# Trade Liberalization and Economic Growth – A Study on Ghana, Nigeria and Cote d`Ivoire

Francis Amoasah[1]

———————————————— **Abstract** ————————————————

The study considers the relationship between trade liberalization and economic growth among three sub-Saharan African countries: Ghana, Nigeria, and Cote d'Ivoire. We find no statistically significant increase in the economic growth of the countries following trade liberalization. However, post-trade-liberalization exports (and trade) of the countries did increase. Yet, the need for the promotion of exports in high value-added industries remain an age long unduly overdue problem. Increases in imports following liberalization dominate the increases in exports, export earnings remain susceptible to international price volatility and a chunk of the export commodities remain unprocessed as well as broadly narrow in range. The EU, US and China are the major trading partners to Africa, even more (in percentage terms) than the continent trades among itself. While reasonable efforts are being made on the African Continental Free Trade Area (AfCFTA), it should be seen that regional economic integration does not automatically improve growth. However, proper desegregation with the needed checks and balances may help yield for Africa some gains from trade. It is time, therefore, that the countries devise important measures to ensure that these envisaged significant gains from trade are duly realised.

**JEL classifications:** F43, O10, C23, O40

**Keywords:** trade liberalization, convergence, Sub-Saharan Africa.

———————————————— **The author** ————————————————

Department of Economics, Universita di Cassino e del Lazio Meridionale, Italy
Email: amoasah@gmail.com

WORKING PAPER

To

**The 11th FIW-research conference in International Economics**

**Austrian Institute of Economic Research (WIFO)**

**Vienna, Austria**

By

**Francis Amoasah[1]**

**PhD candidate, Università degli Studi di Cassino e del Lazio Meridionale**

**Research Topic:**

TRADE LIBERALIZATION AND ECONOMIC GROWTH – A STUDY ON

GHANA, NIGERIA AND COTE D'IVOIRE

[1] Department of Economics, Universita di Cassino e del Lazio Meridionale, Italy
Email: amoasah@gmail.com

# Abstract

The study considers the relationship between trade liberalization and economic growth among three sub-Saharan African countries: Ghana, Nigeria, and Cote d'Ivoire. We find no statistically significant increase in the economic growth of the countries following trade liberalization. However, post-trade-liberalization exports (and trade) of the countries did increase. Yet, the need for the promotion of exports in high value-added industries remain an age long unduly overdue problem. Increases in imports following liberalization dominate the increases in exports, export earnings remain susceptible to international price volatility and a chunk of the export commodities remain unprocessed as well as broadly narrow in range. The EU, US and China are the major trading partners to Africa, even more (in percentage terms) than the continent trades among itself. While reasonable efforts are being made on the African Continental Free Trade Area (AfCFTA), it should be seen that regional economic integration does not automatically improve growth. However, proper desegregation with the needed checks and balances may help yield for Africa some gains from trade. It is time, therefore, that the countries devise important measures to ensure that these envisaged significant gains from trade are duly realised.

*It's difficult to think about anything else when one starts to think about trade – Bob Lucas*

## 1. Introduction

The debate as to whether opening trade improves a country's economic growth is inconclusive (Edwards 1993, Frankel and Romer 1999, Dollar and Kraay 2001, Greenaway et al 2002, Lee et al 2004, Andersen and Babula 2008, Shaikh 2016). Countries in sub-Saharan Africa (SSA) have experimented with trade liberalization over the course of their economic histories mostly as part of the World Bank and the IMF's structural adjustment programs' (SAPs) requirements for financial assistance because of the belief that market-friendly policies would spur growth. But the growth outcomes in SSA have not been as striking as that of the widely admired growth miracle of the "Asian Tigers". On the contrary, most African countries continue to struggle with growth since the time they decided to seize back their destinies from the hands of their colonial masters and to man their own affairs. In a world trade system which seem metaphorical to a strategic game where the Nash equilibrium is increasing gains from trade to the already rich and powerful nations but less to the poor and developing, it is not unreasonable to say that opening up trade does not necessarily distribute the gains fairly among the countries involved. By the speed of convergence notion, growth models like the canonical Solow predict that countries tend to grow at a higher pace the farther they are from their steady state. However, if the outcomes do not result in a symmetrical distribution of the gains involved to the trading parties, the countries at the lower end of the distribution will not converge to their balanced growth path, ceteris paribus, at their theory-predicted pace. The Doha Development Agenda of trade negotiations among the members of the WTO aimed at reforming the international trading system through lower trade barriers and revised trade rules. And organizations like the IMF and the World Bank have continually advocated for free trade as a key poverty alleviation

channel. But it is hard to see the practicality of this notion that open trade will multiply the gains for everyone involved. If the Bretton Woods Institutions are right in their continual advocacy for open economies as an antidote to poverty from increasing growth through increasing trade, the US' recent attempts to subvert the system and the president's outcry of disfavor of unfair trade dealings with China, Europe and neighboring Canada strongly suggests that open trade, when allowed to operate on a carte blanche, is not necessarily fair. In the 73rd session of the United Nations General Assembly meeting in 2018, the president of the United States has said emphatically that the US "rejects the ideology of globalism but embraces the doctrine of patriotism!"; a bold statement which drives home the argument.

It is not surprising that the principle of convergence has eluded many developing economies especially in sub-Saharan Africa. Shaikh (2016) urges the reconsideration of the market-oriented gospel preached as the standard means of achieving economic growth and development across the world through economic openness and points out that none of the 'old rich' economies of the West like the UK and the US and the likes of Germany, Switzerland and Sweden as well as the 'new rich' countries in Asia like Japan, China, South Korea and Taiwan achieved their zero-to-hero feat over their economic histories through 'wholesale trade liberalization' (Shaikh 2016, 491-495). Recently, forty-four African leaders have signed the African Continental Free Trade Area (AfCFTA) but the impact on the growth of the economies of this 'bold' move could well be assessed when it has set out in full operation and reasonable time has passed. While it is expected that the countries remove tariffs of about ninety percent on the goods, the cost of the annual tax revenue to be forgone is expected to be recovered through time through more jobs, increased trade, larger market, and the free movement of labour and capital. But will the AfCFTA yield the much-anticipated gains as Africa remains the "only" continent that trades the least among itself but has preferred trading more with Europe, US and more recently China?

In this paper, we look at the impact of trade liberalization on economic growth: a study on three sub-Saharan African countries - Ghana, Nigeria and Cote d'Ivoire. A brief historical background of the countries will be presented. A simple model suggesting exports trade as the principal channel of growth of the countries will be shown. We will also make suggestions on how the African continental free trade agreement may yield significant growth for the continent, in the concluding part. The rest of the paper is organized as follows: Section two provides the background to the study. Section three discusses measuring trade liberalization. Section four discusses the research methodology. Section five comments briefly on regional economic integration in Africa and how the countries can ensure significant gain from trade from it. Section six concludes.

## 2. Brief background

Sachs and warner (1995) is a great review of the literature on trade liberalization and economic growth and maintains that "convergence can be achieved by all countries, even those with low initial levels of skills, as long as they are open and integrated in the world economy". Wacziarg and Welch (2008) find a positive relationship, on average, about 5 percentage points between trade liberalization and economic growth after updating and extending the dataset to 1999 of the Sachs and Warner 1995 study of some 118 countries on the relationship between openness and growth. But the authors acknowledge that "the average effects mask large differences across countries…" and that "future research should seek to clarify the factors accounting for heterogeneity in the growth effects of trade reform" (Wacziarg & Welch, 2008). They find that trade liberalization improved the growth of Ghana by 2 percentage points but suggest that Nigeria's economy was close even by 1994 and were silent on the impact of trade liberalization

on the growth of Nigeria and for Cote d'Ivoire. I put forward in general agreement with the literature today that the economy of Nigeria like that of Ghana, should be deemed open as at 1986 when the countries got enrolled on the IMF and the World's structural adjustment programs. Trade liberalization for Cote d'Ivoire, however, followed a rather topsy-turvy manner, going from close to open and back again to close until 1994 when it deepened in its liberalization efforts.

**Figure 1 GDP growth (annual %)**
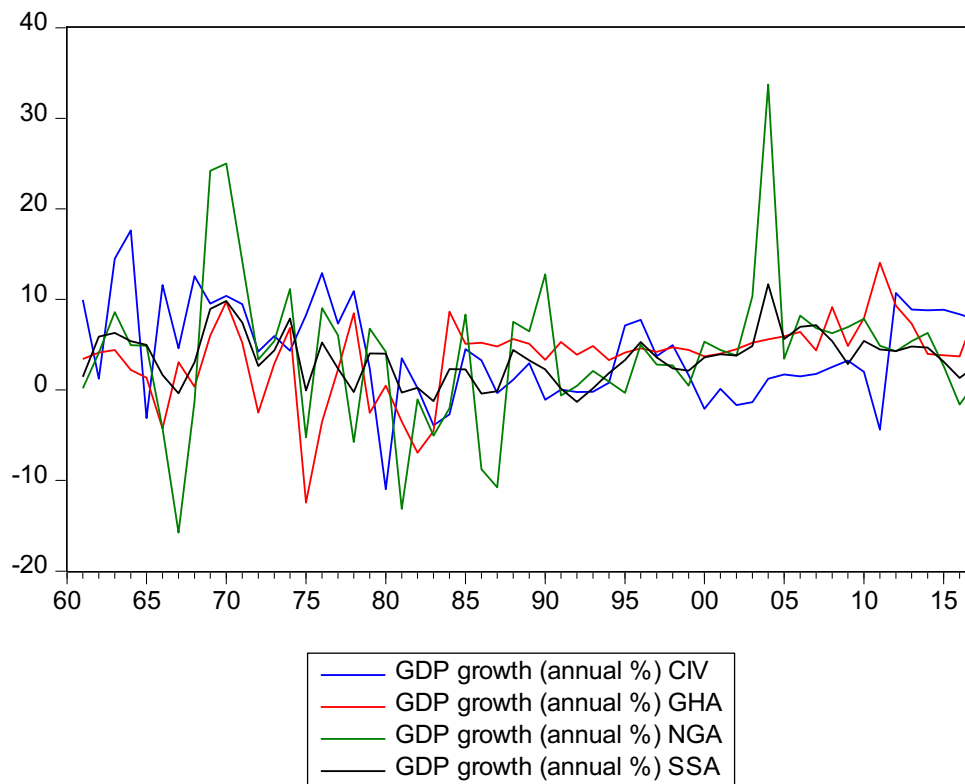


The economies of Ghana, Nigeria and Cote d'Ivoire are viewed among the strongest in West Africa. Being the forerunner of independence in sub-Saharan Africa, Ghana together with the two countries in this study have had historical developments that the author finds interesting in the study of the impact of trade liberalization on economic growth. The countries gained their independence from their colonial masters around the same period. Ghana gained her

independence from Britain in 1957, while Cote d'Ivoire and Nigeria gained theirs in the big year for African independence, 1960, from the French and the British, respectively.

At independence, the then president of Ghana (and the first black president in SSA), Dr. Kwame Nkrumah is fondly remembered for his bold statement that "the independence of Ghana is meaningless unless it is linked with the total liberation of Africa". However, events turned out that he was untimely overthrown in a military coup d'état in 1966 only six years after Ghana became a republic. This rendered futile Nkrumah's ultimate dream of uniting Africa into a single federal union of African states. From 1960, countries in SSA have adopted different kinds of trade policies and the three countries, at some points in their histories from 1960, adopted an industrialization strategy based on import substitution, believing in the doctrine of self-reliance and empowerment of local firms to produce those products they would rather have imported. Later, however, they needed to open their economies for trade, mainly as part of the IMF and the World Bank's SAP's requirements.

Cote d'Ivoire, however, have experimented with different degrees of openness over the years partly because their ties with their colonial masters (France) were not completely severed even after independence. Kone observes that "Cote d'Ivoire's history with trade reforms can at best be described as tentative and rocky and can be summarized as follows: beginning and deepening of protection (1960 – 1984), liberalization (1984 – 1988), return to protection (1988 – 1990), return to liberalization (1990 – 1993), attempt at strengthening trade liberalization (1994 to the present)" (Kone, 2007). In order not to be boggled down with the nitty-gritties of their political economic histories, we discuss essentially how trade openness has impacted on the economic growth of the countries.

While the growth of the countries has been largely flat, their balance of trade has been deficit after liberalization for Ghana and has not been striking for Nigeria, Cote d'Ivoire and SSA as a whole. According to recent estimates, 70% of the export commodities of Africa remain largely unprocessed and that "Africa is only the continent that trades the least with itself, with intra-African trade share of Africa's total merchandise trade at 15 percent compared to 33 percent for the Americas, 55 percent in Asia and 65 percent in Europe!" (Africa Export-Import Bank, 2017). In this sense, any trade liberalization "imposition" such as the IMF-World Bank's will not yield equitable outcomes which will boost the economic growth for everyone. In other words, when there is unequal footing between two parties whereby one (SSA excluding South Africa), as the is the case, produces commodities but the other (like US, Europe, China or all) produces manufactures, free exchange will favour more the manufactures producer to the detriment of the commodities producer, trickling up the gains to the already rich and powerful.

### 3. Measuring Trade Liberalization

Trade liberalization is synonymous to trade openness and it "is associated with the reduction, removal and elimination of taxes on goods and services, quotas on imports, subsidies, and non-tariff barriers to trade, removal of trade-distorting policies, free access to market, free access to market information, the reduction of monopoly or oligopoly power, free movement of capital and labour between and within countries, and free trade zones" (Armah, 2014).

Computing satisfactory indices is a challenge in the literature. For instance, Edwards (1993) examines some work on multi-country studies relating to the trade policy of developing countries which urges a freer trade perspective citing Little et al (1970) on Argentina, Brazil, Mexico, India, Pakistan, the Philippines, and Taiwan and the work of Balassa (1971) on Chile, Brazil, Mexico, Malaysia, Pakistan, the Philippines, and Norway. The author criticises the

limitations of both works which uses the effective rates of protection (ERPs)[2] to measure openness because they failed to: "(1) calculate the evolution of ERPs through time, (2) provide consistent calculations for the same countries in the same years, (3) analyse how specific countries evolve from one trade regime to another, and (4) investigate how alternative policies had affected growth in particular historical setting… concentrating on the characteristic of the import substitution regimes, without comparing it with alternative ways of organizing the external sector" (Edwards 1993, p.1363). Dollar and Kraay (2001) have stressed the difficulty in estimating the impact of trade policy touching on "measurement error, omitted variables and endogeneity" as they note that assigning weights to different categories of goods as well as using average tariffs have their own problems, for instance, in terms of how effective they capture openness by taking into account the degree of importance of the goods they affect and in how binding the tariff system is. They also observe that including trade volumes (exports plus imports as a share of GDP) as one of the explanatory variables would be appropriate if one is looking at the relationship between "trade and growth" but unsatisfactory for a "trade policy-growth" relationship (Dollar and Kraay, 2001).

A few measurement problems abound in estimating the effect of trade policy on growth, apart from the ones mentioned above. One example is the problem of reverse causality. This raise the question of whether more openness means more trade and therefore more growth or rather the opposite where more growing and emerging countries become a destination of interest for investment (more FDI), which increases the growth of the host country. In order not to boggle deep down into the generic problems associated with measurement issues, we go by a simple panel least squares approach, and acknowledge that such a simple approach is useful even if it does not delve into the nitty-gritties associated with a more sophisticated approach.

---

[2] The ERPs should consider the impact of the entire tariff structure on trade by looking at the tariffs on imports of both intermediate and final goods, and how relevant is the imported intermediate inputs in each industry.

## 4. Research Methodology

We adopt a panel least square approach using the World Bank's World Development Indicators data from 1960 to 2015. We could look at the difference in the economic growth performance of the countries before and after trade liberalisation, but it would be dangerous to assume that such a difference reflects the "treatment" of liberalisation policy only because it seems likely that countries with strong institutions are more likely to outperform countries with weaker institutions. Although the three countries have generally identical institutions and infrastructure, the existence of country-specific factors like the recent discovery and commercial extraction of oil for Ghana, international commodity prices volatility of the different primary commodity endowment of the countries and the general political stability are factors that could add to the explanation of growth among the countries. Hence, we use models for the individual countries that explain the idiosyncratic economic growth well enough before including a liberalization dummy variable; one for "after trade opening" and zero for "before", to test if trade liberalization has had a positive effect on the economic growth of the countries. The examination procedures conducted were that, the stationarity or otherwise of the data was tested for using the Augmented Dickey-Fuller (ADF) test for unit root[3]. Empirical studies examining the long and short run relationship between two or more time series variables at levels are generally based on cointegration and the Granger-causality tests. In this study, all the explanatory variables are chosen as a percentage of GDP and given the nature of the sample, it is not arbitrary to treat all variables as stationary even if the ADF test may suggest otherwise. When all the variables are deemed stationary, cointegration analysis (Johansen and Juselius (1990)) is not deemed appropriate but an autoregressive distributed lag model may rather be appropriate insofar as the order of integration of each of the variables is not more than one.

---

[3] Find in appendix 1 the results of the unit root test.

Fixed investment (GFCF), government consumption expenditure (GGFCE), inflation (INF), exports (EXP), oil rents (OR) and the lag of real gross domestic product per capita growth (GDPPCG(-1)) are used in explaining growth in real gross domestic product per capita (GDPPCG) for the countries, in panel least squares estimation using eviews. The model is stated as follows:

$$GDPPCG_{it} = \alpha_i + \beta_1 GFCF_{it} + \beta_2 GGFCE_{it} + \beta_3 INF_{it} + \beta_4 EXP_{it} + \beta_5 OR_{it} + \beta_6 GDPPCG_{it}(-1) + \beta_7 DUM04NGA_{it} + \varepsilon_{it}$$

where the subscripts i and t represent country and time respectively and $\varepsilon_{it}$ is the error term

Variables on the right-hand-side of the equation are measured as a percentage of GDP apart from inflation which is measured by the annual growth rate of the GDP implicit deflator. The dependent variable is the annual percentage growth rate in the real GDP per capita based on constant local currency. The variables are defined according to the World Bank national accounts data. The lagged term of real GDP per capita growth is included in the model to capture omitted variable bias as well as any possible autocorrelation with growth in real GDP per capita, the dependent variable. A dummy variable, DUM04NGA, is employed to eliminate a large outlier, namely the unprecedented jump[4] in the growth of GDP per capita growth for Nigeria in 2004.

In the above equation for GDP per capita growth, $\alpha_i$ is the intercept. It is expected that fixed investment will be positively correlated with growth of real GDP per capita and thus, $\beta_1 > 0$. All other things being equal, the higher the rate of investment, the higher the real GDP per

---

[4] See appendix for graph of GDP per capita growth. The high jump in the GDP growth per capita income growth of Nigeria in 2004 was because of the high price of crude oil and the improved macroeconomic environment, resulting from the positive effect of President Obasanjo's ambitious economic reform in the early 2000s on his assumption of power.

capita growth. Increase in government consumption expenditure is expected to lead to a decrease in real GDP per capita growth all other things being equal because "government consumption measures sets of public outlays that do not directly enhance an economy's productivity" (Barro, 2003). A reason is that injudicious public spending lowers growth by lowering investment and therefore, the coefficient of labour $\beta_2$ is expected to be negative ($\beta_2 < 0$). An increase in inflation is expected to cause a decrease in real GDP per capita growth and so, we expect $\beta_3$ to be negative ($\beta_3 < 0$). An increase in exports is expected to cause an increase in real GDP growth per capita, hence we expect $\beta_4$ to be positive ($\beta_4 > 0$). An increase in the oil rents is expected to cause an increase in the level of real (per capita) GDP but not necessarily GDP growth because oil revenues realised have the effect of significantly impacting growth only in the short run especially at its initial discovery and commercial exploitation year(s) but not necessarily that there will be continual high production volumes that impacts GDP in the long run. Yet, we may expect $\beta_5$ to be positive ($\beta_5 > 0$). Once again, the lag of the dependent variable is included in our model to capture the lagged impacts of shocks; so we can expect $\beta_6$ to be also positive ($\beta_6 > 0$).

**Table 1 Description of the variables**

| Variable | Description | Expectation |
|---|---|---|
| GDPPCG | Real GDP per capita growth (annual %), Dependent Variable | $Y_{it} >/< 0$ |
| GFCF | Fixed investments (% of GDP) | $\beta_1 > 0$ |
| GGFCE | Government consumption (% of GDP) | $\beta_2 < 0$ |
| INF | Inflation, GDP deflator (annual %) | $\beta_3 < 0$ |
| EXP | Exports of goods and services (% of GDP) | $\beta_4 > 0$ |
| OR | Oil rents (% of GDP) | $\beta_5 > 0$ |
| GDPPCG(-1) | Lagged term of real GDP per capita growth | $\beta_6 > 0$ |
| DUM04NGA | Dummy equal to zero for GDP per capita growth of Nigeria in 2004 or one if otherwise | $B_7 > 0$ |

Source: World Development Indicators, 2016.

Observations, findings and conclusions

The fixed effects panel least squares estimation approach is employed.

## Equation 1 Panel least squares estimates (Cote d'Ivoire, Ghana and Nigeria)

Dependent Variable: GDPPCG

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -1.547569 | 2.793600 | -0.553969 | 0.5807 |
| GFCF | 0.019846 | 0.073461 | 0.270160 | 0.7875 |
| GFCE | -0.183278 | 0.179753 | -1.019608 | 0.3102 |
| INF | -0.031818 | 0.021278 | -1.495356 | 0.1377 |
| EXP | 0.142469 | 0.050707 | 2.809673 | **0.0059** |
| OR | -0.023423 | 0.078493 | -0.298401 | 0.7660 |
| GDPPCG(-1) | 0.153385 | 0.080393 | 1.907949 | **0.0590** |
| DUM04NGA | 28.16048 | 4.642417 | 6.065909 | **0.0000** |
| | Effects Specification | | | |
| Cross-section fixed (dummy variables) | | | | |
| R-squared | 0.410315 | Mean dependent var | | 0.436749 |
| Adjusted R-squared | 0.361626 | S.D. dependent var | | 5.604024 |
| S.E. of regression | 4.477522 | Akaike info criterion | | 5.916308 |
| Sum squared resid | 2185.254 | Schwarz criterion | | 6.149848 |
| Log likelihood | -342.0203 | Hannan-Quinn criter. | | 6.011141 |
| F-statistic | 8.427168 | Durbin-Watson stat | | 1.839405 |
| Prob(F-statistic) | 0.000000 | | | |

In the short run, exports positively and significantly affect GDP per capita growth. The model suggests that fixed investment and the lagged term of GDP per capita growth positively affect growth, although the coefficient for the latter is barely significant while that of the former is not significant. However, government consumption expenditure, inflation and oil rents are negatively related to growth in GDP per capita but insignificant. As mentioned, growth in GDP per capita of Nigeria in 2004 was exceptionally high, and without controlling for this outlier the residuals in our model would show asymmetry and a large variance. Since such exceptional growth is unexplained by our model, it is reasonable to eliminate the influence of this

observation from the model using a dummy, which shows a jump in growth for that year of 28%, as well as improving the overall properties of our estimator[5].

The analysis agrees with our prior expectations of the model results although some variables failed to be significant in explaining the dependent variable. Fixed investments and exports are expected to increase GDP growth per capita whereas government consumption expenditure and inflation are expected to decrease GDP growth per capita. However, the growth of the countries is significantly explained by the exports, as exports of primary product remain important source of revenue for them.

**Table 2 Summary of the short- and long-run relationship among the variables**

| Variable | short run | Long run[6] |
|---|---|---|
| GFCF | 0.019846 | 0.0234 |
| GGFCE | -0.18328 | -0.2164 |
| INF | -0.03182 | -0.0375 |
| EXP | 0.142469 | 0.1682 |
| OR | -0.02342 | -0.0276 |

In the short run, if fixed investments and exports increase by 1 percent of GDP, GDP per capita will grow on average by 0.02% and 0.14% respectively. On the other hand, GDP per capita will shrink by -0.18%, -0.03% and -0.02% if there is a unit increase in government consumption expenditure, inflation and oil rents respectively. In the long run, if fixed investments and exports increase by 1 percent of GDP, GDP per capita will grow on average by 0.02% and 0.17% respectively and GDP per capita will shrink by -0.22%, -0.04% and -0.03% if there is a

---

[5] See in appendix for model results without controlling for growth in GDP per capita of Nigeria in 2004 with a dummy

[6] The long run coefficient is computed as $\partial Y/\partial X = \beta_i /(1- \beta_6)$.

unit increase in government consumption expenditure, inflation and oil rents respectively. Once again, exports of the countries is the single most significant contributor to growth for the countries.

## Least Squares estimates for the individual countries

In a panel estimate with fixed effects, we allow only the constant to differ among countries, while the parameters measuring the impact of our explanatory variables are assumed to be the same. It is therefore interesting to evaluate this result by estimating the same model for each individual country. The drawback of this exercise, however, is in the small size of our sample, which is the main reason why we choose a panel approach.

Starting from the same general model, we next evaluate its performance at the country level, presenting only the final specification.

## Equation 2 Least squares estimates for Cote d'Ivoire

Dependent Variable: CIV_GDPPCG

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| C | 1.126231 | 8.320071 | 0.135363 | 0.8929 |
| CIV_GFCF | 0.322195 | 0.117192 | 2.749292 | **0.0086** |
| CIV_GGFCE | -0.661040 | 0.316990 | -2.085364 | **0.0427** |
| CIV_INFD | -0.140776 | 0.069731 | -2.018844 | **0.0495** |
| CIV_EXP | 0.105003 | 0.115745 | 0.907194 | 0.3691 |

| | | | |
|---|---|---|---|
| R-squared | 0.238117 | Mean dependent var | -0.130674 |
| Adjusted R-squared | 0.170394 | S.D. dependent var | 4.632780 |
| S.E. of regression | 4.219662 | Akaike info criterion | 5.812027 |
| Sum squared resid | 801.2498 | Schwarz criterion | 6.003229 |
| Log likelihood | -140.3007 | Hannan-Quinn criter. | 5.884838 |
| F-statistic | 3.516042 | Durbin-Watson stat | 1.449119 |
| Prob(F-statistic) | 0.013989 | | |

Growth in real GDP per capita of Cote d'Ivoire is explained by fixed investments, government consumption expenditure, inflation and exports. Fixed investments and exports are positively related with GDP per capita growth. While the former is significant in explaining growth, the latter was not significant. As stated elsewhere, Cote d'Ivoire, like many SSA countries depend hugely on unprocessed export commodities which are highly susceptible to world price volatility. The country's main export crops, cocoa and coffee, have suffered from price volatility on the international market. Also, recent political instability in the country displaced many of the labour engaged in the production of the cash crops in addition to smuggling of cocoa from Cote d'Ivoire to neighbouring countries especially Ghana for better price of the cash crop. Inflation and government consumption expenditure are both found to be negatively correlated with GDP growth per capita which agrees with our expectations of the model.

## Equation 3 Least Squares estimates for Ghana

Dependent Variable: GHA_GDPPCG

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| GHA_GFCF-GHA_OR | 0.196819 | 0.090881 | 2.165685 | **0.0405** |
| GHA_GGFCE-GHA_OR | -0.500193 | 0.207457 | -2.411067 | **0.0239** |
| GHA_OR | 1.107644 | 0.164742 | 6.723524 | **0.0000** |
| GHA_EXP-GHA_OR | -0.115041 | 0.048881 | -2.353501 | **0.0271** |
| C | 6.598407 | 2.143786 | 3.077922 | 0.0052 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.670384 | Mean dependent var | | 2.832024 |
| Adjusted R-squared | 0.615447 | S.D. dependent var | | 2.213267 |
| S.E. of regression | 1.372498 | Akaike info criterion | | 3.626727 |
| Sum squared resid | 45.21001 | Schwarz criterion | | 3.862468 |
| Log likelihood | -47.58755 | Hannan-Quinn criter. | | 3.700558 |
| F-statistic | 12.20298 | Durbin-Watson stat | | 1.544114 |
| Prob(F-statistic) | 0.000015 | | | |

For Ghana, growth in real GDP per capita is explained by fixed investments, government consumption expenditure, oil rents and exports. Due to the problem of multicollinearity, it is reasonable to transform the variables adjusting for oil rents as shown above. While a unit increase in non-oil fixed investment and oil rents are found to increase growth in GDP per capita, non-oil government consumption expenditure and non-oil exports are found to decrease growth in GDP per capita. Oil rents are however a significant boost to the GDP per capita of Ghana, all other things being equal, as confirmed below.

## Wald test

Equation: EQGHA

| Test Statistic | Value | Df | Probability |
|---|---|---|---|
| t-statistic | 5.093754 | 24 | 0.0000 |
| F-statistic | 25.94633 | (1, 24) | 0.0000 |
| Chi-square | 25.94633 | 1 | 0.0000 |

Null Hypothesis: C(3)-C(1)-C(2)-C(4)=0
Null Hypothesis Summary:

| Normalized Restriction (= 0) | Value | Std. Err. |
|---|---|---|
| -C(1) - C(2) + C(3) - C(4) | 1.526059 | 0.299594 |

Restrictions are linear in coefficients[7].

---

[7] $GDPPCG_{GHA} = \alpha_i + \beta_1(GFCF_t - OR_t) + \beta_2(GGFCE_t - OR_t) + \beta_3 OR_t + \beta_4(EXP_t - \beta_5 OR_t)$

$\partial GDPPCG/\partial GFCF = \beta_1, \qquad \partial GDPPCG/\partial GGFCE = \beta_2, \qquad \partial GDPPCG/\partial EXP = \beta_4$

$\partial GDPPCG/\partial OR = \beta_3 - \beta_1 - \beta_2 - \beta_4 = 1.526059$

This means that on average, a one percent increase in oil rents will increase GDP per capita growth of Ghana by 1.53%, all other things being equal.

Equation 4 Least squares estimates for Nigeria

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 9.013509 | 5.308963 | 1.697791 | 0.1010 |
| NGA_GGFCE | -0.453502 | 0.278955 | -1.625720 | 0.1156 |
| NGA_INFD | -0.049110 | 0.031620 | -1.553126 | 0.1320 |
| NGA_TRD | 0.011290 | 0.064151 | 0.175993 | 0.8616 |
| NGA_GFCF | -0.334917 | 0.164359 | -2.037723 | **0.0515** |
| NGA_FDI | 0.124328 | 0.441967 | 0.281307 | 0.7806 |
| NGA_DUM04NGA | 26.03772 | 5.145367 | 5.060421 | **0.0000** |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.663762 | Mean dependent var | | 1.054957 |
| Adjusted R-squared | 0.589042 | S.D. dependent var | | 7.586045 |
| S.E. of regression | 4.863111 | Akaike info criterion | | 6.182475 |
| Sum squared resid | 638.5460 | Schwarz criterion | | 6.496726 |
| Log likelihood | -98.10208 | Hannan-Quinn criter. | | 6.289644 |
| F-statistic | 8.883359 | Durbin-Watson stat | | 1.885808 |
| Prob(F-statistic) | 0.000022 | | | |

Government consumption expenditure, inflation and fixed investments in Nigeria are negatively related to GDP per capita growth but not significant whereas trade and FDI are positively related to GDP per capita but not significant. However, the dummy for growth in 2004 is very significant in explaining growth in per capita GDP for the country because the growth in GDP per capita shot up at a very high of 30% in that year, hence its elimination from the model earlier on.

Now we test for the impact of trade liberalization among the three countries using a dummy, one for after trade opening and zero before. For Ghana and Nigeria, the literature suggests rather that the year 1986 is more appropriate for indicating the transition to a more open economy, rather than going by the Sachs and Warner (1995) and the Wacziarg and Welch (2008) study that the Nigerian economy was closed even as at 1994. As said elsewhere, Nigeria,

like Ghana, opened its economy in 1986 due to the Bretton Wood's institutions requirements for financial assistance. For trade liberalization in Cote d'Ivoire, we apply the dummy variables following the historical observation of trade liberalization in Cote d'Ivoire based on Kone (2007) as mentioned elsewhere. For emphasis sake, we apply the dummy as follows: (1) zero for the beginning and deepening of protection (1960 – 1984), (2) one for liberalization (1984 – 1988), (3) zero for the return to protection (1988 – 1990), (4) one for the return to liberalization (1990 – 1993), and (5) one for attempts at strengthening trade liberalization (1994 to the present).

## Equation 5 Panel least squares estimates - Cote d'Ivoire, Ghana, Nigeria

Dependent Variable: GDPPCG

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -1.692174 | 2.804834 | -0.603306 | 0.5476 |
| GFCF | 0.030955 | 0.074966 | 0.412913 | 0.6805 |
| GGFCE | -0.172417 | 0.180619 | -0.954590 | 0.3419 |
| INF | -0.031128 | 0.021335 | -1.459026 | 0.1475 |
| EXP | 0.114219 | 0.062440 | 1.829266 | **0.0701** |
| OR | -0.015063 | 0.079366 | -0.189794 | 0.8498 |
| GDPPCG(-1) | 0.149871 | 0.080665 | 1.857946 | **0.0659** |
| DUM04NGA | 28.11936 | 4.651143 | 6.045687 | **0.0000** |
| LIBDUM | 0.930041 | 1.195282 | 0.778093 | 0.4382 |

| | Effects Specification | | | |
|---|---|---|---|---|

Cross-section fixed (dummy variables)

| | | | | |
|---|---|---|---|---|
| R-squared | 0.413602 | Mean dependent var | | 0.436749 |
| Adjusted R-squared | 0.359306 | S.D. dependent var | | 5.604024 |
| S.E. of regression | 4.485648 | Akaike info criterion | | 5.927525 |
| Sum squared resid | 2173.072 | Schwarz criterion | | 6.184418 |
| Log likelihood | -341.6877 | Hannan-Quinn criter. | | 6.031841 |
| F-statistic | 7.617539 | Durbin-Watson stat | | 1.836713 |
| Prob(F-statistic) | 0.000000 | | | |

In the case of performing the panel least squares for the three countries, the dummy variable for trade liberalization LIBDUM has a positive coefficient explaining GDPPCG but not

significant because its impact is already incorporated into the other explanatory variables, generating multicollinearity.

## Equation 6 Panel least squares, Exports

Dependent Variable: EXP

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 6.039472 | 1.288100 | 4.688668 | 0.0000 |
| EXP(-1) | 0.725786 | 0.051452 | 14.10609 | 0.0000 |
| LIBDUM | 3.982185 | 1.015373 | 3.921892 | 0.0001 |
| | Effects Specification | | | |

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.842992 | Mean dependent var | 29.24900 |
| Adjusted R-squared | 0.838992 | S.D. dependent var | 12.43340 |
| S.E. of regression | 4.988999 | Akaike info criterion | 6.082726 |
| Sum squared resid | 3907.748 | Schwarz criterion | 6.178022 |
| Log likelihood | -487.7008 | Hannan-Quinn criter. | 6.121417 |
| F-statistic | 210.7377 | Durbin-Watson stat | 2.292261 |
| Prob(F-statistic) | 0.000000 | | |

We test whether trade liberalization is significant in explaining trade or exports. We find that trade liberalization significantly improved exports and trade. However, while this sounds pleasing to hear, the question remains whether increasing trade is necessarily relevant for growth.

Trade liberalization increases exports as a share of GDP by 4% in the short term, and by 14% in the long term. Given this and from our previous panel estimate that an increase in the exports/GDP ratio of 1% implies faster growth of 0.11% in the short term, and 0.13% in the long term. However, the estimates must be treated with caution because although liberalization

improves the countries' trade (exports and imports), trade liberalization in itself fail to significantly increase growth.

## Equation 7 Panel least squares, Trade

Dependent Variable: TRD

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 7.002768 | 2.026680 | 3.455291 | 0.0007 |
| TRD(-1) | 0.834800 | 0.040414 | 20.65623 | 0.0000 |
| LIBDUM | 5.207880 | 1.578433 | 3.299399 | 0.0012 |

| Effects Specification | | | |
|---|---|---|---|

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.882122 | Mean dependent var | 57.40069 |
| Adjusted R-squared | 0.879119 | S.D. dependent var | 23.10983 |
| S.E. of regression | 8.034816 | Akaike info criterion | 7.035823 |
| Sum squared resid | 10135.65 | Schwarz criterion | 7.131119 |
| Log likelihood | -564.9017 | Hannan-Quinn criter. | 7.074515 |
| F-statistic | 293.7218 | Durbin-Watson stat | 2.151063 |
| Prob(F-statistic) | 0.000000 | | |

Not only does trade liberalisation improves the export receipts of Ghana, Nigeria and Cote d'Ivoire, it has a significant positive impact on their trade in general as showing above. Trade liberalisation trade among the countries increases trade on average by 5.2% in the short run and 31% in the long run. But as imports usually dominates exports over the period, the consequence is a current account deficit as a percentage of GDP.

## Table 2 Robustness of the residuals

| | | |
|---|---|---|
| Cote d'Ivoire | Serial correlation | No |
| | Heteroskedasticity | No |
| | Normal distribution | No |
| | Stability of model parameters | Yes |
| Ghana | Serial correlation | No |
| | Heteroskedasticity | No |
| | Normal distribution | Yes |
| | Stability of model parameters | Yes |

| Nigeria | Serial correlation | No |
| | Heteroskedasticity | No |
| | Normal distribution | Yes |
| | Stability of model parameters | Yes |

In the analysis above, we resorted to the panel least squares due to the small sample size of the data. I perform in sequence some residual diagnosis, mainly for serial correlation, heteroskedasticity, normality in the distribution, and the stability of the individual countries' model. I find that the model for the individual countries pass all four tests above. It is only the model for Cote d'Ivoire that rejects the normality of the distribution of the residuals but since it passes the other robustness checks, we decide to proceed with.

## 5. Regional Economic Integration

As mentioned elsewhere, regionalism especially by unequal trading parties tend to favour the more powerful but to the detriment of the weak. This put smaller countries like those in SSA who are largely agricultural-biased at the losing end. The global trade system if allowed to operate without some forms of restrictions does not produce equitable outcomes and this has been the misery of African countries since time immemorial. However, with a new air of optimism coupled with a strong political will and new efforts geared toward a radical redesign of unfavourable terms of trade, the continent can overturn the magnitude of its present unfair dealings. Forty-Four African countries have signed the African free trade agreement. It is pleasing that the countries which are all African are of equal footing in their trade (exports and imports) composition and this is a good ingredient of necessity to a rewarding regional integration. In light of this, this is a commendable bold step taken by the African leaders. However, how promising it is as it stands will depend on proper checks and balances. More of intra-African trade is strongly recommended if any significant gains from trade for the countries is to be realized. It has been said in the theory of conditional that convergence is

based on countries having the minimum technical ability and the skilled human resources if they are to grow at a significant pace. But in the modern-day diffusion of skills across national boundaries, access to the needed knowledge is no longer a barrier and this is no longer a reason for the unfortunate growth situation of the African continent. A well-designed regulations and carefully crafted scheme of operations is the way forward. Efforts should be targeted at improving the transit infrastructure particularly the road, rail and water transport networks needed and in the automation of shipping processes. A proper implementation of the no-tariffs system associated with a free trade area should be enforced rigorously as stipulated by agreement by all the member-states. These would help bridge the gap between the commodities production end on the one hand and the industrial sector on the other. Having said this, the begging question is how to address the challenges in the industrial sector. It is worrying to say that the industrial sector has not much improved and the present state of many that were set up in the 1960s, as part of the import substitution strategy, has not been encouraging. When these goals are achieved, while the population of Africa as a continent would present opportunity for a ready market for made-in-Africa industrial outputs, it would also serve as a market for the abundant industrial raw material supplies. In this sense, an urgent need for entrenching and expanding Africa's industrial sector is called for!

Our finding is in agreement with the recent of the United States against unfair trade dealings with China, Europe and neighboring Canada, and the attempt of US to subvert the international trade system to prevent further unfair trade against it. It suggests that the problem of "unfairness" may even worse among SSA countries, as a chunk of the export commodities remain unprocessed.

## 6. Conclusion

The study considered the relationship between trade liberalization and economic growth using three SSA countries - Ghana, Nigeria, and Cote d'Ivoire. The empirical findings show that the post-liberalization export (and trade) of the countries increased but their economic growth was not significantly boosted. We reject the hypotheses that trade liberalization has improved economic growth performance of Cote d'Ivoire, Ghana and Nigeria but fail to reject that trade liberalization has improved their overall exports and trade. The need for the promotion of exports in high value-added industries has been an age long unduly overdue outcry. It is time appropriate measures are put in place and proper checks and balances adopted against further unfairness to the continent. This may involve proper regional integration through the African continental free trade area, a healthy industrialization organization, and bridging out the infrastructural gap. It also calls for leadership efforts in the implementation of free trade area agreements and regulations. These could help alleviate poverty on the continent while reducing unemployment.

## Appendices

### Appendix 1 Unit root test of the variables

| Variable | Cote d'Ivoire | | | Ghana | | | Nigeria | | |
|---|---|---|---|---|---|---|---|---|---|
| | **5% Test critical value** | **P-value (t-Statistic)** | **Result** | **5% Test critical value** | **P-value (t-Statistic)** | **Result** | **5% Test critical value** | **P-value (t-Statistic)** | **Result** |
| GDPPCG | -2.917650 | 0.0000 (-5.420939) | Stationary | -2.917650 | 0.0003 (-4.720201) | Stationary | -2.917650 | 0.0001 (-5.214001) | stationary |
| GFCF | -2.923780 | 0.4701 (-1.609487) | non-stationary | -2.925169 | 0.6218 (-1.300516) | non-stationary | -2.954021 | 0.0007 (-4.653672) | stationary |
| D(GFCF) | -2.923780 | 0.0000 (-5.401386) | Stationary | -2.926622 | 0.0000 (-8.086093) | Stationary | - | - | - |
| GGFCE | -2.916566 | 0.0640 (-2.806424) | non-stationary | -2.916566 | 0.2952 (-1.978501) | non-stationary | -2.954021 | 0.0544 (-2.914967) | non-stationary |
| D(GGFCE) | -2.917650 | 0.0000 (-7.258905) | Stationary | -2.917650 | 0.0000 (-6.567896) | Stationary | -2.957110 | 0.0000 (-6.827025) | stationary |
| INFD | -2.917650 | 0.0000 (-5.436810) | Stationary | -2.917650 | 0.0001 (-4.999027) | Stationary | -2.917650 | 0.0000 (-6.796880) | stationary |
| EXP | -2.916566 | 0.1269 (-2.475879) | non-stationary | -2.916566 | 0.7232 (-1.064796) | non-stationary | -2.916566 | 0.1191 (-2.508528) | non-stationary |
| D(EXP) | -2.917650 | 0.0000 (-8.279978) | Stationary | -2.917650 | 0.0000 (-7.034309) | Stationary | -2.917650 | 0.0000 (-10.70386) | stationary |
| OR | -2.938987 | 0.4735 (-1.599079) | non-stationary | -2.931404 | 0.9246 (-0.244158) | non-stationary | -2.931404 | 0.0169 (-3.387730) | stationary |
| D(OR) | -2.943427 | 0.0000 (-6.236797) | Stationary | -2.933158 | 0.0000 (-6.724506) | Stationary | - | - | - |

Source: Author's calculations, World Bank WDI, 2016

**Appendix 2**
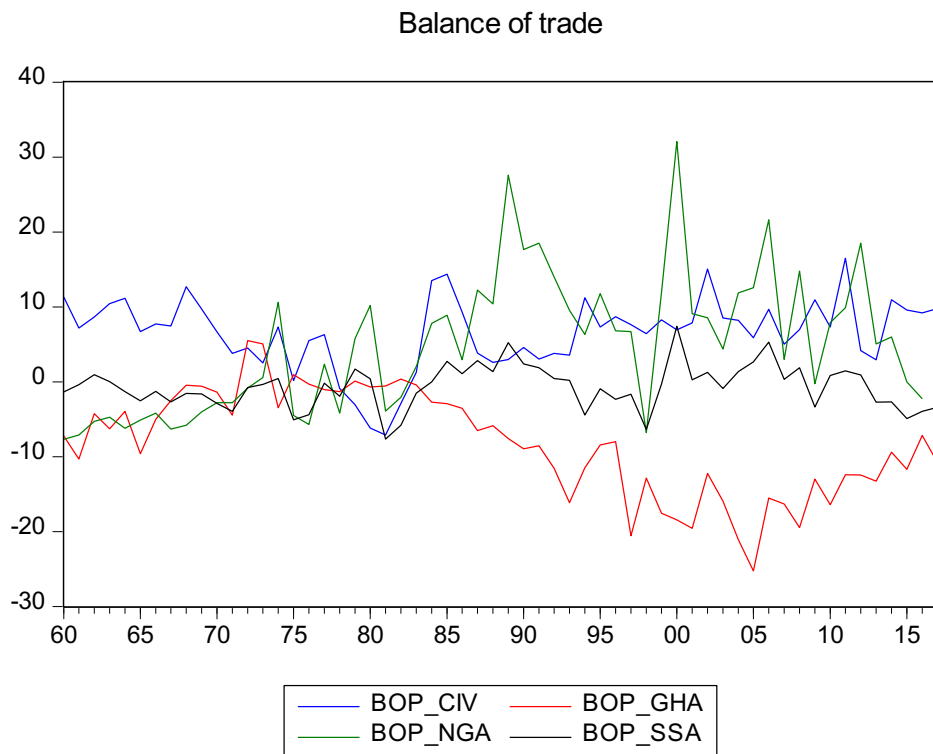
### Balance of trade



Author's elaboration, World Trade Organization, and World Bank GDP estimates, 2018.

### Merchandise trade (% of GDP)
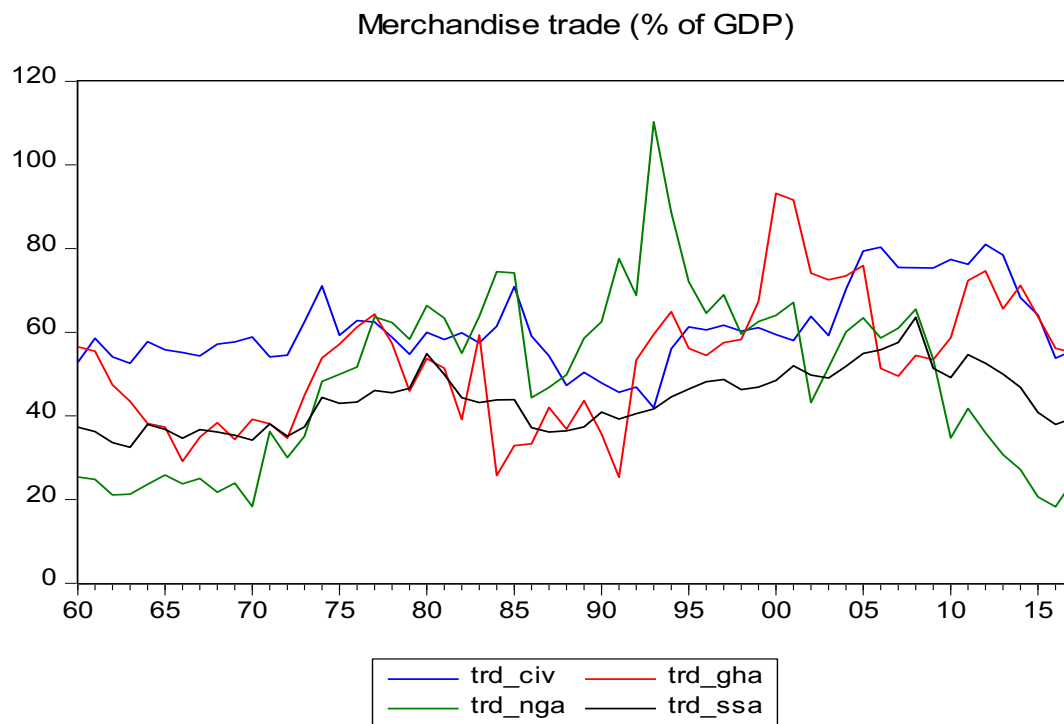


Author's elaboration, World Trade Organization, and World Bank GDP estimates, 2018.

**Appendix 3**

Exports (% of GDP)
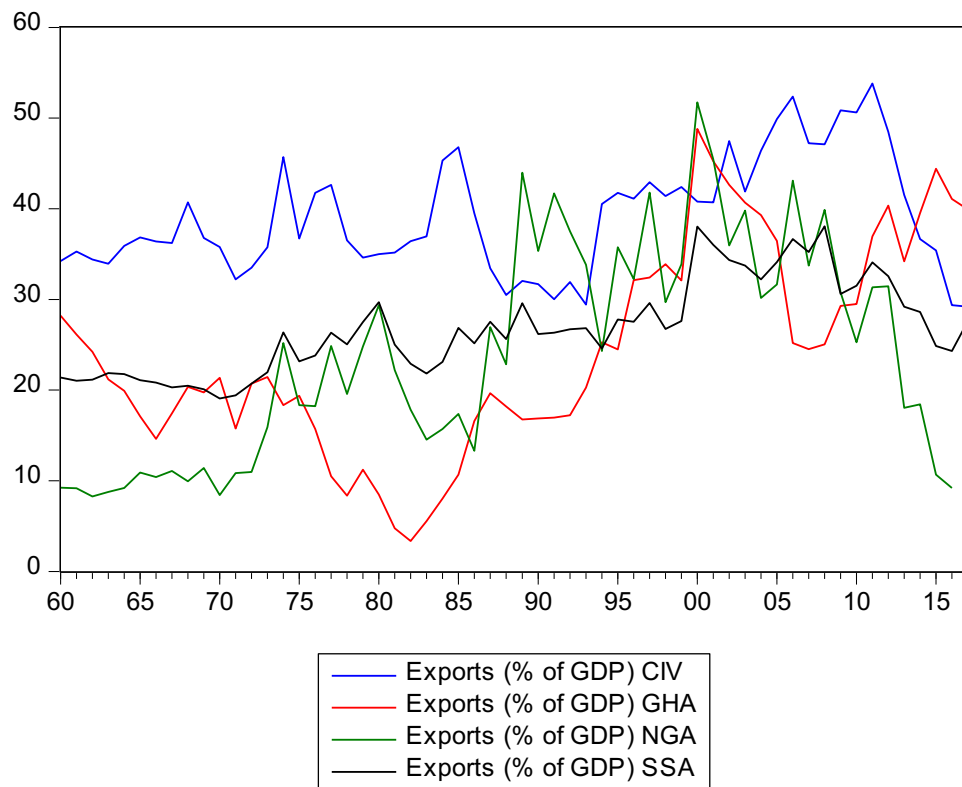


Author's elaboration, World Trade Organization, and World Bank GDP estimates, 2018.

# References

Andersen, L., & Babula, R. (2009). The link between openness and long-run economic growth. *J. Int'l Com. & Econ.*, *2*, 31.

Armah, M. K., Brafo-Insaidoo, W. & Akapare, I. A. (2014) *Trade Liberalization and Import Revenue: Evidence from Ghana* International Journal of Economics, Commerce and Management, United Kingdom Vol. II, Available at: http://ijecm.co.uk/ ISSN 2348 0386

Barro, R. J. (1999). Determinants of economic growth: implications of the global evidence for Chile. cuadernos de economía, 443-478.

Dollar, D., & Kraay, A. (2001). *Trade, growth, and poverty*. World Bank, Development Research Group, Macroeconomics and Growth.

Edwards, S. (1993). Openness, trade liberalization, and growth in developing countries. *Journal of economic Literature*, *31*(3), 1358-1393.

Frankel, J. A., & Romer, D. (1999). Does trade cause growth?. *American economic review*, 379-399.

Greenaway, D., Morgan, W., & Wright, P. (2002). Trade liberalisation and growth in developing countries. *Journal of development economics*, *67*(1), 229-244.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and statistics*, *52*(2), 169-210.

Kone, Y. (2007). *The effects of adjustment policies on economic* growth, welfare and income distribution in a CGE model with imperfect competition. An application to Cote d'Ivoire*. University of Kansas.

Lee H. Y., Ricci L. A., and Rigobon R. (2004) *IMF Working Paper* Once Again, is Openness Good for Growth? The International Monetary Fund

Oramah, Benedict (2017) *A Lecture on the Theme delivered at New York University on 10 October 2017 by the President of the Africa Export-Import Bank* A Path to Making Africa Great Again

Shaikh, A. (2016). *Capitalism: Competition, conflict, crises*. Oxford University Press.

Wacziarg, R., & Welch, K. H. (2008). Trade liberalization and growth: New evidence. The World Bank Economic Review, 22(2), 187-231.