Journal of Agribusiness and Rural Development

MARKET ANALYSIS ON COCOA BEANS EXPORT: THE CASE OF GHANA AND COTE D'IVOIRE IN WEST AFRICA

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Abstract. The history of cocoa production in West Africa shows that commercial cocoa production began in the Gold Coast (Ghana) in the 1890s. By the 1920s, Ghana had become the world's leading cocoa producer, accounting for over half of all production. Ghana continued to be a leading producer of cocoa until 1978, when Cote d'Ivoire topped Ghana as the world's largest cocoa bean producer. It has since become the leading producer, with about a 40% share of global production. This study aimed to analyze the competitiveness and similarity of the Ivorian and Ghanaian cocoa sectors. Time series data (2011–2020) from FAOSTAT was used to analyze the level of competitiveness and similarity between the two largest cocoa-producing countries in West Africa. The analysis was conducted using the Revealed Comparative Advantage (RCA), Product Similarity Index (PSI), and Quality Similarity Index (QSI). The findings indicate that the two countries are strong competitors in cocoa exports and have the same quality of products. 2020 and 2017 witnessed the weakest competition between the two countries, with a similarity index of 0.53 and 0.60, respectively. It is concluded that the two economies (especially Ghana) guard against over-dependence on cocoa exports because a disruption in production would have a great shock on the economy.

Keywords: cocoa beans, cocoa export, competitiveness, similarity, West Africa

INTRODUCTION

West Africa is known for its large cocoa exports to the global market, contributing to approximately 70% of total global production (Wessel and Quist-Wessel, 2015). The leading producers in the region are Côte d'Ivoire and Ghana, followed by Nigeria and Cameroon. Cocoa trees require a great deal of rain and warmth to thrive, along with rainforest trees to provide shade and shelter from too much sun and wind damage. Côte d'Ivoire and Ghana have these favorable conditions, making the cocoa plant more successful in these countries than in other regions. Wessel and Quist-Wessel (2015) asserted that cocoa growing uses a low-input farming approach and takes advantage of forest soil nutrients and existing shade. It is, therefore, sufficient to say that the reasons for the sustained increase in cocoa production in much of West Africa are the suitable climate and the comparatively low cost of production.

The history of cocoa production in West Africa shows that commercial cocoa production began on the Gold Coast in the 1890s. By the 1920s, it had become the world's leading cocoa producer, accounting for over half of all production (Green and Hymer, 1966). Ghana continued to be a leading producer of cocoa until 1976. In 1978, Cote d'Ivoire topped Ghana as the world's largest cocoa bean producer and has since become the leading producer, with about a 40% share of global production (World Cocoa Foundation, 2010). Cocoa is an essential source of employment for most people in rural regions and plays a crucial role in the economic development of major producing countries. Cocoa remains the most significant agricultural export crop in both Côte

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d'Ivoire and Ghana. Cocoa is Cote d'Ivoire's prof-itable export, accounting for approximately 37% of total exports in 2015 (UNCTAD, 2016). Similarly, in Ghana, the ICCO (International Cocoa Organization, represent-ing the majority of world cocoa production and con-sumption groups) reports that cocoa contributes about 30% of overall export earnings and employs approxi-mately six million people (ICCO, 2022).

Although cocoa-producing countries strive to sus-tain an increasing trend in production, annual produc-tion is quite erratic across all producing countries. Un-precedented changes in weather, the spread of pests and diseases affecting specific production regions, and insufficient understanding of cocoa farmers in cocoa-producing countries are all common causes of produc-tion volatility. The volatile nature of production raises concerns for countries like Côte d'Ivoire and Ghana, which depend so much on cocoa for export earnings. Odijie (2016) investigated the diminishing returns and shrinking agricultural output of Côte d'Ivoire's cocoa sector and asserted that because of frequent geographi-cal fluctuations in cultivation, all cocoa-producing countries have boom and bust cycles. Again, the avail-ability of forests determines the structural or ecological limit of each cocoa-producing area, so once the ceiling is reached, it is hard to produce more cocoa due to the lack of virgin forests. Ghana's technical efficiency in co-coa production has also been declining over the years. Similar to Odijie's findings, Besseah and Kim (2014) investigated the technical efficiency of cocoa farmers in Ghana and found that natural land productivity and farmland expansion are critical to Ghana's cocoa output. However, decreases in both the amount and quality of cocoa farmland have a negative impact on productivity. Besseah and Kim (2014) also stated that finding fertile land for cocoa production has remained a severe diffi-culty for Ghanaian cocoa farmers as current farm sites are decreasing in fertility. Furthermore, farm input pric-es, such as agrochemicals, are rising faster than farmers' real income (Besseah and Kim, 2014).

As the governments in these countries make efforts to put policies in place to ensure sustainability and an increasing trend in the production of the cocoa sector, it is essential to understand the current trend in production and trade as well as the competitiveness in the market. Following this, the present study seeks to analyze the competitiveness and similarities of the Ivorian and Gha-naian cocoa sectors in the past decade, 2011–2020. This study specifically aims to analyze the competitiveness of the two largest cocoa-producing countries in the West African region. The study also aims to assess the simi-larity in the quantity and quality of cocoa exports made by Côte d'Ivoire and Ghana. Due to the ongoing and expected climate change across the globe, scholars pre-dict that, in the near future, the need for increased land use for food production will reduce the size of cocoa farm areas, thereby affecting the position of West Africa in the world cocoa market. Aging trees and a lack of virgin forest for the expansion of farmland have recent-ly resulted in a decline in cocoa production, which has prompted the governments of Côte d'Ivoire and Ghana to implement rehabilitation and replanting programs. Therefore, this study's findings are relevant to govern-ments and stakeholders in the Ivorian and Ghanaian co-coa sectors in assessing the trends in the performance of their cocoa industry amidst the rehabilitation and replanting program. Although many studies have been done on cocoa production in West Africa, the novelty of this study is the comparison of the competitiveness and similarity between the two-leading cocoa-producing countries in the world, with more current data covering the latest crisis of 2020.

WORLD'S COCOA MARKET

Production volume and value

Because supply-side issues heavily influence trade bal-ances and pricing development, cocoa bean production is closely monitored. Several cocoa market analysts and professionals have published production volume and value reports based on historical, present, and future fore-cast levels (World Cocoa Foundation, 2010). Since 2010, an average of 4 million tonnes of cocoa beans have been produced annually worldwide, according to a global mar-ket analysis on cocoa by Voora et al. (2019). In the same year, grand view research on cocoa bean market size, share & trend analysis reported that, in 2018, the global market for cocoa beans was valued at USD 9.94 billion. However, the value of the market is expected to grow at a compound annual growth rate (CAGR) of 7.3 percent from 2019 to 2025, reaching USD 16.32 billion (Grand View Research, 2019). Data on yearly gross cocoa bean production and year-on-year change from the Internation-al Cocoa Organization (ICCO) is shown in Table 1 below.

A glimpse at Table 1 reveals that global cocoa bean production was volatile from 2011/2012 to 2020/2021.

Table 1. World Cocoa Bean Production

Crop year Oct-Sep	Gross crop production (Thousand tonnes)	Year on year change (%)
2011/12	4095	–5.0
2012/13	3943	–3.7
2013/14	4370	10.8
2014/15	4252	–2.7
2015/16	3994	–6.1
2016/17	4768	19.4
2017/18	4648	–2.5
2018/19	4784	2.9
2019/20	4735	–1.0
2020/21	5226	10.4

Source: ICCO, 2019/2020.

Table 2. World Trade Volume and Value of Cocoa Beans from 2011–2020

Year	Export Quantity (tonnes)	Export Value (1000 US$)
2011	3,314,332	9,621,400
2012	2,982,170	7,724,461
2013	2,724,969	6,853,432
2014	3,292,873	9,328,529
2015	3,388,204	9,733,178
2016	3,218,595	9,496,525
2017	3,891,931	9,243,154
2018	4,128,847	9,700,259
2019	4,098,527	9,649,203
2020	4,117,305	9,656,488

Source: FAOSTAT, 2022.

The highest gross production for the period was 5.226 million tonnes in the 2020/2021 crop year, and the lowest gross production was 3.943 million tonnes in 2012/13. The year-on-year change also depicts that production has fallen more often than it has risen.

Trade volume and value

The increasing global demand for cocoa products creates a ready market for cocoa bean production. About 95% of cocoa beans are traded on global commodity markets (Swiss Platform for Sustainable Cocoa, 2019). Thus, cocoa flows through countries and continents in a worldwide supply chain (World Cocoa Foundation, 2010). Making cocoa beans ready for the market includes harvesting them from the farm, as well as fermenting and drying them. After this, the next crucial stage is the processing and preparation of the cocoa beans for commercial consumption. While cocoa production is limited to a few countries in the world, international trade makes it possible for cocoa to be exported to all parts of the world. According to World Trade Organization data, cocoa bean processors are spread around the globe, with the biggest concentration in Europe, followed by the Americas, Asia & Oceania, and Africa (World Trade Organization, 2010). The annual global trade volume and value for the past decade are presented in Table 2.

Price development

Cocoa is traded in London and New York, with prices expressed in British Pounds per Metric Ton and US Dollars per Metric Ton. The price of cocoa is determined by supply and demand in the commodities market. Like the volatility in production, the price of cocoa in the global markets is not very stable. Over the years, the unstable market price has been a significant challenge for cocoa farmers. The global market report on cocoa in 2019 by Voora et al. (2019) reported a drastic fall in the price of cocoa from USD 3,422 per tonne in late 2015 to USD 1,769 per tonne in mid-2017. This drastic price drop was not observed in the past decade. This drastic price drop resulted from the fact that in the 2016/2017 crop year, global cocoa production witnessed a record-breaking harvest. Because West Africa produces more than 70% of the world's cocoa, events in the region, such as political unrest, climate-related concerns, and border bottlenecks, create massive changes in cocoa supply, affecting pricing (Cocoa Pricing, 2022). Figure 1 shows the fluctuations in cocoa prices for the past 200 years.

Political disturbance, production volumes, and the climate have contributed to the rise and fall of cocoa prices over the past 200 years.
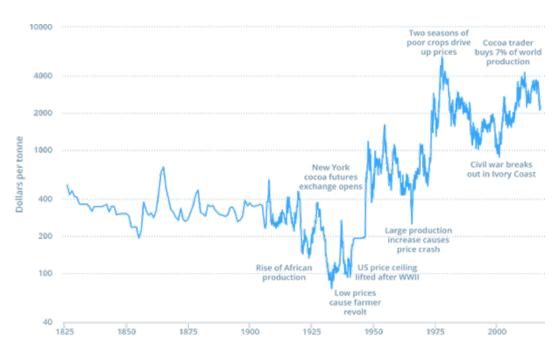
Fig. 1. Cocoa price fluctuations from 1825–2020
Source: Winton, 2022.

Consumption

Processing cocoa beans into various products such as chocolate, cocoa powder, cocoa paste, cocoa liquor, and cocoa butter for consumption is done across the globe. Europe processes about 40% of global output. The Netherlands is the world's largest cocoa processor, processing about 13% of the annual global harvest (ICCO, 2022). Europe consumes about 45% of global cocoa output, followed by the Americas (35%). However, speaking in terms of individual countries, ICCO reports that the United States ranks first in consumption of cocoa with about 797,000 tonnes in 2019, followed by Germany (347,000 tonnes), France (228,000 tonnes), the United Kingdom (221,000 tonnes), and the Russian Federation (195,000 tonnes). Ironically, Africa, the biggest cocoa producer, has the lowest consumption of 4%, followed by Asia and Oceania (19%).

IMPORTANCE OF WEST AFRICA IN THE COCOA BEAN MARKET

Production

As stated, West Africa is known for its significant cocoa exports to the global market. In the past decade, West Africa has contributed more than 70% of the total global cocoa bean production each year. Reports from the International Cocoa Organization (ICCO) indicate that West Africa contributed a total of 73.1% to global cocoa bean production in the 2015/16 crop year, 76.5% in 2016/17, 75.9% in 2017/18, 76.0% in 2018/19, 74.9% in 2019/20, and 77.4% in the 2020/21 crop year. It is sufficient to say that West Africa has maintained its strong position in cocoa bean production over the years and is gradually reaching an 80% share of global production. The leading producers in the region are Côte d'Ivoire and Ghana, followed by Nigeria and Cameroon. Côte d'Ivoire and Ghana are the world's two main cocoa producers, accounting for nearly 60% of global production (Swiss Platform for Sustainable Cocoa, 2019).

Trade

A significant percentage of the cocoa produced in West Africa is consumed outside the region. For most West African countries, export earnings are the primary driver for increasing cocoa bean production. This is evident in the case of Côte d'Ivoire and Ghana, where cocoa beans remain the most significant and profitable agricultural export commodity accounting for approximately 37%

Table 3. Export quantity and value of cocoa beans from West Africa

Year	Export Quantity (tonnes)	Export Value (1000 US$)
2011	2,169,210	6,210,580
2012	1,867,308	4,894,975
2013	1,547,234	3,888,777
2014	2,087,467	5,682,890
2015	2,113,813	5,780,952
2016	1,932,398	5,739,218
2017	2,442,705	5,870,007
2018	2,703,240	6,325,539
2019	2,608,818	6,111,533
2020	2,437,216	5,883,865

Source: FAOSTAT, 2022.

and 30% of total exports in both countries, respectively (UNCTAD, 2016). The major importers of West African cocoa beans are the Netherlands, Germany, Switzerland, the United Kingdom, and the United States. Data from the Food and Agriculture Organization of the United Nations on trade volume and value from the region are presented in Table 3.

METHODOLOGY AND DATA

Study area

Côte d'Ivoire and Ghana are neighbouring countries in West Africa sharing a 430-mile-long boundary (Saffu, 1970). Both nations have savanna in the north and tropical forest in the south. Due to the greater soil nutrients in the southern forest, the southern belt of both countries has seen significant use in the cultivation of cocoa and other cash crops such as coffee (Jedwab, 2011). Figure 2 shows the map of the two countries and their cocoa soil suitability.
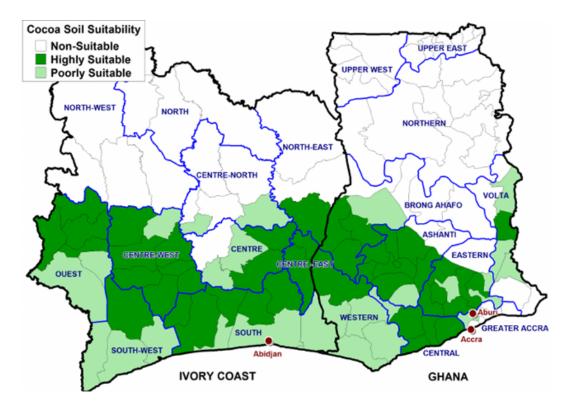

Fig. 2. Cocoa soil suitability and regional boundaries
Source: Jedwab, 2011.

METHODS

According to trade theory, a country's competitiveness in a specific commodity is based on comparative advantage. According to the Ricardo and Heckscher-Ohlin models, trade flows result from differences in production costs between countries. Therefore, a specific country will specialize in producing a product with a comparative advantage. Scholars have developed several trade criteria for assessing a country's competitiveness in a product. In this study, however, the Revealed Comparative Advantage (RCA) by Balassa (1965), otherwise known as the Balassa index, was adopted to analyze the competitiveness of Côte d'Ivoire and Ghana in cocoa bean exports in the West African market. Time series data for the past ten years (2011–2020) was sourced from the Food and Agriculture Organization of the United Nations (FAOSTAT, 2022). The total value of cocoa beans exported from West Africa sourced from FOASTAT is the aggregate of eight West African countries: Côte d'Ivoire, Ghana, Guinea, Liberia, Niger, Nigeria, Sierra Leon, and Togo. In the current study, RCA was computed using the formula:

$$RCA_{ijt} = \left[\frac{X_{ijt} / X_{iwt}}{X_{ajt} / X_{awt}} \right]$$

where:

RCA_{ijt} – is the revealed comparative advantage index value of cocoa beans in country j in year t

X_{ijt} – is the export of cocoa beans from country j in year t

X_{iwt} – is the total export of cocoa beans from Africa in year t

X_{ajt} – is the sum of all agricultural exports from country j in year t

X_{awt} – is the sum of all agricultural exports from West Africa in year t.

Moreover, based on a theoretical concept that countries exporting similar goods to a specific market can be considered competitors (Rondinella et al., 2019), we analyzed the similarity of cocoa exports from Côte d'Ivoire and Ghana in depth. We calculated the similarity in the quantity and quality of exports of four cocoa products: cocoa beans, cocoa butter, cocoa paste, and cocoa powder & cake. First, we calculated the product similarity index (PSI), which shows the degree of overlapping of the absolute quantities of the export streams. Higher values of this index mean greater similarity in exports and, therefore, higher competitive pressure between countries (Bajan et al., 2021). The PSI was calculated as follows:

$$PSI = 1 - \left[\frac{\sum_{c=1}^{n} \left| X_{i,d}^{c} - X_{j,d}^{c} \right|}{\sum_{c=1}^{n} \left(X_{i,d}^{c} + X_{j,d}^{c} \right)} \right]$$

where:

$X_{i,d}^{c}, X_{j,d}^{c}$ – are the quantities of goods exported (c) from country i and j to market (d).

The PSI may overestimate the real similarity of exports because it does not consider the quality of goods. The export quantity may be the same, but the value of the shipped goods is different due to the differences in quality. To tackle this problem, we calculated the quality similarity index (QSI), which considers only goods of the same quality based on the export unit values (XUV). The QSI was calculated as follows (Antimiani and Henke, 2007):

$$QSI = \left\{ 1 - \left[\frac{\sum_{c=1}^{n} \left| X_{i,d}^{c,q} - X_{j,d}^{c,q} \right|}{\sum_{c=1}^{n} \left(X_{i,d}^{c,q} + X_{j,d}^{c,q} \right)} \right] \right\} \cdot \left[\frac{\sum_{c=1}^{n} \left(X_{i,d}^{c,q} + X_{j,d}^{c,q} \right)}{\sum_{c=1}^{n} \left(X_{i,d}^{c} + X_{j,d}^{c} \right)} \right]$$

where:

$X_{i,d}^{c,q}, X_{j,d}^{c,q}$ – are the quantities of goods exported (c) from country i and j to market (d). Only goods similar in terms of XUV (q) are used in the formula.

It is worth emphasizing that using XUV as an indicator of the quality of goods is a simplification and has been subject to criticism (King, 1993; Silver, 2009). However, several studies have justified the legitimacy of using XUV as a quality indicator (Anwar and Sun, 2018; Smutka et al., 2019). Based on Bajan et al. (2021), we recognize goods as the same quality when they fulfil the condition of the following equation:

$$1 - \left(\frac{XUV_{i,d}^{c} - XUV_{j,d}^{c}}{XUV_{i,d}^{c} + XUV_{j,d}^{c}} \right) \geq 0.9$$

where:

$XUV_{i,d}^{c}, XUV_{j,d}^{c}$ – are the export unit values of goods (c) from country i and j to market (d).

Table 4. Market share and RCA of Côte d'Ivoire and Ghana in cocoa bean production

Year	Market Share (Percentage)		
	Côte d'Ivoire	Ghana	Total Share
2011	48.77	35.42	84.19
2012	47.47	40.33	87.8
2013	52.41	35.50	87.91
2014	53.58	36.01	89.59
2015	61.47	28.98	90.45
2016	53.32	32.87	86.19
2017	59.71	27.97	87.68
2018	51.43	38.53	89.96
2019	58.51	30.30	88.81
2020	66.76	22.29	89.05
The average share total share for 2011–2020			88.16

Source: own computations based on FAOSTAT, 2022.

The QSI may reach values between 0 and 1, where 0 means a complete lack of export similarity regarding the quality of the goods, and 1 means complete similarity. In practice, the maximal value of QSI is limited by the PSI. When QSI reaches the value of PSI, all overlapping streams of exported goods are similar quality-wise. Thus, the QSI values should be considered in relation to PSI.

RESULTS AND DISCUSSION

The market share of Côte d'Ivoire and Ghana in cocoa bean production in the West African market was computed by dividing the value of cocoa beans exported from the country by the value of total cocoa beans exported from West Africa. The result was then multiplied by 100 to express the answer as a percentage. Table 4 shows the results of the analysis.

A similarity index of all cocoa exports from the two nations was calculated in order to compare the quality of cocoa from Ghana and Côte d'Ivoire. The value of the similarity index is given between the ranges from 0 to 1. The higher the similarity for each cocoa product category, the stronger the competition between the two countries. Overall, the quality of exported cocoa products from Côte d'Ivoire and Ghana is said to be the same if the quality similarity index is the same as the product similarity index. For the sake of simplicity in comparison, product and quality similarity indexes are presented together in Table 5.

The observed similarity in the trade volume of the analyzed cocoa products between Côte d'Ivoire and

Table 5. Cocoa export similarity index of Côte d'Ivoire and Ghana

Product similarity index	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cocoa beans	0.79	0.73	0.79	0.80	0.62	0.71	0.55	0.71	0.57	0.48
Cocoa butter	0.82	0.39	0.54	0.60	0.43	0.57	0.78	0.83	0.91	0.78
Cocoa paste	0.04	0.00	0.00	0.61	0.60	0.66	0.31	0.39	0.56	0.59
Cocoa powder & cake	0.00	0.00	0.02	0.72	0.69	0.65	0.38	0.34	0.41	0.76
All cocoa products	0.73	0.65	0.70	0.78	0.63	0.72	0.60	0.74	0.63	0.53
Quality similarity index										
Cocoa beans	0.94	0.81	0.98	1.00	0.97	0.94	0.90	0.85	0.87	0.98
Cocoa butter	0.94	0.92	0.81	0.97	0.91	0.92	0.99	0.99	0.96	0.98
Cocoa paste	0.97	0.79	0.93	0.96	0.99	0.96	0.97	0.93	0.97	0.98
Cocoa powder & cake	0.00	0.77	0.70	0.91	0.88	0.93	0.89	0.89	0.91	0.97
All cocoa products	0.73	0.02	0.67	0.78	0.59	0.72	0.07	0.07	0.18	0.53

Source: own calculations based on the FAOSTAT, 2022.

Ghana ranged from 0.60 to 0.78, from 2011 to 2019. No clear trend in the indicator's value was observed then. Throughout the analyzed period, Côte d'Ivoire had a higher export volume of all cocoa products. In 2020, the value of the similarity index dropped to 0.53, which can be interpreted as an overlapping of export volumes at 53%. Such a low value of the index in 2020 may potentially be related to the turmoil in world trade caused by the COVID-19 pandemic. Cocoa products are not an essential commodity, hence, their production could have decreased due to lower demand.

According to the calculations, except for 2012, in 2011–2016, a high quality (price) similarity was observed in the exported cocoa products (QSI indicators were the same or very close to the PSI). The situation changed in 2017–2019, when Ghana obtained clearly higher prices than Côte d'Ivoire for the most significant cocoa product in commercial exchange, i.e., cocoa beans. Therefore, it can be concluded that in 2017–2019, Ghana competed with higher product quality, while Côte d'Ivoire gained significant market share due to a higher export volume. In 2020, the situation in the world markets resulted in a relative alignment of cocoa product prices between the analyzed countries. It was in 2020 that the prices in both countries were the most similar in the entire analyzed period, which meant that the cocoa exports were in direct competition.

The RCA of Côte d'Ivoire and Ghana in cocoa bean production in the West African region was calculated as the ratio of each country's export share of cocoa beans in West Africa to the country's export share of all other agricultural commodities. A country has a comparative advantage in the production of cocoa beans if its RCA is greater than 1. Otherwise, the country is not competitive and hence lacks comparative advantage. The analysis is presented in Table 6.

The analysis shows that Côte d'Ivoire has sustained the greatest market share of cocoa bean exports in West Africa for the past decade. The analysis also reveals that Côte d'Ivoire has increased its market share considerably from 48.77% in 2011 to 66.76% in 2020. This could be explained by the increase in farmland/area harvested in the region, as well as a governmental intervention to augment cocoa inputs. This result supports that of Verter (2016), whose analysis found that, while Côte d'Ivoire's performance has slightly fluctuated over time, it has remained competitive and witnessed noticeable growth year on year. In the case of Ghana, it started the period

Table 6. RCA of Côte d'Ivoire and Ghana in cocoa bean production in West Africa

Year	RCA	
	Côte d'Ivoire	Ghana
2011	1.13	3.68
2012	1.13	4.46
2013	1.33	3.76
2014	1.21	2.96
2015	1.44	2.32
2016	1.45	1.64
2017	1.55	1.94
2018	1.39	2.46
2019	1.51	1.99
2020	1.64	1.39

Source: own calculations based on the FAOSTAT, 2022.

with a 35.42% market share in 2011 and ended the period with a 22.29% market share. During this period, the trend in Ghana's market share went up and down, with positive and negative year-on-year changes. The study of Jambor et al. (2017) is consistent with this finding. In their analysis of the export competitiveness of global cocoa traders, Jambor et al. (2017) found that, while most of the cocoa exporting countries exhibited fairly consistent competitive patterns, Ghana witnessed the worst decline throughout the period under study (1992–2015). Overall, the total market shares of both countries for the period stood at an average of 88%.

The export similarity analysis shows that both the Product Similarity Index and Quality Similarity Index of Cote d'Ivoire and Ghana were more or less the same from 2011 to 2020. Although Côte d'Ivoire has a larger market share of cocoa exports than Ghana, the export similarity index shows strong competition between the two countries for the years 2014, 2018, 2011, 2016, and 2013. 2020 and 2017 witnessed the weakest competition between the two countries, with a similarity index of 0.53 and 0.60, respectively. This is due to the fact that, during these two crop years, Ghana's market share of cocoa bean exports fell drastically. This was particularly marked in 2020, when Ghana's market share of cocoa bean exports fell to its lowest for the decade (22.29%), while Côte d'Ivoire's rose to the highest for the period

under consideration (66.76%). The findings reveal no significant difference between the two countries regarding the quality of cocoa exports from Côte d'Ivoire and Ghana.

In addition, the Revealed Comparative Advantage analysis shows that both Côte d'Ivoire and Ghana have a comparative advantage in cocoa exports from West Africa. This finding is not surprising as the two countries are the leading cocoa producers in West Africa and the world. This was confirmed by the studies of David (2013) and Verter (2016), who found that, despite the challenges facing cocoa-producing countries in West Africa, Côte d'Ivoire and Ghana still maintain their competitiveness in the West African market and the world at large. Nonetheless, it is worth mentioning that, relative to other agricultural exports, cocoa bean exports are more important to the Ghanaian economy than they are to the Côte d'Ivoire economy. This is true because the values of RCA in Ghana are higher than those of Côte d'Ivoire. Ghana's economy is more dependent on cocoa exports than any other agricultural exports. On the other hand, even though Côte d'Ivoire has a comparative advantage in cocoa bean exports, it has other significant advantages in other agricultural products such as coffee in the West African region, as confirmed by Pelupessy (2018).

CONCLUSION

To sum up, the current study's findings show that Côte d'Ivoire and Ghana sustained an increasing market share in cocoa bean exports from West Africa from 2011 to 2020. The export similarity index indicates that the two countries are strong competitors in cocoa exports and have the same quality of cocoa exports. Again, both Côte d'Ivoire and Ghana have a comparative advantage in cocoa bean exports from West Africa. However, the analysis shows that cocoa bean exports are more important to the Ghanaian economy than they are to the Côte d'Ivoire economy. Ghana's overdependence on cocoa bean exports is therefore not the best economically, as a fall in production will shock the economy more. The objectives of the study were successfully achieved as the findings give a fresh insight into the state of competitiveness and export similarity between the world's top two cocoa-producing countries. The findings also add to the existing knowledge in this area of research. We recommend that the governments of Ghana and Côte d'Ivoire develop strategies aimed at educating farmers about best production practices, opening up credit facilities for cocoa cultivars, and accelerating the processing of raw cocoa beans in order to command a higher price on the global market. We also recommend that future studies focus on the competitiveness of Côte d'Ivoire and Ghana in the global cocoa market, especially during the year of the Covid pandemic and post-pandemic era. Again, future research may examine how competitive Nigeria, Cameroon, and Togo are in the West African cocoa market.

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