

Has the Special Economic Zone Approach Improve Ghana's Competitiveness in the Global Market?

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Abstract

Ghana adopted the Special Economic Zones (SEZs) model in an attempt to stimulate economic growth by moving from an era of import-based to an export-based development strategy and also to potentially improve competitiveness in the world market. However, until now, it is not well understood if this move has been beneficial and whether it has positioned Ghana particularly in terms of trade on the global market. This study examines and demonstrate if the adopted SEZ model has had any significant effects on the trade patterns in Ghana. This was undertaken by analyzing the competitiveness and the dynamics and/or level of comparative advantage of selected products traded within the SEZs on sectoral levels in the world market using the Balassa Revealed Comparative Advantage (RCA) index. The

results shows that among the investigated products, Ghana shows little and/or no comparative advantage for manufactured goods with a maintained relative competitiveness for raw materials. In addition, the RCA index indicates that Ghana has not improved its competitiveness even in the exports of its resource intensive products such as Wood and Minerals. Clearly, it was revealed that Ghana appears to not have made any substantial progress towards taking advantage of the dynamic potential of SEZs as a tool for sustainable exports gains transformation. In the light of the evidence shown, some policy implications and recommendation are described.

Keywords: Ghana, Special Economic Zones, Revealed Comparative Advantage, Trade, Export patterns, Free zones

1. Introduction

In the last few decades of globalization, most developing countries are seeing a shift from an era of importing based development strategy to one based on export promoting approaches by creating special economic zones (SEZs) within its national borders Litwack and Qian (1998);(Aggarwal et al., 2008). SEZs are used to stimulate private investment and economic development through preferential government policies (Farole, 2011). It has been demonstrated to have the potential to be an effective mechanism to promote industrialization as noted in participating countries especially in the East Asia (Zeng, 2015). This has attracted many countries especially developing nations to implement this approach with the key objective of enhancing the competitiveness to deliver economic turnaround.

Whiles some countries such as China, Singapore have demonstrated successful implementation with notable advancement in their economy (Zeng, 2015), most participating developing countries still lag especially those in Sub-Sahara Africa (Farole, 2011). Most of these countries until now are still not able to compete and integrate into the global trade platform that produce the goods and services that are demanded by consumers around the world. Ghana is no exception to the numerous sub-Sahara Africa countries that have not been successful (Chalfin, 2001).

In the early 90s, Ghana adopted the free zone model as an economic policy tool with the aim of reversing the decades of economic failures since independence from British colonization (Angko, 2014). With this, it was expected that both GDP and export will grow as well as a perceived declination in poverty. Furthermore, it was argued this move could potentially improve Ghana's competitiveness in the world market. However, Ghana has not realized the intended impact of the SEZ on its economy and other expectations have not been met. Albeit some relative improvement that has been seen over the last few years, Ghana's SEZ experience has not been anywhere near as successful as policy makers hoped it would be (Angko, 2014). Ghana is one of the very few Africa nation that has been asserted to be a promising candidate for SEZ reform which was highlighted by World Bank report describing Ghana's SEZ program as "one of the best designed, most flexible and most innovative in Africa" (Moberg and Tarko, 2014). This therefore raises questions as to why Ghana after many years of establishing SEZs still trial in developing the model to become an important policy tool to drive substantial economic returns.

The establishment of the SEZ has brought about a characterised geographically dispersed rapid market-driven changes providing opportunities for trade and export of products by industries in Ghana. With liberation in trade and improvements in exports with strong international competitiveness being one of the key highlight for establishing the SEZ's, this study therefore aims to examine the export patterns and dynamics especially after the establishment of the SEZ. This effort is to provide valuable insights of comparative advantage and/ or competitiveness of key products traded within the zones. This was explored by using the Revealed Comparative Advantage (RCA) index concept by (Balassa, 1965, 1977; Balassa & Noland, 1989). The approach with the RCA index model was to compute by product export categories based on Standard International Trade Classification (SITC) by the World Trade Organization for listing products. To provide a global perspective the export competitiveness and comparative advantage of Ghana in the world market, this study compared Ghana's competitiveness with China. The reason for comparison with China is because of the increasing importance of China as a powerhouse in global trade as well as the significant trade patterns and differences between China and Ghana. Thus in this study, we analyzed the RCA of selected key export products of Ghana to investigate:

- i. Has the establishment of the free trade zone model enhanced Ghana's export comparative advantage patterns and competitiveness in the world market?
- ii. What has been the temporal shift in the RCA of these selected products before and after the adoption of the SEZ model?
- iii. Which of the key products have prominently improved revealed comparative advantage in the world market?

It is expected that this study will contribute to the existing gap literature and drive knowledge on competitiveness of Ghana's export sector in relation to the global market as well as propel further studies to better our understanding on the driving factors for the observed stillness in Ghana's SEZ economic contribution.

2. Ghana Export Overview

The poor economic performance of most countries in Sub-Sahara Africa has been linked to the low growth of exports in general and particularly manufactured exports (Söderbom & Teal, 2003). As with many other Africa countries and other developing countries elsewhere, Ghana sees the development of SEZ as a vital component to facilitate private sector investment and promote export-oriented growth and generate employment. The economy of Ghana is reported to be much more successful before her independence in 1957 than has the trend been since (Teal, 2002) (Figure 1). Ghana's openness to the global economy at the beginning of the twentieth century during the post colonization by the British changed the country from just a subsistence economy driven by survival to live to relatively well-to-do people. Figure 1 shows the rise and decline of Ghana's per capita exports (measured in US\$). As shown, the trend decreased by the late 20th century (1960 – 1990) after Ghana's independence. This has been reported to be as a result of the ruling government instability during this period as well as failure of policy to provide for macroeconomic stability and the lack of technical progress in the economy (Leith, 1996). However, by the end of the 20th

century, Ghana's exports reverted to the level similar to the beginning to which the establishment of the SEZ was reported to be a key catalyst. Nevertheless, its share in the global market had been in decline contrary to the early part of the century where it experienced a sharp rise.

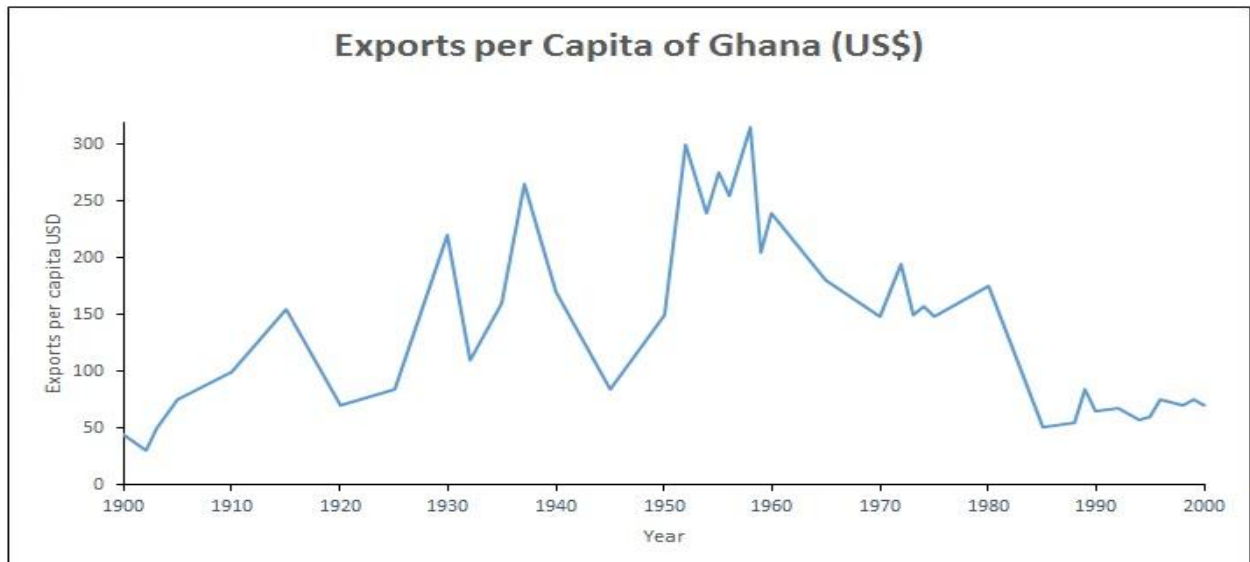


Figure 1. Ghana's Annual export per capita value in the 20th century of total exports

Ghana is recognized as one of the largest economies within the Economic Community of West African States (ECOWAS). However, it is often argued that Ghana's economy have endured the long-term declines in the terms of trade they have encountered (Teal, 2002). As of 2015, Ghana had a negative trade balance of \$3.28 billion in net imports as compared to their trade balance in 1995 (before SEZ establishment) when they still had a negative trade balance of \$484 million in net imports (Simoes and Hidalgo, 2016). This indicates the country's annual import rate in the global market has been exceeding that of export (Figure 2), a sign that shows that Ghana has less comparative advantage in the world market. The economic complexity ranking of Ghana has decreased by 37 places over the past 50 years from 90th in the 60s to 127th as of 2015 (Mehrra, 2013) (Figure 3). Thus Ghana economy particularly in terms of trade and investment does out stand out on the global economic maps.

From above, it seems that Ghana has not taken advantage of the platform SEZ provides as a mechanism to transform export gains and improve competitiveness in the global market. Thus, the need to explore Ghana's export comparative advantage patterns and competitiveness in the world market for further understanding of progress and propose strategies for the way forward.

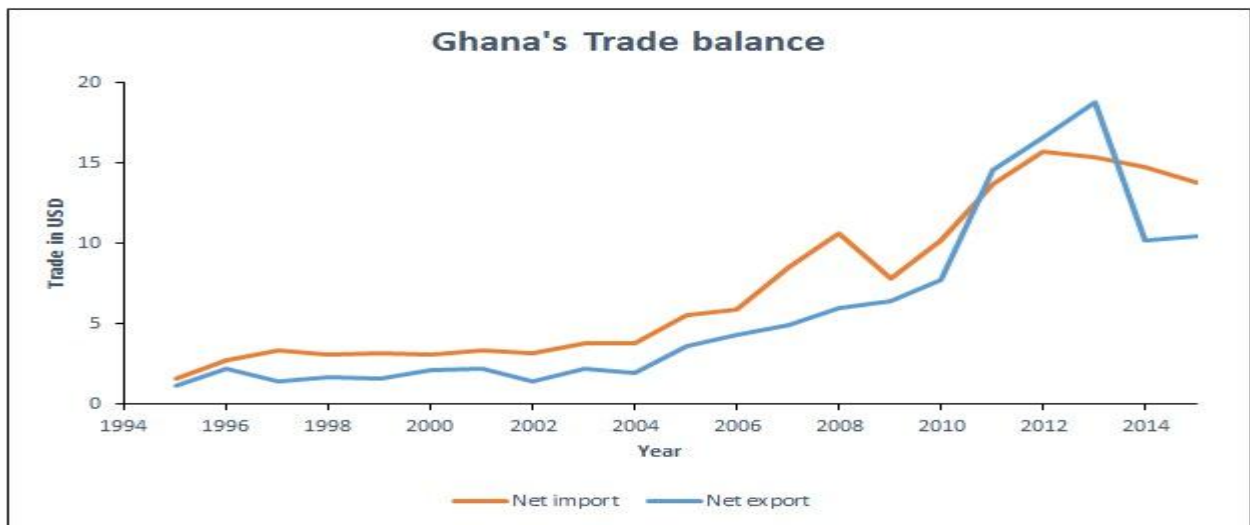


Figure 2. Trade balance for Ghana (1995-2015). Net trade amount is in USD (Billions)

Source: The Observatory of Economic Complexity database, compiled by the authors in March 2017

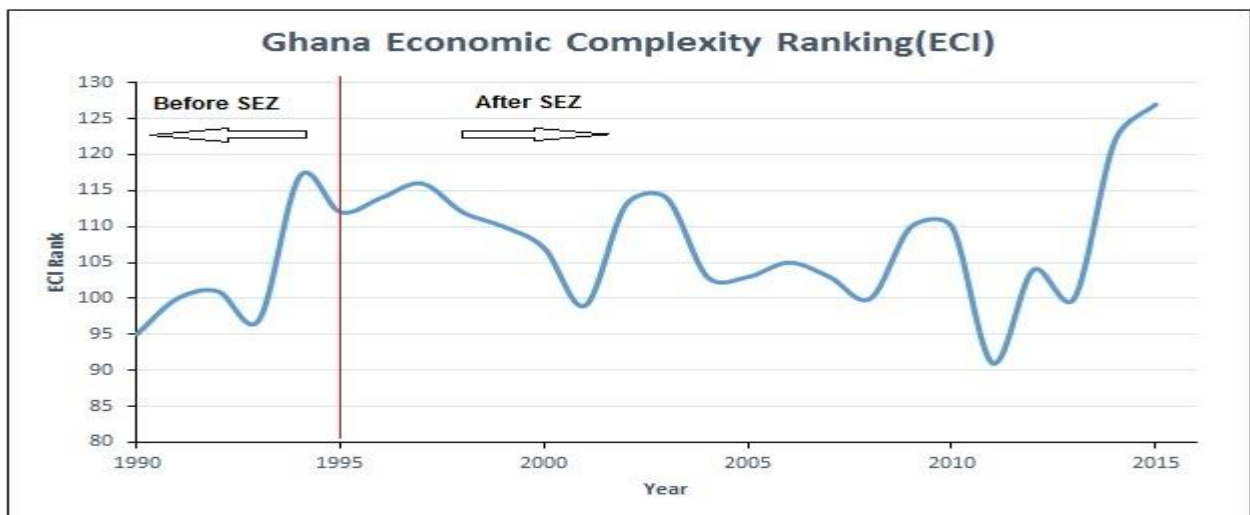


Figure 3. The Economic Complexity ranking of Ghana before and after establishment of free trade zones in 1995

Source: The Atlas of Economic Complexity (online version) database, compiled by the authors in March 2017

3. Approach and Methods

3.1 Study Data

The data used here for the analysis was sourced from the World Bank – World Integrated Trade Solution database based on SITC between Ghana and China. Data limitations constrain the indices to the year 1996-2013. The analysis thus performed was based on the annual time

series data of exports of specific products of both Ghana and China. The products investigated were coded and categorized based on the Standard International Trade Classification (SITC) by the World Trade Organization for listing products (Table 1). Data was compiled in MS Excel to estimate and analyze the RCA and R statistical tool was employed to examine the Spearman Rank Correlation Coefficient (R Core Team, 2012).

Table 1. Products investigated in the study and their Standard International Trade Classification (SITC) number as specified by the World Trade Organization for listing products

SITC	Products
0	Food products
2	Wood
3	Minerals
4	Animal products
5+6	Plastic and rubber
65	Textiles and clothing
67	Metals

3.2 The Revealed Comparative Advantage (RCA) Model

This paper employs the concept of revealed comparative advantage as by Balassa (1965 and 1977). Therefore, it is known as the ‘Balassa index’ for empirically identifying a country’s weak and strong export sectors. It uses the trade pattern to reveal the sectors in which an economy has a comparative advantage by comparing the relative advantage or disadvantage of the said country in a certain class of products with the global trade flow (Balassa, 1977; Bowen, 1983; Greenaway and Milner, 1993). Herein, it is used to examine the relative export performance of selected products in Ghana which will define Ghana’s share of the global exports of that product divided by its share of total global exports. The motive for comparison with China is because of the increasing importance of China in global trade as well as the significant trade patterns and differences between China and Ghana.

The Revealed Comparative Advantage (RCA) index has been defined (Balassa, 1965) as follows

$$RCA_{ij} = \frac{(X_{ij}/X_{wj})}{(X_i/X_w)}$$

where, RCA_{ij} is revealed comparative advantage of country i of product j

X_{ij} denotes export of product j from country i

X_{wj} denotes total amount of global exports of product j

X_i denotes total exports of country i

X_w denotes total amount of world exports

The benefit of using RCA index is that it regards the intrinsic advantage of a particular export product and is coherent with changes in an economy's relative factor endowment and productivity (Sanidas and Shin, 2010, FAO, 2015). However, it cannot separate improvements in factor endowments and pursuit of suitable trade policies by a country.

3.2 Range of Values for RCA

The Revealed Comparative Advantage (RCA) index takes values between the range of $-\infty$ to $+\infty$ which could be less, greater or equal to 1. This has a relatively simple interpretation where $RCA_{ij} > 1$ means the country i has comparative advantage in exports of product j

because its market share is larger in the product than its share in total exports. The $RCA_{ij} < 1$ is explained in the vice versa (Greenaway and Milner, 1993).

RCA indices are a useful measure of competitive performance enabling the identification of specialization patterns (Kaimakoudi et al., 2014; Pilinkienė, 2014; Hidayati and Masyhuri, 2015; Karelakis et. al, 2017). Herein, the RCA index for specific products for exports of Ghana and China is computed. The products investigated were categorized based on the Standard International Trade Classification (SITC) by the World Trade Organization (Table 1).

3.3 Spearman Rank (r_s) Correlation Coefficient

In this study, we computed the Spearman Rank (r_s) Correlation Coefficient from the estimated RCA values of each product pair for Ghana and China to examine how competitive or complementary these two nations are. Spearman rank correlation is a non-parametric measure of the monotonic association between two numeric variables (Zar, 1998). The idea of the Spearman Rank used here will check if it is the case that on the global export market, either country is competing for share or is just complementary in the export of that product or there is no relationship at all between the two countries. This approach has been employed in recent time by several studies to explore the degree of competition exhibited by an industry in relation to others and/ or two countries (Mahmood, 2000; Gauthier, 2001; Mohan, 2013; Franco et al., 2014)

Correlation coefficients take the values between minus one and plus one. This means a higher positive values of the coefficient is an indicative of a competitive relationship between Ghana and China in the global export market. Similarly, a negative coefficient implies a complementary in export of the particular product between Ghana and China. There is no relationship if the coefficient value is zero. The Spearman Rank (r_s) coefficient is expressed according to the following equation

$$r_s = 1 - \frac{6\sum d_i^2}{n(n^2 - 1)}$$

where $d_i = RCA(Gh)_i - RCA(Ch)_i$, and n is total years under consideration. Here, $RCA(Ch)$ and $RCA(Gh)$ are a set of the RCA values of China and Ghana respectively for a particular product.

Ranking data is carried out on the RCA of the two countries for the product that are separately put in order and are numbered. If the data are correlated, than the sum of the square of the difference between the ranks will be small. The magnitude of the sum is related to the significance of the correlation. The advantage of the Spearman Rank coefficient is that it is a nonparametric technique thus it is not impacted by the population distribution (Zar, 1998).

4. Results and Discussion

4.1 The Comparative Advantage and/or Disadvantage of the Product Categories

Figures 4 (a) and 4 (g) shows the analyzed results of the RCA of products categories in SITC 1 to 6 between Ghana and China.

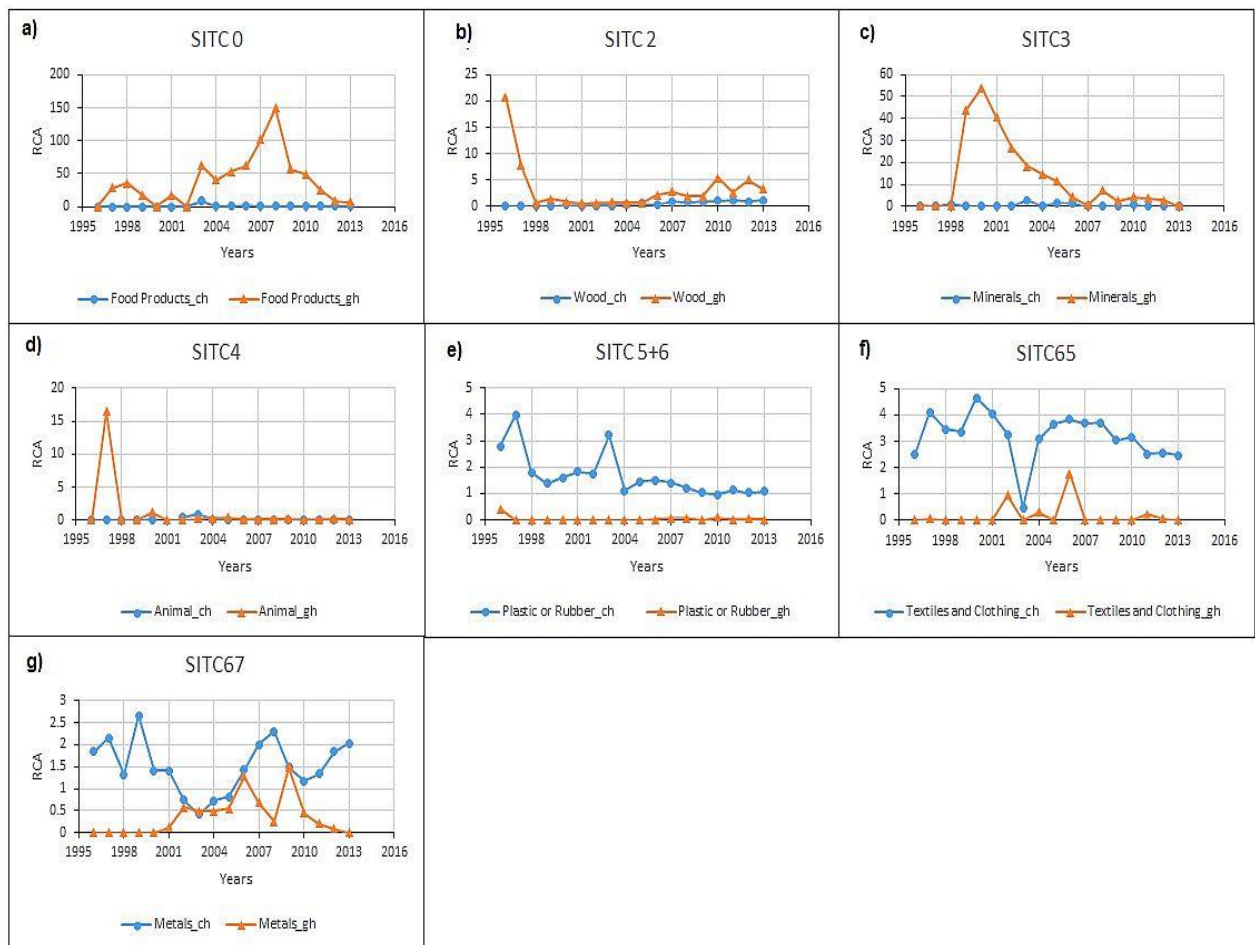


Figure 3. Analyzed results of the revealed comparative advantage (RCA) values for the investigated products for Ghana (gh) and China (ch)

4.1.1 SITC 0 – Food Products

The RCA values of SITC 0 (Food products) from year of 1996 to 2008 is high with an average of 47.65 which peaked at 149.8 in the year 2008 (Fig 4a). This shows that Ghana has a high significant comparative advantage in her export of food products to the world market during those years. However, a sudden decrease was observed from year 2009 and hit lowest of 6.76 in year 2013. On the other hand, the RCA value of SITC 0 for China shows a slim increase, although insignificantly from the year 1997 to 2003 peaking at 8.72 in the year 2003. Overall, this indicates China's weak comparative advantage of food products in the global market. Accordingly, the gradual declining shift of RCA from 2009 shows Ghana has been losing her comparative advantage. This affirms the recent studies (Lançon and Benz, 2007; Cudjoe et al., 2010) which have asserted that Ghana recently depends on importing food products showing that Ghana is losing grip on being once a powerhouse of food exports to the world. Generally, the comparative analysis of RCA demonstrates that for the product of SITC 0, Ghana while currently showing decline in RCA value is positioned more advantageously than China in the world market.

4.1.2 SITC 2 – Wood

The RCA value of SITC2 – Wood for Ghana was 20.8 in the year 1996 and its value decreased rapidly from 1997 peaking at 0.64 in the year 2005 (Fig 4b). The RCA value began to pick up again from the year 2001 at 2.1. Since then until 2013, the RCA value for wood in Ghana has fluctuated showing gradual rise and fall. The values from 2007 indicate that Ghana in recent times is having a significant comparative advantage in her export of Wood to the global market. China on the contrary has less comparative advantage in the export of Wood with an average RCA value of 0.52 for the 17 years under this investigation compared to the average RCA of 3.34 for Ghana. Overall, comparative analysis of RCA shows that for the product of SITC2, Ghana is positioned more advantageously than China in the world market.

4.1.3 SITC 3 -Minerals

The RCA value of SITC 3 –Minerals products for Ghana was 0.05 in the year 1997 where its value quickly jumped to 43.85 in 1999 and peaking at 53.92 in 2000 (Fig 4c). It shows that Ghana at this period (1997-2000) had a strong comparative advantage in the world market. Ghana's levels mineral production particularly gold, diamond and bauxite in to the world market rocketed within this period. This was in the period where Ghana's minerals and mining sector saw a major resurgence contributing massively to the national economy becoming the main foreign exchange earner (Addy, 1998; Aryee, 2001). However, inter-temporal shifts of RCA of SITC 3 during the year 2004 to 2013 shows that the comparative advantage has decreased significantly. It interprets a significant reversal in Ghana's mineral sector export performance in the world market. This has been attributed to the increase in operational costs and decline in reserves (Amponsah-Tawiah and Dartey-Baah, 2011). Contrarily, the RCA value of SITC 3 was 0.47 in 1996 which indicates China has no comparative advantage of SITC 3 in the world market. Considering inter-temporal shifts of RCA of SITC 3 in China, the analysis indicates that China gained a comparative advantage in

2003 with RCA value of 2.93. However, a relatively low RCA values compared to Ghana between 2004 to 2013 shows Ghana is positioned more advantageously than China in the world market.

4.1.4 SITC 4 – Animal Products

The RCA value of SITC 4 –Animal products for Ghana was 16.42 in the year 1997 where it value decreased to 0.1 in 2013 (Fig 4d). That shows the declining and weak comparative advantage of animal products for Ghana in the world market. In regards to inter-temporal shifts of RCA of SITC 4, it indicates that the comparative advantage has steeply and significantly declined over the years. The case for China is no different to Ghana which shows an overall inter-temporal decreased indicating also a less comparative advantage of export of animal products in the world market. Overall, the analysis shows that for the product of SITC 4, both Ghana and China is positioned less advantageously in the world market.

4.1.5 SITC 5+6 – Plastic and Rubber

The RCA value of SITC 5+6 – Plastic and Rubber for Ghana was 0.4 in the year 1996 where its value declined to 0.02 in 2013 (Fig 4e). This shows that Ghana has no significant comparative advantage in her export of Plastic and Rubber to the world market. The inter-temporal shift of RCA during 1996-2013 affirms that Ghana's comparative advantage over plastic and rubber is very insignificant, rather Ghana imports plastic and rubber from other countries particularly China. On the other hand, China had an RCA value of 3.97 in 1997 which indicates China's high comparative advantage over SITC 5+6 in the world market (Fig 4e). However, looking at the inter-temporal shift of RCA during 1997-2013, China has been losing gradually her comparative advantage which declined to 1.07 in 2013. Overall, the analysis shows that for the product of SITC 5+6, China is positioned more advantageously than Ghana in the world market.

4.1.6 SITC 65 –Textiles and Clothing

The RCA value of SITC 65 –Textiles and clothing products for Ghana was 0.07 in the year 1997 where it slightly increased to 1.78 in 2006 and decreased to 0.06 in 2013 (Fig 4f). This shows Ghana has no comparative advantage in the world market for textiles and clothing. This is not surprising though as the textile sector in most Africa countries including Ghana is known to be import dominated (Teal, 2002; Jauch and Traub-Merz, 2006). China's RCA value for SITC 65 was 2.51 in 1993 (Fig 4f) which shows China has relatively high comparative advantage in the world market for Textiles and clothing. Inter-temporal shift analysis however shows China hit a low RCA in 2003 (RCA =0.47) but steadily increased to high of 3.7 in 2008 and maintaining that till 2013. The textile and clothing industry is known to be a mainstream and key industry in China possessing a considerable percentage of the national economy since the reform (Lau et al., 2009) and ranking first in the world in annual production. Overall, the comparative analysis of RCA shows China is positioned advantageously compared to Ghana in the world market for the product of SITC 65.

4.17 SITC 67 – Metals

Figure 4g shows that Ghana has no comparative advantage for SITC 67 in the world market from 1993 to 2001. Inter-temporal analysis however shows that in 2002, Ghana recorded a peak high RCA value of 1.27 but decreased since then. On the contrary, China RCA value in 1993 was 1.84 which peaked at 2.66 in 1999 (Figure 4g). This shows China has relatively high comparative advantage in the world market for metals. China's metal industry particularly steel is recorded to be dominating in the global market (Popescu et al, 2016, Wu et al., 2017). Overall, comparative analysis of the RCA values indicates that for the product of SITC 67, China is placed highly advantageous than Ghana in the global market.

4.2 Competitive Evaluation of the 7 Products for Ghana and China

Table 2 shows the level and pattern of competition between Ghana and China in the global market from 1993-2013. This have been assessed by determining the Spearman's Rank Correlation coefficients for the RCA index for both Ghana and China in the products for SITC 0-6 as well as 65 and 67. This was an attempt to key out if Ghana and China compete and/ or complement each other in the world market for the investigated products.

Here, the results was interpreted on a two level scale of competitiveness and complementariness where positive r_s shows competitiveness between the two countries and negative r_s shows complementariness between the two countries for that product . The results reveals higher competitiveness for food products and wood (SITC 0 and 2) for the two countries with SITC 0 showing highest level of competitiveness. On the hand, r_s for SITC 3, 5+6, 65 and 67 indicates that's the two countries are complementary in the world market for Minerals, plastic and rubber, Textiles and clothing and Metals.

Table 2. The calculated Spearman Rank (r_s) Correlation Coefficient values of the investigated products between Ghana and China

SITC	Products	r_s
0	Food products	0.63
2	Wood	0.235
3	Minerals	-0.164
4	Animal products	NA
5+6	Plastic and rubber	-0.358
65	Textiles and clothing	-0.011
67	Metals	-0.387

5. Conclusions and Recommendations

This study analyzed the revealed comparative advantage for some products based on the Standard International Trade Classification (SITC) by the World Trade Organization for listing products between Ghana and China. The analysis herein shows that among the investigated 7 products, Ghana is positioned more advantageously in the world market than China over 3 products which includes Minerals, Wood and Food products. Similarly, China

also had a comparative advantage than China over 4 products including Textiles and clothing, Plastic and rubber, Metals and Animal products. The inter-temporal shifts of RCA over the studied years shows China has improved her comparative advantage over the years for most products while Ghana has seen a relative decline in her competitiveness in the investigated product. From the results, we can understand that the composition of exports in Ghana shows little and/or low comparative advantage for manufactured goods with maintained competitiveness for raw materials. Apparently, the industrial sector in Ghana is being challenged with the domination of low value added products, the increased imports of manufactured goods, thus industries face competition both in the internal and external markets.

For the time period, Ghana has showcased its high comparative advantage for resource intensive product, likewise traditional primary export namely Raw Materials, Food Products (SITC 0), Minerals (SITC 3) and Wood (SITC 2). The RCA index for Ghana overall indicates that Ghana has not improved its specialization even in the exports of its resource intensive products like Wood (SITC 2), Minerals (SITC 3). In contrast, China shows steady growth in all its high comparative advantage product categories. Clearly, Ghana appears to not have made any substantial progress towards taking advantage of the dynamic potential of SEZs as a tool for sustainable exports gains transformation. From the analysis, it is not surprising why the annual total exports per capita of Ghana (Figure 1) has reduced significantly over the last two decades. A clear indication of how Ghana has lost its competitiveness in the world market. Ghana's net exports results have not been consistent, thus averagely on the decline where free zones exports have been less than 10% of total exports. This could be attributed to the less enduring change in export structure in bare contrast to other successful countries

Based on the revelation from this study, the following recommendations are suggested to overcome these and many more challenges facing Ghana free trade zones

1. There is the need to increase diversification and sophistication of Value Chains. This will not only aim at pushing the industrialization of the country forward but also improve the competitive advantage of the existing sectors for example agriculture sector thus reduce the country's vulnerability in the world market. All stakeholders including policymakers, businesses, Ghana Free Zones Board, Ghana Investment Promotion Centre, financial institutions etc. must have strong and long-term commitment, should be interested in complex production and services processes that could ensure the continuity of SEZ policy with adequate provision of basic services. More so, Ghana can draw some key useful lessons from China's experiences of SEZ program.
2. Learning from China, Ghana could employ an economic shifting from labor intensive industry to technology based industry in their SEZs which is likely to improve efficiency and add value to products to attract world trade market.
3. A fundamental key objective of SEZs is to overcome the constraints of trade and provide better operating environments. Declines in the exports pattern leading to less competitiveness could be attributed to the lack of investors to trade in the products. One of the concern of Ghana's SEZ has been the inability to attract foreign direct

investors to do business with. This is mostly as a result of the weak or lack of institutional authority and administrative procedures characterized by chaotic environment for industries to operate and attract foreign investors and trade partners. In China's SEZ program, the government have laid down formal, empowered one-stop-shops in the zones together with dedicated onsite customs clearance. This was seen to be key to provide an internationally competitive operating environment for investors and trade partners.

4. Finally, further study is required to better improve our understanding on the contributing factors that drives the presented results in this study. This could be by drafting and administering surveys, and direct interview with stakeholders to investigate and come out with more policy level suggestions for improvement.

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