competitiveness effect, which explained 29.8% of the export growth in Uganda's unrooted cuttings. Roses declined in export growth, which was primarily attributed to the competitive effect that accounted for 221.6% of the fall. The competitive effect reflects the difference between the real export growth and the growth that would have occurred if Uganda had maintained its share of the exports of roses in its export markets.

With the aid of the RCA index, the study has revealed that both Uganda's roses and unrooted cuttings/slips enjoyed a comparative advantage (RXA > 1) in the period 2015–2018. Although positive, the comparative advantage of roses was steadily declining, while that of unrooted cutting and slips experienced a sharp decline between 2015 and 2016, then started rising between 2016–2018.

5.1 Policy Implications

The positive commodity composition effect of unrooted cuttings and slips indicates that its growth rates are more favourable than the world average. Thus, its international markets are growing relatively fast. From a policy perspective, unrooted cuttings and slips as a classification of flower exports are essential to improving Uganda's export earnings from NTAEs.

Much of the decline in the export performance of Uganda's exports of roses was attributed to the competitiveness effect, implying that Uganda had lost its share of international markets. Given that the interpretation of the competitiveness effect is relatively ambiguous, owing to the myriad of factors embedded in it (e.g., domestic policies), absolute quantification of these factors is not possible. However, from a policy perspective, the focus ought to be placed on non-price factors that could directly relate to the production and logistics of the exports of Uganda's roses.

Of crucial importance to the sustainably of export earnings from flowers is the reduction in the reliance on a single export market. A significant proportion of the poor performance of Uganda's roses exports is attributed to the distribution, or market effect. A favourable market effect occurs when a given export is destined for international markets where demand is growing. Therefore, those in charge of policy ought to diversify the exports of Uganda's roses to other lucrative markets. The trade flow data shows that other markets—such as in Germany, the US, France, the UK, and the Russian Federation—offer plausible diversification options.

5.2 Limitations

The unit of analysis in this study was the export commodity and not the exporters (firms). Therefore, the study fails to capture the input of the actors at the micro-level. In Uganda, the choice of export market(s) relies much on individual firms' discretion, therefore inferring a direct association with the distribution effect. Further studies ought to explore the export market choices of Uganda's flower exporters. The CMSA methodology is also sensitive to the base period chosen. This study chose 2016–2018 as the base period and, therefore, subject to the global economic forces (COVID-19 and the period 2020-onwards).

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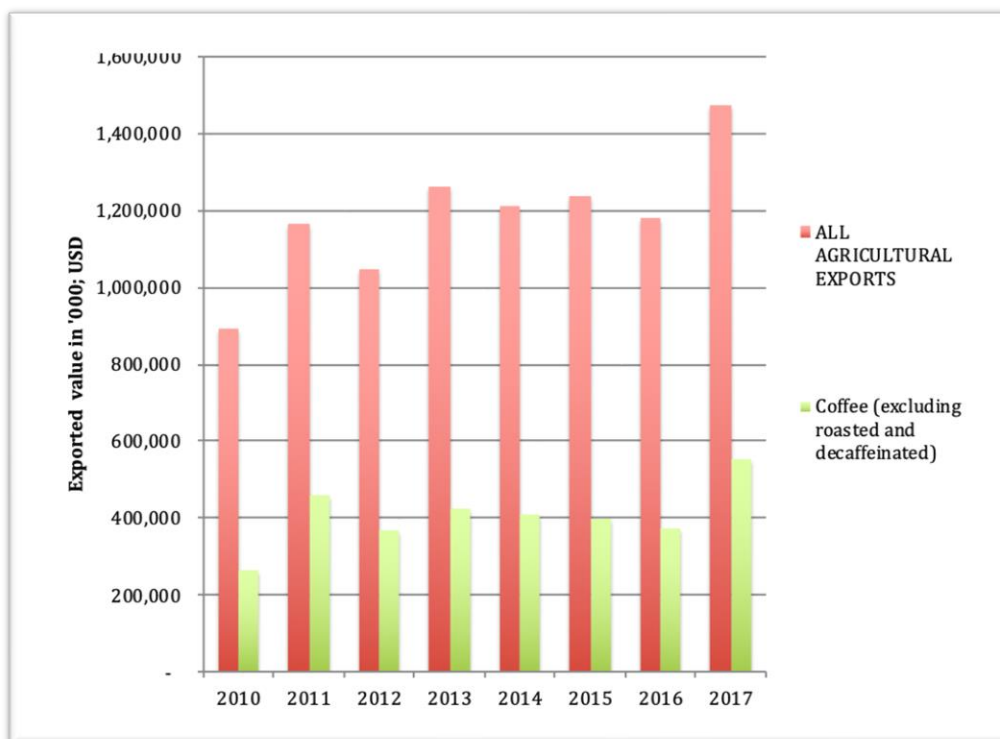
Annex

Figure A1: The Share of Coffee Exports in Uganda's Overall Agricultural Exports

Source: ITC calculations based on UN COMTRADE statistics