

# Impact of Import and Export on the Economic Growth of Ghana

Moyo Grace<sup>1</sup> and Amoah Daniel Ayisi<sup>2</sup>

<sup>1</sup>Student, SILC Business School, Shanghai University, CHINA

<sup>2</sup>Student, College of Transport and Communication, Shanghai Maritime University, CHINA

<sup>1</sup>Corresponding Author: [danielamoah@outlook.com](mailto:danielamoah@outlook.com)

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## ABSTRACT

This study investigates the impact of import and export on the economic growth of Ghana by using a multiple linear regression model. The variables of interest for these models were the gross domestic product representing the economic growth as the dependent variable. Import, export, foreign direct investment and population were the independent variables used in determining the relationship they have with economic growth. Secondary data on GDP, import, export, population and FDI were accessed from the World Bank website in order to satisfy the model which was run through a regression software called STATA. The results from the study indicated that both import and export are tremendously important factors in effecting growth on the economy of Ghana. Population on the other hand shows a negative effect on the economy. This research then suggested that more exports must be encouraged to boost the growth of the economy.

**Keywords**— Trade, Gross Domestic Products (GDP), Export, Import, Population, Foreign Direct Investment

Economic growth basically refers to the increase or decrease of production in a country. It is rapid or steady process where the capacity of productivity of an economy is increased or decreased overtime to bring about rising or falling levels of a county's output and income. (Cornwall, 2018) Indicated that economic growth is the process by which a country's health increases and is mostly used in short term economic performance. The economic growth of a country is best measured using the Gross domestic product (GDP) which takes into consideration the country's economic output. This is achieved by considering all goods and services that are produced for sale by businesses in the country whether sold internationally or domestically.

The economy of Ghana is very rich in resources and also diverse. It includes manufacturing, exportation of raw materials and industrial minerals which have given Ghana one of the highest gross domestic product per capita in West Africa. Ghana's economic economy has been inconsistent for the past few years but in the first quarter of 2019 the gross domestic product (GDP) growth was estimated at 6.7% compared to 5.4% in the same period of 2018 and the non-oil growth was also at 6.0% which is a strong indication. The relatively high quarterly growth was attributed to a strong recovery in the services sector which grew by 7.2% (Worldbank, 2019).

A disturbing phenomenon that is mostly discussed in Ghana is the trade deficit where the number of imported goods exceed what is exported. The revenue the country makes from exporting goods is lesser than what she spends in importing into the country and this goes a long way to stall the growth of the country. Most of the exports from Ghana are raw materials or semi-finished goods which generates less revenue. This trade deficit seems to have created financial difficulties for the country hence the massive borrowing from both domestic and international aids. The excess borrowing has led to Ghana being part of the heavily indebted poor countries (HIPC) with billions of cedis in debt. (Patrick Enu, 2013) highlighted in his study that in the long run, increase in export has a positive effect on the real GDP whereas

## I. INTRODUCTION

International trade is a major driver of national and global economies with an impact which cannot be ignored. According to (Robinson, 2020) International trade can be defined as transactions that are made between two or more countries with commonly traded items such as consumer goods, capital goods and raw materials. Goods moving in and out of countries via different modes of transport goes a long way in impacting the economic growth of Ghana. Ghana is a sub-Saharan country with numerous natural resources and raw materials hence her involvement in major import and export trade with other countries globally.

Ghana is a West African country bordered by the Atlantic Ocean, Togo, Benin, Burkina and Cote d'Ivoire with a population of around 30 million in 2021. In the quest of achieving a rapid economic growth, the state is implemented policies such as planting for food and jobs and also building factories in every district in the country.

increase in import has a negative effect on the real GDP of the country.

All nations one way or the other need to import goods and services in order to ensure nation building. The import of goods and services may be as a result of uneven distribution of natural resources and also the requirement of expertise from other countries. For this reason, imports have major impacts on a country's economy. Most countries are considering minimizing their level of imports through policies and programs in order to promote indigenous companies and locally produced goods. Many developing countries such as Ghana have adopted the import substitution strategy in order to reduce their imports but unfortunately the plan has not gone as planned. Ghana has given subsidies to farmers and vehicle assembling companies in order to promote domestic production and to subsequently lead to a higher growth in gross domestic product. In 2019 the volume of import merchandise to Ghana totaled \$10.4 billion. Compared with 2018, total commodity imports to Ghana decreased by 12.1 percent. Import of merchandise decreased by 1.44 billion. The amount of imports of merchandise to Ghana in 2018 was 11.8 billion dollars (Economy, 2020).

Exports are major boosters of a country's GDP. In 2018, Ghana's export generated a total of \$20.5 billion making it the 71<sup>st</sup> exporter globally. Ghana's export has changed from \$17.3 billion in 2013 to 20.5 billion in 2018 with an increment of \$3.2 billion which would go a long way to increase the economic growth of the country (OECDWorld, 2018).

It is believed that population and economic growth has a relationship. The relationship between population and economic growth has been extensively studied by (Peterson, 2017). Many experts argue that the economic growth of high-income countries is expected to slow down while others also argue that growth in population would be problematic in the long run since the people are going to use all the finite resources available which would stall the potential economic growth in the world. Ghana's population is around 30 million and it is expected to grow in the coming years. Population growth affects many aspects of the world such as the size of workforce, international migration, age structure and the overall economic growth of a country.

Foreign direct investment (FDI) takes place when a corporation in one country establishes a business operation in another country, through setting up a new wholly-owned affiliate, or acquiring a local company, or forming a joint venture in the host economy (Moran, 2012). According to (UNCTAD, 2020) FDI flows in Ghana decreased from 3 million to United States dollars to 2.3 million between 2018 and 2019.

The nexus between economic growth, imports, exports, population, foreign direct investment and other

factors has always been a subject of interest in economics and in this article two regression models were developed to find their relationship.

## II. METHODOLOGY

In this paper, we use the multiple regression analysis to examine the impact of import and export of goods and services in the economic growth of Ghana in the long run.

## III. DATA AND PRELIMINARY ANALYSIS

The study employs annual time series data on GDP, Population, Import, Export, and foreign direct investment from the year 1980 to 2019

The data on GDP, Population, import, export and foreign direct investment were obtained from *The World Bank (2021a, 2021b, 2021c, 2021d, 2021e)*

GDP used here is at purchaser's prices where the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies were not included in the value of the products. Data are in current U. S. dollars. Ghana endowed with lots of natural resources like gold, oil, precious metals and agricultural resources tends to optimize these resources to its economic growth hence being classified a fast-growing economy recording \$66 billion in 2019. Ghana's GDP has been on a fascinating trend since the year 1980 where the GDP recorded according to The World Bank (2021a and 2021b) was about \$4.5 billion. By far the maximum GDP of Ghana recorded between the period of 1980 and 2019 is \$67 billion. Ghana's GDP took a steady rise after 1983 where the country experienced a major national crisis.

**Export** of goods and services are expressed with the representation of all goods and other market services provided to the rest of the world which includes merchandise, freight, insurance, transport, travel, royalties, license fees, and other services such as communication, construction, financial, information, business, personal, and government services. Data are in current U. S. dollars. The export of Ghana has tremendously maintained an impressive stability within the period of 1999 to 2019 although there were rise and falls respectively in the previous years.

The export of Ghana averaged \$5.9 billion in the period of 1980 to 2019 with the highest value of \$24 billion recorded in the year 2019 and the lowest value of \$134.6 million recorded in the year 1982. Ghana's main export commodities include cocoa, crude oil, manganese, gold, aluminum, diamond, and other cultural products. About 56% of the export of Ghana were imported in Asian

countries. Export of Ghana contributes to the GDP by about 42%.

Population however is based on the de factory definition, which basically counts all residents of legal status or citizenship with the values shown in our study as midyear estimates. The population of Ghana recorded in the year 1980 showed a decreased in the number of people compared to the population recorded in the subsequent years. In 1980, Ghana recorded a total of 11 million in the population census. Census in the period of decades were tremendous as the population of Ghana increased by 3.7 million. In the subsequent decade, Ghana recorded an increase in population by 4.5 million. This is between 1990 and 2000. From the year 2000 to 2010, Ghana recorded an increment of 5.5 million in the population census. In 2019, Ghana recorded 5.6 million increase in the population census from the previous decade 2010 with an actual figure of 30 million.

Foreign direct investment in our study is based on equity flows in the Ghanaian economy which comprises the sum of equity capital, reinvestment of earnings and other capital. The direct investment expresses a category of cross border investment associated with a resident in the Ghanaian economy. Data is in current US dollars.

The economic growth performance of Ghana has been a mixed one, rising to peaks and declining.

Ghana recorded an average of \$19.5 billion of growth performance in the period of 1980 to 2019 with a highest value of \$66.9 billion in 2019 and a lowest value of \$4 billion in the year 1982. The economy of Ghana wasn't doing well in the period of 1982 and 1983 because of a national crisis which struck the country. There was a huge famine which caused the economy to default in other ways.

**Table 1:** The data on GDP, export, Population and foreign direct investment

Year	GDP	Export	Population	Foreign Direct
1980	4445228216	376348547.7	11056116	15600000
1981	4222441615	200813941.8	11348289	16263752
1982	4035994398	134733893.6	11676823	16300000
1983	4057275043	225418866.3	12033575	2400000
1984	4412279843	354924983.7	12405660	2000000
1985	4504342149	479914488.8	12783613	5600000
1986	5727602645	949412973.2	13164837	4300000
1987	5074829932	997843537.4	13552021	4700000
1988	5197840979	945143358.9	13947042	5000000
1989	5251764264	879283843.4	14353410	15000000
1990	5889174825	993968473.1	14773277	14800000
1991	6596546196	1119008152	15207367	20000000
1992	6413901602	1104855835	15653336	22500000
1993	5966255778	1208400616	16106765	125000000
1994	5444560669	1375221757	16561674	233000000
1995	6465137615	1583728941	17014057	106500000

1996	6934984709	2226974924	17462496	120000000
1997	6891308594	2233493164	17908985	81800000
1998	7480968858	2533905277	18357156	167400000
1999	7719354839	2476240810	18812359	243700000
2000	4983024408	2431828409	19278856	165900000
2001	5314909954	2404094095	19756928	89320000
2002	6166330136	2627858783	20246381	58930000
2003	7632406553	3104789917	20750299	136751000
2004	8881368538	3490673152	21272323	139270000
2005	10744675210	3916349978	21814642	144970000
2006	20440893017	5149494044	22379055	636010000
2007	24827844950	6089051469	22963946	1383177930
2008	28678701891	7178123444	23563825	2714916344
2009	26048108185	7629976940	24170940	2372540000
2010	32197272797	9490699301	24779619	2527350000
2011	39337314810	14529869986	25387710	3247588000
2012	41270954737	16656634665	25996449	3294520000
2013	62405374786	16118921318	26607642	3227000000
2014	53660342160	15465492198	27224472	3363389444
2015	48564863888	15520745572	27849205	3192320531
2016	55009730600	17537473272	28481946	3485333369
2017	58998132330	20801563774	29121471	3254990000
2018	65556464048	23118048350	29767108	2989035000
2019	66983634224	24098556292	30417856	2318800000

4 . reg GDP Export Population ForeignDirectInvestment

Source	SS	df	MS			
Model	1.6601e+22	3	5.5338e+21	Number of obs = 40		
Residual	4.2238e+20	36	1.1733e+19	F( 3, 36) = 471.65		
Total	1.7024e+22	39	4.3651e+20	Prob > F = 0.0000		
				R-squared = 0.9752		
				Adj R-squared = 0.9731		
				Root MSE = 3.4e+09		

  

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Export	2.393938	.2284428	10.48	0.000	1.930435	2.857242
Population	-212.8097	230.2343	-0.92	0.361	-679.7465	254.1271
ForeignDire-t	3.626387	1.012216	3.58	0.001	1.573518	5.679257
_cons	5.72e+09	3.59e+09	1.60	0.119	-1.55e+09	1.30e+10

**Figure 1:** Outcome of the Export regression analysis

Our regression was compiled using data from Ghana's GDP, Export, Import, Population and foreign direct investment trends from the year 1980 to 2019 where fascinating increase and decrease trends were observed.

In the data outcome from Stata, the ANOVA table showed our source which denotes the source of our variance, model, residual and total as seen in the figure above. The Model denotes our independent variables. Our Sum of Squares, **SSTotal** is used to determine our variability around our mean, our Sum of squares residual (**SSResidual**) denotes our sum of squared errors in our prediction and our **SSModel** denotes our improvement in predicting by using the predicted value of Y which is our

dependent variable over juts using the mean of our dependent variable.

The number of observations used in the regression analysis totaled 40 from the period of 1980 to 2019.

Our F-value yielded **471.65**. However, the P-value associated with our F-value is **0.0000**

Our R-squared measures our goodness of fit with a value of **0.9752** indicating that our independent variable, Foreign Direct investment explains much of the variations in population as well as population for export, meaning our independent variables are highly correlated. Our R-Squared being the proportion of variance in the economic growth, our dependent variable which can be predicted from our independent variables (export, population and foreign direct investment). The value indicates that **97.52%** of the variance in Ghana's economic growth can be predicted from export, population and foreign direct investments.

Ultimately, for our parameter estimates, our coefficients for predicting the dependent variables from the independent variables are **2.393938, -212.8097, 3.626387**.

$$Y_{\text{predicted}} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3$$
$$\text{GDP}_{\text{predicted}} = 5720000000 + 2.393938 \text{Export} - 212.8097 \text{Population} + 3.626387 \text{ForeignDirect investment}$$

These estimates tell the amount of increase in the economic growth of Ghana.

Looking at the coefficient parameter for export which is **2.393938**, for every unit increase in export, there is a **2.393938**-unit increase in GDP predicted, holding all other variables constant. This is significantly different from

Looking at the coefficient for population which is **-212.8097**, denotes that for every % increase in the population of Ghana, there is a **212.8097** decrease in the predicted GDP, holding all other variables constant. The variable population is therefore, technically not statistically significantly different from 0 meaning population does not impact GDP both in a short run and in the long run because the GDP value decreases by the coefficient of **212.8097** per every percentage increase in population.

Also, the coefficient for foreign direct investment being **3.626387** implies that for every unit increase the foreign direct investment, there is a **3.626387** growth in the economy of Ghana. This is significantly different from 0.

The coefficient of export (**2.393938**) is significantly different from 0 using a significance level of 5% (0.05) because it's P-value is 0.000 which is less than 0.05.

The coefficient for foreign direct investment (3.626387) is statistically significantly different from 0 because it's p-value is less than 0.05.

The 95% confidence interval is very useful as it aids in the understanding of how low or high our parameter values might be. They are related to the p-values such that the coefficients will not be statistically significant if the confidence interval includes 0.

**Import** of goods and services are also expressed with the representation of all goods and other market services received from the rest of the world which includes merchandise, freight, insurance, transport, travel, royalties, license fees, and other services such as communication, construction, financial, information, business, personal, and government services. Data are in current U. S. dollars. The import as well averaged \$7.7 billion dollars in the period of 1980 to 2019 with highest value of \$23 billion recorded in the year 2019 and a lowest value of \$120.6 million recorded in the year 1982. Ghana imports a lot of major commodities.

Comparing the data on import and population with respect to the population census captured in decades, Ghana recorded \$15 million in 1980, \$14.8 million in 1990, \$166 million in 2000, \$2.5 billion in 2010 and \$23 billion in 2019. Looking at the trend, the increase and decrease is tremendous as FDI increased greatly from the year 1990 to 2000 with an increment of \$151.1 million between this period.

Foreign direct investment proved an interesting trend in the data gathered from the world bank (2021a and 2021b).

In 1980, the foreign direct investment of Ghana was \$15.6 million and in 2019, \$2.3 billion which denotes attraction of foreign entities to investing in the economy of Ghana. The FDI of Ghana dropped from about \$3 billion in 2018 to \$2.3 billion in 2019. The highest FDI recorded in the data from the world bank (2021a and 2021b) is \$3.4 billion in the year 2016.

**Table 2:** The data on GDP, import, Population and foreign direct investment

Year	GDP	Import	Population	Foreign Direct Investment
1980	44452282	40695020	1105611	15600000
1981	42224416	22476742	1134828	16263752
1982	40359943	12035480	1167682	16300000
1983	40572750	24298941	1203357	2400000
1984	44122798	47522831	1240566	2000000
1985	45043421	61211090	1278361	5600000
1986	57276026	11532866	1316483	4300000
1987	50748299	13288707	1355202	4700000
1988	51978409	12507105	1394704	5000000
1989	52517642	12784503	1435341	15000000
1990	58891748	15223686	1477327	14800000
1991	65965461	16837554	1520736	20000000
1992	64139016	18451281	1565333	22500000
1993	59662557	21726240	1610676	12500000
1994	54445606	20015575	1656167	23300000
1995	64651376	21287531	1701405	10650000
1996	69349847	27804269	1746249	12000000
1997	68913085	36518110	1790898	81800000
1998	74809688	34957214	1835715	16740000
1999	77193548	38308660	1881235	24370000
2000	49830244	33508931	1927885	16590000
2001	53149099	34447439	1975692	89320000
2002	61663301	33836497	2024638	58930000
2003	76324065	43205605	2075029	13675100
2004	88813685	53614165	2127232	13927000
2005	10744675	66318603	2181464	14497000
2006	20440893	83254377	2237905	63601000
2007	24827844	10137018	2296394	13831779
2008	28678701	12757654	2356382	27149163
2009	26048108	11019098	2417094	23725400
2010	32197272	14778901	2477961	25273500
2011	39337314	19416444	2538771	32475880
2012	41270954	21794702	2599644	32945200
2013	62405374	22377217	2660764	32270000
2014	53660342	19505247	2722447	33633894
2015	48564863	21187683	2784920	31923205
2016	55009730	20615994	2848194	34853333
2017	58998132	22649501	2912147	32549900
2018	65556464	23871613	2976710	29890350
2019	66983634	23713149	3041785	23188000

4 . reg GDP Import Population ForeignDirectInvestment

Source	SS	df	MS	Number of obs = 40		
Model	1.6456e+22	3	5.4853e+21	F( 3, 36) =	347.63	
Residual	5.6804e+20	36	1.5779e+19	Prob > F =	0.0000	
Total	1.7024e+22	39	4.3651e+20	R-squared =	0.9666	
				Adj R-squared =	0.9639	
				Root MSE =	4.0e+09	

  

	GDP	Coeff.	Std. Err.	t	P> t	[95% Conf. Interval]
Import		3.45007	.4053962	8.51	0.000	2.627888 4.272251
Population		-887.2174	325.8344	-2.72	0.010	-1548.04 -226.3946
ForeignDirectInvestment		-2.660238	1.759387	-1.51	0.139	-6.22844 .9079647
_cons		1.28e+10	4.72e+09	2.71	0.010	3.22e+09 2.24e+10

**Figure 2:** Outcome of the Import regression analysis

For the import analysis, the number of observations equals **40** which represents the years of data since **1980** to **2019**, with F-value of **347.63**.

The P-value associated with Former value is **0.0000**. R-squared measures a value of **0.9666** indicating that the independent variables are highly correlated. The value indicates that **96.66%** of the variance in Ghana's economic growth can be predicted from import, population and foreign direct investments.

This means our independent variables being import, population and foreign direct investment reliably predicts the economic growth of Ghana.

For the parameter estimates of the import analysis, the coefficients for predicting the dependent variables from the independent variables are **3.45007**, **-887.2174**, and **-2.660238** respectively.

$$Y_{\text{predicted}} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3$$

$$GDP_{\text{predicted}} = 1280000000 + 3.45007 \text{Import} - 887.2174 \text{Population} - 2.660238 \text{ForeignDirect investment}$$

These estimates tell the amount of increase and decrease in the economic growth of Ghana.

The coefficient parameter for import measures **3.45007** which implies, for every unit of current US dollar increase in import, there is a **3.45007**-unit increase in GDP predicted, holding all other variables constant. This is significantly different from 0 meaning import impacts GDP both in a short run and in the long run because the GDP value increases by the coefficient of **3.45007** per every percentage increase in the import of Ghana.

Coefficient of population measures **-887.2174** which implies that for every 1% increase in population, predicted GDP drops by **\$887.2174**, holding all other variables constant implying population does not impact

GDP both in a short run and in the long run because the GDP value decreased by the coefficient of **\$887.2174** per every percentage increase in the population of the country. The coefficient for foreign direct investment measures - **2.660238** which implies that for every unit increase in the foreign direct investment, there is a **2.660238** reduction in the economic growth of Ghana.

#### IV. CONCLUSION

Based on the result of the study, the results depict that both import and export are tremendously important factors in effecting growth on the economy of Ghana. Population on the other hand shows a negative effect on the economy. Growth achievement based on the study is mainly based on import and export and foreign direct investment in the case of export. With the variables for export and import being statistically significant on the economic growth.

Export should however promote or enhanced more to increase be its significance in economic growth.

As a factor of economic growth, policies geared towards developing export infrastructures and superstructures will tremendously aid in the economic growth of Ghana, thereby creating a better economy and increasing the standard of living. Also, the government of Ghana can grant subsidies and tax exemptions or waivers to enhance local manufacturers to manufacture more for export.

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