

**Czech University of Life Sciences Prague**

**Faculty of Business Administration**

**Department of Economics**



**Bachelor Thesis**

**Africa–economic situation**

**Alena ZORYA**

**2018 CULS Prague**

# CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

## BACHELOR THESIS ASSIGNMENT

Alena Zorya

Business Administration

Thesis title

Africa – economic situation

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### Objectives of thesis

The main objective of my bachelor thesis is to describe and analyze the economic situation in countries of Africa. To analyze the economic conditions in these countries, it is necessary to take into account some factors that influence it, such as industry, trade and agriculture. In order to achieve the main aim of the thesis I decided to analyze the data for the period of time from 1970 to 2016 years. It helps to understand in what sectors growth has occurred, in what volume growth has occurred in each sector, what countries are leaders in its particular area, what economic situation is, according to GDP, and what the reason is of that growth in the economy of Africa for 46 years.

### Methodology

This thesis will be divided into three parts.

The first part is a theoretical one and will be based on literature search. It will define the current state of knowledge in the field of African economic situation with the overlap to its history and development.

The second part will rely on the theoretical part and it is the key component of the thesis. The author will use method of quantitative research such as statistical and mathematical methods. The researcher will use secondary sources of information (UN, UNCTAF, FAOSTAT, African Development Bank, etc.).

The final part will conclude the results of the previous parts and discuss it with another author. The most important part will consist of partial conclusions outcome and finding

**The proposed extent of the thesis**

30 – 40 pages

**Keywords**

colonization, agriculture, industry, GDP, population

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**Recommended information sources**

- ČESKÁ ZEMĚDĚLSKÁ UNIVERZITA V PRAZE. INSTITUT TROPŮ A SUBTROPŮ, – HEJKRLÍK, J. *Impact of the world trade liberalization on economic development and poverty alleviation in the Southern African development community (SADC)*. Dissertation thesis. Praha: 2008.
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**Declaration**

I declare that I have worked on my diploma thesis, entitled "Africa–economic situation", by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any third person.

In Prague on 14.3.2018

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## **Africa–economic situation**

The aim of my bachelor thesis is to describe and analyze the economic situation in African countries. The theoretical part consists of important factors that are components of the economic, such as population, trade, agricultural, and industries. According to these components, you can have rough idea of the situation on this continent. In the practical part I analyze data of main industries and GDP in the period 1970-2016, it consists of constant and current prices. It allowed us to see the important changes that accrue during this period of time and main reasons that influence the economy of the continent of Africa. Based on these researches we can see weak and strong sides of Africa.

**Keywords:** economy, agriculture, industries, GDP

# Afrika-ekonomická situace

## Shrnutí

Cílem mé bakalářské práce je popsat a analyzovat ekonomické situace v Afrických zemích. Teoretická část se skládá z důležitých faktorů, které jsou součástí hospodářského, jako je populace, obchodu, zemědělství a průmyslu. Podle těchto komponent, můžete mít hrubou představu o situaci na tomto kontinentu. V praktické části budu analyzovat data z hlavních průmyslových odvětví a HDP v období 1970-2016, skládá se z konstantní a aktuální ceny. To nám umožnilo vidět důležité změny, které vzniknou během tohoto období a hlavní důvody, které mají vliv na hospodářství afrického kontinentu. Na základě těchto výzkumů můžeme vidět slabé a silné strany Afriky.

**Klíčová slova:** ekonomika, zemědělství, průmysl, HDP

# Table of contents

1 Introduction .....	9
2 Objectives and methodology .....	10
2.1 Objectives .....	10
2.2 Methodology .....	10
3 Literature Review .....	13
3.1 Geographical description .....	13
3.2 Scramble for Africa.....	15
3.3 Natural resources.....	16
3.4 Soil .....	17
3.5 Population .....	17
3.6 Trade .....	19
3.6.1 Domestic trade.....	19
3.6.2 Foreign trade.....	20
3.7 Agriculture .....	20
3.8 The main industries.....	21
3.8.1 The mining industry.....	21
3.8.2 Fuel and energy complex.....	22
3.8.3 Oil refining industry .....	23
3.8.4 The chemical industry.....	23
3.8.5 Steel industry .....	23
3.8.6 Transportation.....	24
4 Practical part.....	24
4.2 Agriculture .....	30
4.3 Industry .....	32
4.4 Trade .....	34
5 Discussion .....	37
6 Conclusion.....	39
7 References .....	40

## List of figures

Figure 1- Map of Africa .....	13
Figure 2- Map of land occupation in Africa (1914) .....	15
Figure 3- Map of natural resources in Africa .....	16
Figure 4- Africa Population (1950-2017).....	17
Figure 5- Density of Africa's population 2015 .....	18
Figure 6- Africa's economic blocks.....	19
Figure 7- Population of African countries 2016.....	26
Figure 8- Structure of the African economy in 2015 .....	28
Figure 9- Annual agriculture growth of Africa 1970-2016.....	32
Figure 10- Annual industry growth of Africa 1970-2016 .....	34
Figure 11- Annual trade growth of Africa 1970-2016 .....	36

## List of tables

Table 1- Africa's GDP (1995-2016) .....	
Table 2- Africa 2016: population, GDP .....	
Table 3- Purchasing power in Africa (1995-2016) .....	
Table 4- The structure of the economy of Africa in % (1970-2015) .....	
Table 5- The dynamics of the economy of Africa in bln. US\$ (1970-2016) .....	
Table 6- The nominal GDP per capita in Africa by sub-region in % (1970-2016).....	
Table 7- The nominal GDP of Africa by sub-regions in % (1970-2016).....	
Table 8- The top countries by nominal GDP growth in Africa (1970-2016).....	
Table 9- Rank of countries by size of nominal GDP in 2016 .....	
Table 10- Agriculture of Africa (1970-2016).....	
Table 11- Industry in Africa (1970-2016).....	
Table 12- Trade in Africa (1970-2016).....	



# **1 Introduction**

Africa is the second largest continent in the world. The Strait of Gibraltar separates it from the southern tip of Europe. From Asia Africa separated by the narrow Suez Canal.

Despite rich stocks of food and mineral resources for almost half a century of independent existence the economies of developing countries of Africa did not become a significant component of the world economy. For countries with developed market economies this region long remained a zone of threats to their well-being (such as AIDS, environmental risks, the increase in emigration to Europe, etc.). Meanwhile, along with the rich resource potential, Africa has the striking features of the peculiar "economic drive", as evidenced by increasingly close scrutiny of many participants of the globalizing world economy, which show it in recent years.

The purpose of writing the work is the study of economic situation in countries of Africa. The study will consist of a theoretical part specifically description of geographical position, short history, minerals; a practical part is an analysis of industries such as agriculture, mining, transportation etc. Analysis of trade based on topical data and information from different resources; the conclusion is summary of all relevant information based on analysis that was obtained from the theoretical part.

## **2 Objectives and methodology**

### **2.1 Objectives**

The main objective of the bachelor thesis is to describe and analyze the economic situation in countries of Africa. To analyze the economic conditions in these countries, it is necessary to take into account some factors that influence it, such as industry, trade and agriculture. In order to achieve the main aim of the thesis analysis the data for the period of time from 1970 to 2016 years was applied. It helps to understand in what sectors growth has occurred, in what volume growth has occurred in each sector, what countries are leaders in its particular area, what economic situation is, according to GDP, and what the reason is of that growth in the economy of Africa for 46 years.

### **2.2 Methodology**

The bachelor thesis consists of three parts: theoretical part, practical part and conclusion.

The first part based on literature review that has relevant information from the various resources such as sciences books or useful internet web-pages. This part represents some knowledge that describe general conditions of the continent, the main characteristics of African countries and the brief description of history of Africa in order to reveal the main reasons/aspects that impact today's economic situation of this continent.

The second part is a practical one and it refers to the literature review and it consists of the analysis of the main aspects that were mentioned in the first part. This part is important because it describes main reasons that affect the economics of Africa.

The most commonly used method is quantitative method, particularly linear correlation- regression analysis for each aspect such as agriculture, trade, industry etc. Dependent variable (Y) is calculated value of a particular sector and independent variable (X) is a year. It helps to determined growth of economy as whole and growth of each sector that were listed above.

For the estimation of linear regression model is used correlation-regression analysis. This analysis contains two components: correlation analysis and regression analysis. Correlation analysis is a quantitative method of determining the closeness and direction of the relationship between sample variables.

*The formula for the sample correlation coefficient is (1)*

$$r = \frac{Cov(x,y)}{\sqrt{s_x^2 * s_y^2}} \quad (1)$$

where  $Cov(x,y)$  is the covariance of  $x$  and  $y$  defined as (2)

$$Cov(x,y) = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{n-1} \quad (2)$$

$s_x^2$  and  $s_y^2$  are the sample variances of  $x$  and  $y$ , defined as (3)

$$s_x^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1} \text{ and } s_y^2 = \frac{\sum_{i=1}^n (y_i - \bar{y})^2}{n-1} \quad (3)$$

(Boston University School of Public Health, 2013)

Regression analysis is a quantitative method of determining the type of mathematical function in the causal relationship between variables.

The true determination coefficient of the model of the dependence of the random variable  $y$  on factors  $x$  is determined as follows (4):

$$R^2 = \frac{V(y|x)}{V(y)} = 1 - \frac{\sigma^2}{s_y^2} \quad (4)$$

where  $V(y|x) = \sigma^2$  — conditional (factor  $x$ ) the variance of the dependent variable (the variance of the random error of the model).

This definition uses true parameters that characterize the distribution of random variables. If a sample estimate of the values of the corresponding variances is used, we obtain a formula for the sample coefficient of determination (which is usually meant by the coefficient of determination) (5):

$$R^2 = \frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{\sum_{i=1}^n (y_i - \bar{y})^2} = 1 - \frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{\sum_{i=1}^n (y_i - \bar{y})^2} \quad (5)$$

where  $\sum_{i=1}^n (y_i - \hat{y}_i)^2$  - sum of squares of regression residuals,  $y_i, \hat{y}_i$  - actual and calculated values of the explained variable. (6)

$\sum_{i=1}^n (y_i - \bar{y})^2 = S_y^2$  - Total sum of squares.

$$\bar{y} = \frac{1}{n} \sum_{i=1}^n y_i \quad (6)$$

In the case of linear regression with a constant  $SS_{tot} = SS_{reg} + SS_{re}$ , where

$SS_{reg} = \sum_{i=1}^n (\hat{y}_i - \bar{y})^2$  - the explained sum of squares, so it is a simpler definition in this case - the coefficient of determination is the proportion of the explained sum of squares in the total (7):

$$R^2 = \frac{SS_{reg}}{SS_{tot}} \quad (7)$$

(Yershov, 2002)

The scale of statistics is used to assess the strength of the relationship in the theory of correlation: weak - from 0.1 to 0.3; moderate — from 0.3 to 0.5; noticeable — from 0.5 to 0.7; high — from 0.7 to 0.9; very high (strong) — from 0.9 to 1.0.

The final part is a summarizing of information that was obtained during analyze.

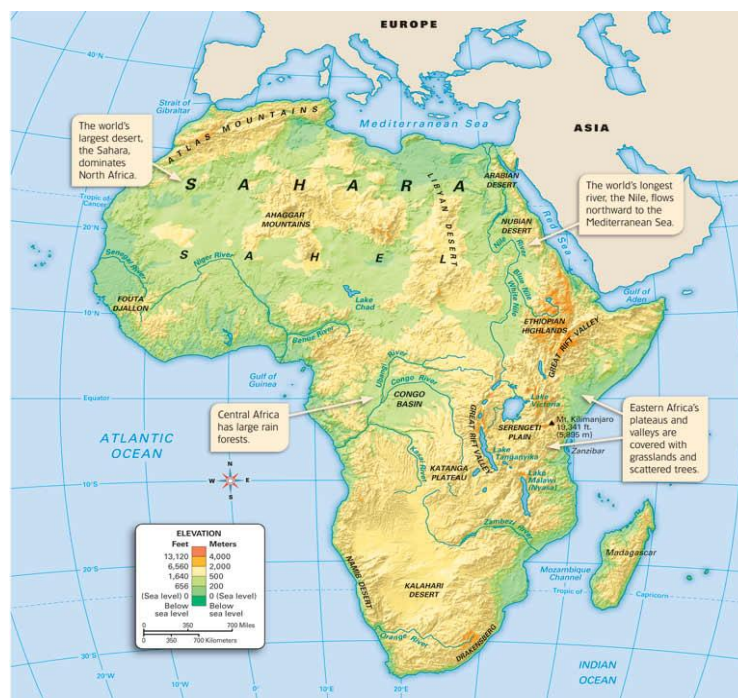
### 3 Literature Review

The literature review is a theoretical part that describes geographical and economic situation of African countries. This part consists of aspects that influence the state of the countries and based on it. It represents a general idea of the economic situation.

#### 3.1 Geographical description

The continent of Africa is washed from different directions by two oceans and two seas. The east is washed by the Red Sea and the Indian Ocean, the west by the Atlantic Ocean, and the north is washed by the Mediterranean Sea (figure 1).

Figure 1- Map of Africa



Source: Maps of World, 2018

The population of Africa is 933 million, in its territory there are 55 countries, most of which, unfortunately, are recognized as the poorest countries on Earth.

The continent of Africa is characterized by a weak vertical and horizontal dissection. The geographical position of Africa is special, since the continent is symmetrically located to the equator.

“Separated from Europe by the Mediterranean Sea, it is joined to Asia at its N.E. extremity by the Isthmus of Suez, 80 m. wide. From the most northerly point, Ras ben Sakka, a little west of Cape Blanc, in 37° 21, N., to the most southerly point, Cape Agulhas, 34° 51’

15" S., is a distance approximately of 5000 mi.; from Cape Verde, 17° 33' 22" W., the westernmost point, to Ras Hafun, 51° 27' 52" E., the most easterly projection, is a distance (also approximately) of 4600 mi" (Richardson, 1995).

Only the southern and northern outskirts are partially located in subtropical latitudes. It is unique that most of the continent is located in a hot belt, the territory of which is constantly warmed by the Sun.

The coastlines of Africa are indented slightly, so the harbors and bays along the coasts formed little.

It should be noted the configuration of the continent of Africa, as a feature of its geographical location. The manifestation of the zonality of the landscapes of Africa is definitely unevenly distributed land area to the south and north of the equator.

“The peculiarity is that the northern part is much wider than the southern half of the continent. For example, the width of the southern part is about 3000 km, and the distance from the western point of the Green Point to the eastern point of Ras Khafun is 7,5 thousand km” (Tonkich, 2015).

It is necessary to pay attention to the features of the mainland bays. The largest is the Guinea Bay. A large peninsula Somalia is washed by the Gulf of Aden from the north.

This bay is located in the Mediterranean Sea, as well as the Gulf of Sidra. And “the Mozambique Gulf in the Indian Ocean threading between the island nation of Madagascar on the east and Mozambique on the African mainland”. It separates the largest island Madagascar from the mainland (Encyclopedia Britannica, 2015).

Also in this ocean are such islands as Zanzibar, Pemba, Mafia, the Socotra archipelago. Known to the whole world, the Canary Islands are located in the Atlantic Ocean and are located near Africa, like Madeira and the Green Cape (Gonzalez and Jimenez, 2016).

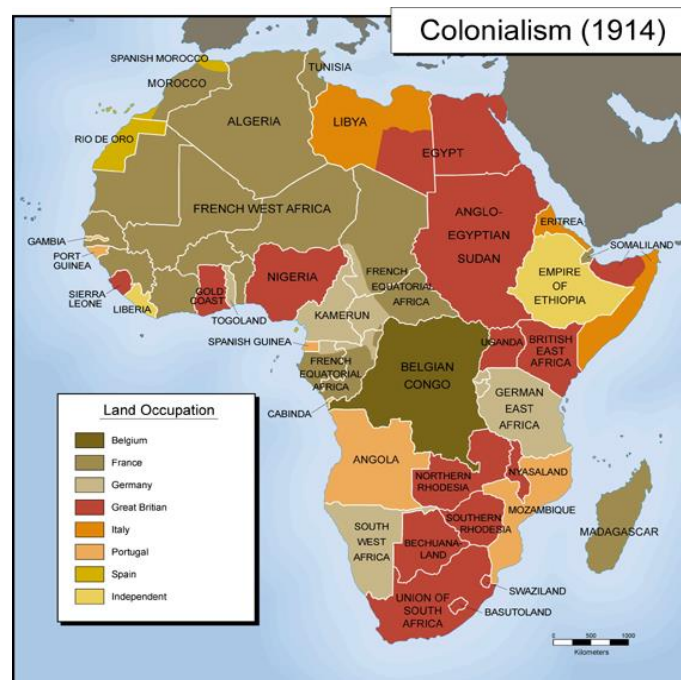
And there are the small islands of Fernando-Po and Principein in the Gulf of Guinea.

Due to the extraordinary configuration of the continent, the location of the natural zones is not the same, but they segue into each other. Zones of subequatorial forests are replaced by tropical deserts, which in turn are replaced by subtropical natural zones.

### 3.2 Scramble for Africa

Until the fifties of the XX century Africa was a continent of colonial and dependent countries. “France owned 37% of the African territory, which was inhabited by 26% of the population, Britain owned 32%, Belgium - 8%, Portugal - 7%, Spain and Italy also had colonies” (General characteristics of the economy of African Countries, 2013) (figure 2).

**Figure 2- Map of land occupation in Africa**



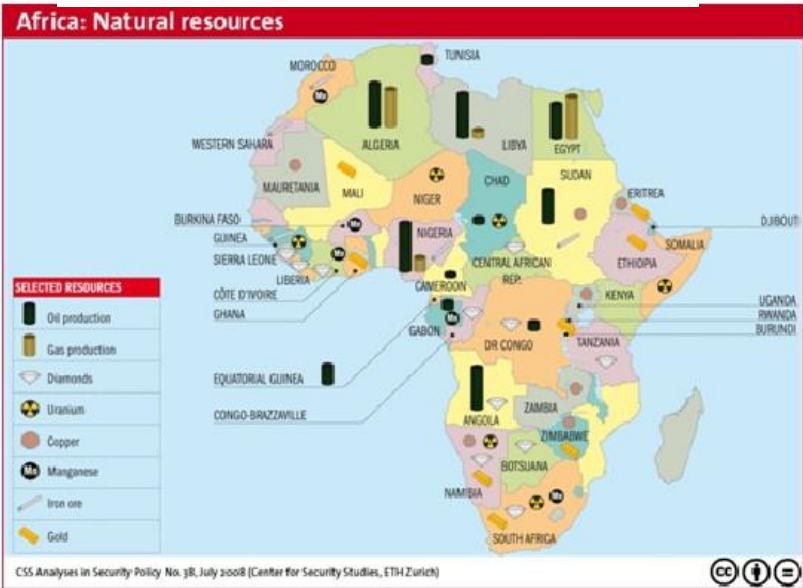
*Sources: Exploring Africa, 2018*

In the 1950s, the first countries gained independence. In the 60s years of independence, more than 40 countries have already received independence, in the 70th - the process of freeing the continent from under colonial oppression has almost come to an end. Currently, there are 55 independent states on the continent. Most African countries are small, economically weak states with a small population and little developed natural resources. These countries are mainly economically dependent on their former metropolises. Former British colonies remained in the Commonwealth system, French - in the Community of French-speaking countries. “More than 30 countries in Africa have become associate members of the European Community and in fact play the role of its raw materials appendage” (General characteristics of the economy of African Countries, 2013).

### 3.3 Natural resources

Africa is a continent of large economic opportunities, which has a variety of natural conditions, rich mineral resources, significant land, water, plant and other resources. For Africa, there is an insignificant division of the relief that contributes to economic activity - the development of agriculture, industry, transport. The location of most of the continent in the equatorial belt largely predetermined the presence of huge massifs of moist equatorial forests. “Africa accounts for 10% of the world's forest area, accounting for 17% of the world's timber reserves” (Soloninko, 2008). The Sahara is the largest desert of the world, it contains in its bowels huge reserves of fresh water, and large river systems are characterized by large volumes of runoff and energy resources. Africa is rich in minerals, which are resources for the development of ferrous and non-ferrous metallurgy, the chemical industry. Thanks to the new discovery, Africa's share is increasing in the world's explored reserves of energy raw materials. The reserves of phosphorites, chromites, titanium, and tantalum are greater than in any part of the world. The main importance of reserves of bauxite, manganese, copper, cobalt, uranium ores, diamonds, rare earth metals, gold, etc. (figure 3). The main areas for the concentration of mineral resources are: the "copper belt" of Africa that extends from Katanga in Zaire through Zambia to the Eastern Africa (deposits of copper, uranium, cobalt, platinum, gold, manganese); Guinea part of West Africa (deposits of bauxite, iron ore, manganese, tin, oil); zone of the Atlas Mountains and the coasts of North-West Africa (cobalt, molybdenum, lead, zinc, iron ore, mercury, phosphorites); North Africa (oil, gas - coast and shelf of the Mediterranean Sea) (Zambia development agency, 2013).

Figure 3- Map of natural resources in Africa





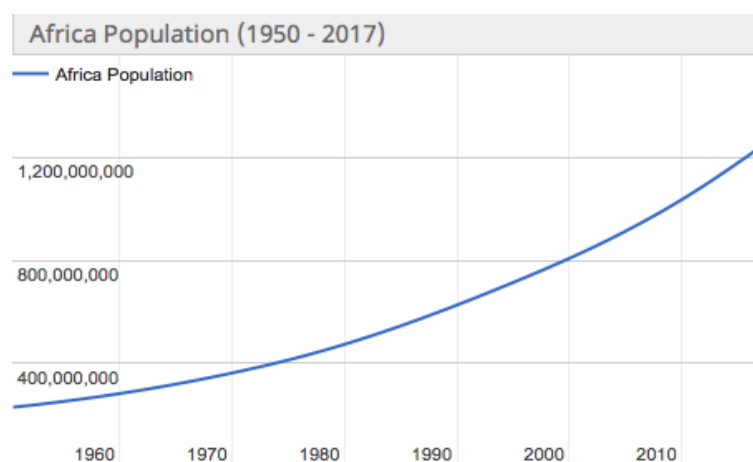
### 3.4 Soil

The regions of Africa are very different in their natural features: the supply of moisture, types of soil, vegetation cover. Common is only one element is a lot of heat. Unfavorable for agriculture areas of deserts and equatorial forests. In the desert, farming is possible only if there are water sources around which oases are formed. In the equatorial forests, the farmer is fighting against lush vegetation. The best conditions for agriculture in the highlands and savannas with a favorable alternation of wet seasons. Most of the continental soils have low natural fertility. 3/4 of the territory of the continent is covered with red and red-brown soils, a thin layer of which is poor organic matter. It is easily exhausted and destroyed (Eswaran and Almaraz, 1997).

### 3.5 Population

According to the United Nations in Africa, there are about 1,216 milliards people, or 12.9% of the world's total population. In the second half of XX century the population of the continent began to grow rapidly, and in the 1970s and 1980s its rate of growth was one of the highest in the world - 2.9-3.0% per year (figure 4). African countries differ markedly in terms of population: Nigeria, Egyptian, Ethiopia, and South Africa have a population of over 40 million people. In general, these countries account for almost half the population of the mainland (Worldometers, 2017).

**Figure 4- Africa Population (1950-2017)**



*Source: Worldometers, 2017*

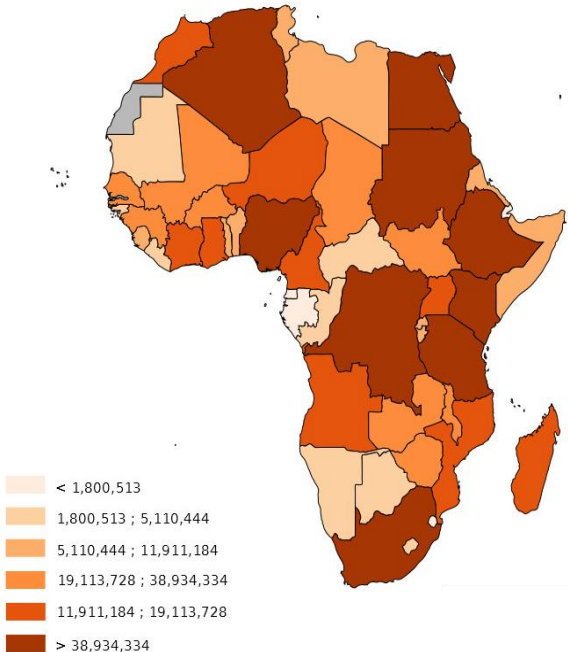
The current demographic situation in African countries is very controversial. The dynamics of the population of the continent in connection with relatively small emigration and migration determines, in the main, its natural movement. In different countries, the population is growing unevenly, the characteristics of the sex-age structure remain

unfavorable from the economic point of view: inadequate number of able-bodied population, especially men, high proportion of children and youth, short life expectancy (for men it is 49 years, for women - 52 years).

Africa has a high birth rate. Due to the improvement of socio-economic conditions and medical care, the increase in the level of culture and education has led to a decrease in mortality, especially in children. Decrease in mortality and high fertility in most countries give high rates of population growth.

“The average density of the continent's population is small and is about 30 people for 1 km<sup>2</sup>” (Physical geography, 2015). The highest it is on the Mauritius Island (about 625 people per 1 km<sup>2</sup>), the lowest is in the Sahara and the countries of the sub-Saharan region (figure 5). A significant concentration of the population remains in the areas of developed agriculture (the Nile River valley, the Maghreb coast, Nigeria) or industrial activities (the "copper belt", industrial areas of South Africa) (Encyclopedia Britannica, 2017).

**Figure 5- Density of Africa’s population 2015**



*Source: Encyclopedia Britannica, 2017*

The factors related to the uneven socio-economic and economic-cultural development of individual countries have a significant impact on the migration of the population. Industrial areas accept emigrants from neighboring countries who are looking for work.

National liberation movements, military coups, the constant struggle between ethnic and religious groups, military conflicts between countries lead to the emergence of a large

number of refugees in various parts of the continent. “In Africa in the 80s years there were from 7 to 9 million emigrants.” (Soloninko, 2008)

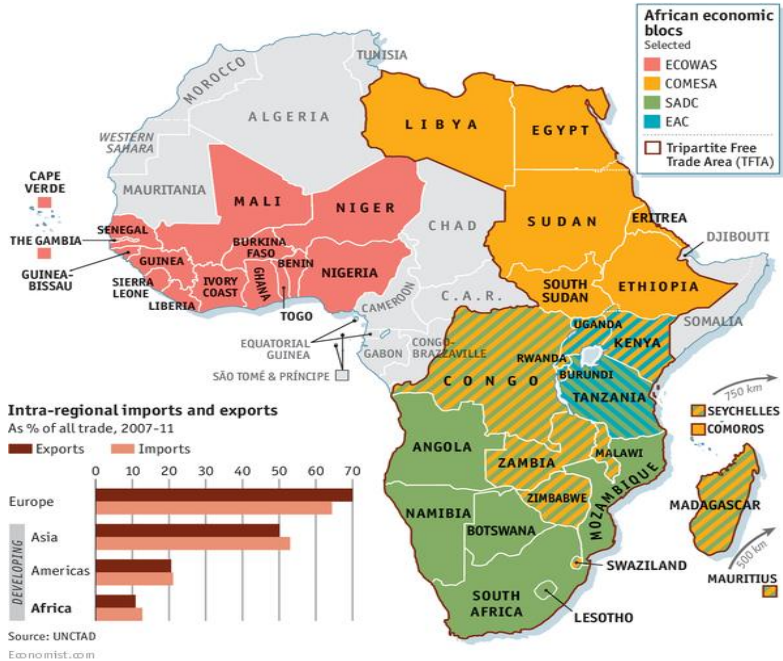
Despite the prevalence of the rural population, Africa is characterized by high growth rates of urban population - over 5% per year. In Africa there are 20 cities of millionaires: Cairo, Alexandria, Casablanca, Algeria, Kinshasa, Lagos, Khartoum, Tunisia, Johannesburg, Addis Ababa, Cape Town, Douala, Abidjan, Giza, Nairobi, Dakar, Newwana, Rabat, Harare, Dar es – Salam. (Worldatlas, 2015)

### 3.6 Trade

#### 3.6.1 Domestic trade

The necessity of development of trade between African countries has pushed them to the conclusion of several regional agreements, including the East African Community (EAC), Common Market for Eastern and Southern Africa (COMESA), Southern Africa Community Development (SADC) and The Tripartite Free Trade Agreement (TFTA), as well as to the establishment by 2017 of a Continental Free Trade Area (CFTA), which will unite the state from Cairo to Cape town (figure 6). It is expected that a trilateral agreement will provide economies of scale and other benefits associated with market integration (for example: an increase in income and employment) (Yang and Gupta, 2005).

Figure 6- Africa's economic blocs



Source: UNCTAD, 2017

### **3.6.2 Foreign trade**

The most important role in the international economic relations of African countries plays foreign trade. Mining and agricultural raw materials prevail in export, in imports-finished products. Algeria, Nigeria, Libya export of Oil; iron ores - Liberia, Mauritania; diamonds in Namibia and gold in South Africa; copper - Zambia, South Africa; phosphates in Morocco; uranium - Niger, Gabon; cotton - Egyptian, Sudan, Tanzania; coffee - Ethiopia, Kenya, Uganda, Angola and others; peanuts - Senegal, the Sudan; olive oil - Tunisia, Morocco (Myers, 2016).

### **3.7 Agriculture**

Due to the geographical position of Africa in the subtropical and equatorial tropical geographical zones, there has been development of tropical and subtropical agriculture. The crops produced can be divided into two groups: consumer and export. The first group includes millet, sorghum, yams, cassava, wheat, barley, corn, rice, peanuts. Secondly – cocoa, coffee, tea, cotton, citrus, sugar cane.

“Agriculture is the main industry in Africa, employing 65% of labor force and accounting for about a third of its gross domestic product” (World Bank, 2008). Africa is a global supplier of many kinds of products of tropical agriculture: cocoa beans are about 2/3 of world exports, sisal and coconut kernels - 1/2, coffee and palm oil - 1/3, tea -1/10, a significant amount of peanuts and peanut butter.

From the consumer cultures, wheat, corn, barley, rice is grown most in African countries. The wheat harvest is the most significant in Egypt, Algeria, Morocco, South Africa, Tunisia; maize – South Africa, Egypt, Nigeria, Ethiopia; barley in Morocco, Ethiopia, and Algeria.

Oilseeds are cultivated in many countries; groundnut and oil palm are grown in West Africa – about half of the charges have in Nigeria and Senegal, the olive tree – in the North (about half of the olives and olive oil in Africa gives Tunisia) (Chauvin, 2012).

Among export crops industrial crops play a big role– cocoa (Ghana, Nigeria), coffee (Ethiopia, Angola, Democratic Republic of the Congo), tea (Kenya, Mozambique, Uganda, Tanzania, Congo). In the subtropics of the North African countries and South Africa need to acknowledge the role of viticulture. Here is grown a lot of citrus – oranges, mandarins, lemons, and grapefruit. In North Africa they are intended mainly for export (Chauvin and Porto, 2011).

Africa accounts for about 2/5 of world production of dates. Especially a lot of date palms grows in Egypt (FAOSTAT, 2014).

In Africa livestock is markedly developed in the economy of individual countries: Botswana, Mauritania, Mali, Niger, Somalia, Sudan, Chad, and Ethiopia. “In the most favorable period in the beginning of 80s the shares of Africa in the world livestock were: cattle and 14.2%, goats - 32.9%, sheep and 16.7%, camels - even 74%. The volume of production of major livestock products remained small, meat - 5,1%, milk 2,3%, wool - 7.2% of the global total” (Filipenko, 2013). This industry is the least developed and it can be unprofitable with careful calculations in many countries.

As a result of poor material-technical base, crop and livestock production is very variable with respect to adverse climatic conditions and natural disasters. Drought, epidemics, raids of locusts, which lead to the villages of several countries, this is a common phenomenon in contemporary Africa. Forestry occupies an important place in the economy of the tropical zone of the continent. In the harvesting of valuable wood specific gravity of Africa reaches 25%. The most significant exporters: Cameroon, Gabon, Congo and Liberia.

The resources of the surrounding seas and inland waters of Africa are significant. 2% of the economically active population is engaged in fishing. The industry is most developed in Nigeria, Morocco, and Ghana. Modern methods of fishing and fishing travels slow (National Geographic Society, 2012).

## **3.8 The main industries**

### **3.8.1 The mining industry**

The mining industry is one of the most developed and technically well-equipped industries of the African continent, primarily as a result of high activity of foreign capital. In fact, the mining industry was developing at the moment, not so much as a particle of African economies, but as an element of economy of states-consumers of the relevant raw materials. There is a high concentration of production, relatively rapid development of primary processing of raw materials and appropriate infrastructure (Yager, 2012).

Mineral deposits are very unevenly distributed on the continent. A unique cemetery of the raw material resources is the depths of Republic of South Africa (RSA). This state has a leading position in the world for the extraction of gold, platinum, manganese, chromites, as well as diamonds, uranium ore. There are significant reserves of metal ores Liberia, Mauritania and Algeria (iron ore); Gabon, Ghana, Morocco, Zaire (manganese), Zambia and Zaire (copper), Guinea (bauxite); Sierra Leone (titanium). For minerals rich in Morocco,

Western Sahara, Tunisia, Togo, Senegal (phosphates), Zimbabwe (asbestos), Madagascar and Zimbabwe (graphite), Kenya (fluorite). Energy reserves (primarily oil and gas) have the greatest value (MiningAfrica, 2017).

### **3.8.2 Fuel and energy complex**

Reliable reserves of energy raw materials on the continent amount to over 60 billion tons of conditional fuel, which makes Africa the middle-in this regard. Among African countries, 13 is oil. "The majority of oil reserves (and production) in Africa comes from Libya, Nigeria, Algeria, Angola, and Sudan, which together produce more than 90 percent of the continent's reserves" (Kasekende, 2009). Part of the continent in world exports of crude oil fluctuates in recent years at around 15% - 20%.

Algeria is the undisputed leader in the production of gas on the continent (up to 2/3 of the total); Libya, Nigeria and Egypt have substantial reserves.

According to the calculations there is a relative scarcity of gas reserves, especially of oil and the current production rates will last only until 2010-2015 that encourages accelerated industrial development for processing of raw materials and the increase in profits from exports. In the 80s the power of refining in the countries of North Africa and Nigeria has grown rapidly.

Coal mining, in addition to RSA (Republic of South Africa), is not significant. This country is a major producer and exporter of uranium concentrate. The uranium mining industry has been developed also in Niger and Gabon with the participation of foreign capital (Dasnois, 2012).

Africa has large resources of hydropower, but they are placed unevenly. The significant size of the production of this type of energy purchased in Egypt, Ghana, Nigeria, Zaire, Mozambique. Most other states are forced to focus on the construction of power plants that produce half of the electricity of the continent (RSA - 98%). Modern power system, in addition to RSA, acquiring development in Algeria, Tunisia, Egypt, Sudan, Ethiopia, Mozambique (Maksakovskij, 2009).

Traditional fuel types have important importance in many deep areas of the continent. Almost a third of African countries do not have the capacity to produce industrial electricity, the other to satisfy their needs through their own capabilities only by 10 - 15%. Overall, 37 countries are energy importers, mainly oil. Energy consumption per capita in Africa specifically oil amounted to 103 kg in 1990 (in 1965 - 74 kg), significantly below the average of developing countries (Kasekende, 2009).

### **3.8.3 Oil refining industry**

For some countries, the construction of refineries was the beginning of their industrial development. In 1955, there were only 3 refineries in the region (Egypt, Morocco). Currently, the refining industry is most developed in the countries of North Africa, Nigeria and South Africa (more than 100 refineries). Basically, it produces diesel fuel, gasoline, kerosene and jet fuel, in most countries there is no production of lubricating oils (established mainly in Algeria, Nigeria, Morocco, Madagascar) (CITAC Africa, 2013).

### **3.8.4 The chemical industry**

Chemical industry until the 60s of the 20th century was represented by the production of mineral fertilizers and sulfuric acid. Since the 70s, the industry of organic synthesis, rubber, paint, chemical and pharmaceutical industries, the production of explosives began to be created. Mineral fertilizer production is developing in almost all countries of North Africa, as well as Senegal, Nigeria, Zimbabwe, Zambia and Madagascar. The industry of organic synthesis and rubber industry gets the development in oil-producing countries, mainly in North Africa. The greatest capacities are created for production of methyl alcohol, chemical fibers, ethylene and polyethylene, plastics, synthetic resins. The paint and chemical and pharmaceutical industries, although important, are represented by small-scale enterprises in North Africa. Production of explosives is developing in countries with developed mining industry (Zambia, Algeria, Tunisia, and Mauritania) (Majozi and Veldhuizen, 2015).

### **3.8.5 Steel industry**

The steel industry plays an important role, but the full-cycle steel industry is virtually non-existent. “Iron and steel industries have been established in Zimbabwe, Egypt, Algeria, Nigeria and Libya; aluminum in Cameroon and Egypt; petrochemical industries in Algeria, Libya, Egypt and Nigeria” (Alemayehu, 2000). Machine-building and metalworking are in the early stages of development in most countries. In most countries, mechanical engineering is virtually absent. It is mainly represented by the assembly of cars, bicycles, household appliances. Only South Africa and Egypt produce a relatively wide range of equipment. Plants in Algeria, Tunisia, Morocco, and Nigeria produce simple equipment. Metalworking is carried out mainly in artisanal and semi-artisanal workshops. Only cement production (North Africa), bricks (everywhere), glass production (Nigeria, Ghana) stands out in the building materials industry.

### **3.8.6 Transportation**

The transport infrastructure of Africa was mainly in the colonial period and was aimed at maintenance of economic and geopolitical interests of the metropolis. At the present stage of its development for the most part also determined by the maintenance needs of export shipments and only in the second place, it aims to meet domestic needs because of the deficiency of funds. There is still the problem of providing convenient traffic, and other types of communication between African and even neighboring States. The only continental communication system does not exist, and its sub-regional elements began to take shape only. A significant part of the road ways are isolated and connect only the areas of mineral deposits, which are oriented to export-oriented industrial complexes, and the largest administrative centers, with the ports. Difficult terrain and significant distances determine the most capital-intensive transport construction on the African continent. It slows down and bothers the development of the industry; in most cases this is an incentive to attract foreign capital (Sarl, 2013).

## **4 Practical part**

Practical part consists of the analyze that is based on the theoretical information obtained in the literature review and tries to find reasons that effect the economic on the basis of results of the analyze.

The main components of the economics of African countries are trade, industry and agriculture, however the growth of the components is not significant in comparison with other countries. For period 1995-2016 gross domestic product increased in current nominal prices from 564.5 billion dollars to 2321 billion dollars that means it grew up 4.11 times. Africa has made a big leap over these 21 years.

According to data in constant prices relative to 1995, for over 1995-2016 years Africa's GDP has increased from 213.3 billion dollars in 1995 to \$ 535 billion dollars in 2016. It means that as a whole for 21 years the real purchasing power of Africa has increased 2.508 times.

In 1995 population of Africa was estimated at 720,416,385 people, and finally in 2016 it is estimated at 1 216 129 000 people, it means that for 21 years the population of Africa has increased 1.69 times.

The table it provides some kind of explanation. You can observe the dynamics of growth of GDP of Africa from 1995 through 2016. Current prices are nominal prices in



dollars. Constant prices of 1995 are what Africa's GDP would be if purchasing power of the dollar would be the same as in 1995.

**Table 1- Africa's GDP (1995-2016)**

Year	GDP (bln dollars)	DGP per capita (dollars)	GDP (bln dollars)	GDP of growth, %	share in the world, %
	Current prices		Constant prices 1995		
1995	564,5	789	213,3		1,8
1996	591	806	224,7	5,07	1,9
1997	611,3	814	231,7	3,02	1,9
1998	603,7	785	238,3	2,77	1,9
1999	606,4	769	244,4	2,50	1,9
2000	631,3	782	253,2	3,48	1,9
2001	615,6	745	263,4	3,87	1,9
2002	635,6	751	279,3	5,69	1,8
2003	760,5	877	294,3	5,10	2
2004	928,1	1045	311,9	5,64	2,1
2005	1097,6	1206	330,6	5,66	2,3
2006	1259,5	1351	349,9	5,52	2,5
2007	1465,5	1533	371,3	5,76	2,5
2008	1733,6	1769	391,7	5,21	2,8
2009	1620,3	1613	403,5	2,92	2,7
2010	1910,8	1856	424,3	4,90	2,9
2011	2105,2	1995	428	0,86	2,9
2012	2261,3	2090	449,6	4,80	3,1
2013	2322,4	2094	464,7	3,25	3,1
2016	2321	1933	535	—	3,08

Source: Own elaboration based on data from the United Nations Data, 2017

**Table 2- Africa 2016: population, GDP**

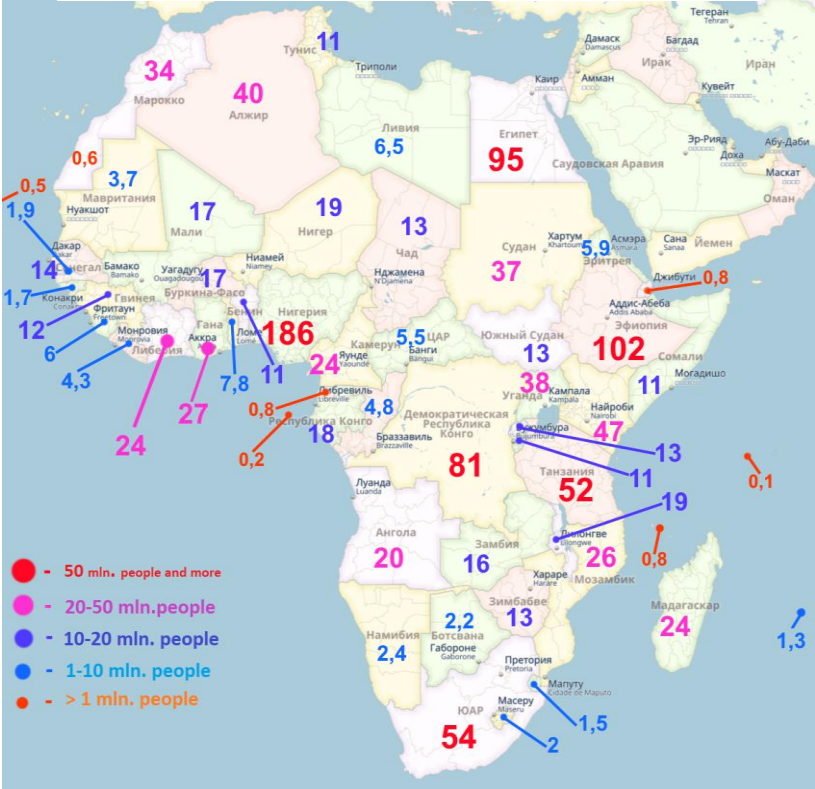
Country	Area (thsnd km2)	Population (mln)	Nom. GDP (bln \$)	% from Nom.GDP	GDP PPP (bln \$)	Nom. GDP per capita (\$)	GDP PPP per capita (\$)	Population density (km2)
Africa	30370	1216,129054	2321	100	6103	1933	5083	39,5
Nigeria	924	186	485	20,9	1166	2606	6267	201,4
Ethiopia	1104	102	67	2,91	170	659	1665	92,7
Egypt	1010	95	331	14,25	1093	3494	11542	93,7
Dem. Repub. Congo	2345	81	42	1,81	69	517	845	34,7
South Africa	1221	54	327	14,07	742	6014	13673	44,5
Tanzania	947	52	47	2,01	151	890	2870	55,4
Kenya	581	47	69	2,98	153	1478	3264	80,5
Algeria	2382	40	168	7,25	609	4180	15135	16,9
Uganda	241	38	27	1,15	85	695	2221	159
Sudan	1886	37	84	3,63	167	2296	4547	19,5
Morocco	447	34	109	4,69	288	3236	8543	75,4
Ghana	239	27	38	1,64	121	1411	4477	113,4
Mozambique	802	26	19	0,82	37	734	1424	32,3
Madagascar	587	24	10	0,42	37	399	1535	41,6
Cameroon	475	24	31	1,33	77	1267	3171	51,2
Cote-d'Ivoire	322	24	34	1,48	85	1444	3593	73,6
Angola	1247	20	99	4,26	194	4899	9620	16,2
Nigeri	1267	19	7,652	0,33	20	411	1085	14,7
Malawi	118	19	6,149	0,26	22	331	1176	156,7
Gabon	268	18	15	0,63	36	804	2000	67,7
Mali	1240	17	12	0,51	31	680	1774	14,1
Burkina Faso	273	17	12	0,51	33	685	1890	63,4
Zambia	753	16	21	0,89	65	1269	4020	21,5
Senegal	197	14	15	0,65	39	1061	2717	72,8

Source: Own elaboration based on data from the United Nations Data

According to the table 2 the first economy in Africa, measured by GDP, is Nigeria and the reason is that Nigeria is a major oil and raw materials economy in the world, a significant share of Nigeria is in agro-industry production. Nigeria's gross domestic production is an impressive it is 1,166 bln. US\$ in 2016. The annual share of GDP is 6,267 US\$ per capita, aligned to purchasing power. Nigeria is the undisputed leader. But for the second place on the African continent is a competition between South Africa and Egypt. And this year Egypt managed to become a leader due to the fact that South Africa has carried out a sharp devaluation of its currency.

For greater clarity here is the map of population of Africa by country in 2016 (figure 7).

**Figure 8- Population of African countries 2016**



Source: Maps of World, 2017

Based on the above data, it is possible to make a table of how much purchasing power had on one African in 1995, how much purchasing power you had in 2016 at constant 1995 prices and current prices.

The purchasing power of the average African increased from 1995 to 2016. It is increased not only in current-nominal prices and in constant prices of 1995. In current-nominal prices it grew by 2.45% and in constant prices of 1995, it grew 1.49 times (table 3).

**Table 3- Purchasing power in Africa (1995-2016)**

Year	Population	GDP (bln US\$)	GDP per capita (US\$)	GDP (bln US\$)	GDP per capita (US\$)	share in the world %
		Current prices		Constant prices 1995		
1995	720416385	564,5	789	213,3	296	1,8
2016	1216129000	2321	1933	535	440	3,08

Source: Own elaboration based on data from the United Nations Data, 2017

More than 50% of GDP growth is due to the recovery of oil and agricultural production in Nigeria, as well as the easing of tensions in the Niger Delta. Angola and South Africa have made contribution to the economic recovery due to the extraction of oil and minerals (in 2016 in the economies of these countries was stagnating). The economic situation in the region has also been affected by the end of drought in the eastern and southern parts of the continent.

The tables 4, 5 and 6 with the explanations you will be able to learn information about the structure of the economy, GDP for individual sub-regions and other economic indicators of African countries from 1970 to 2016. I specify the latest data below are the maximum for 2016.

**Table 4- The structure of the economy of Africa in % (1970-2015)**

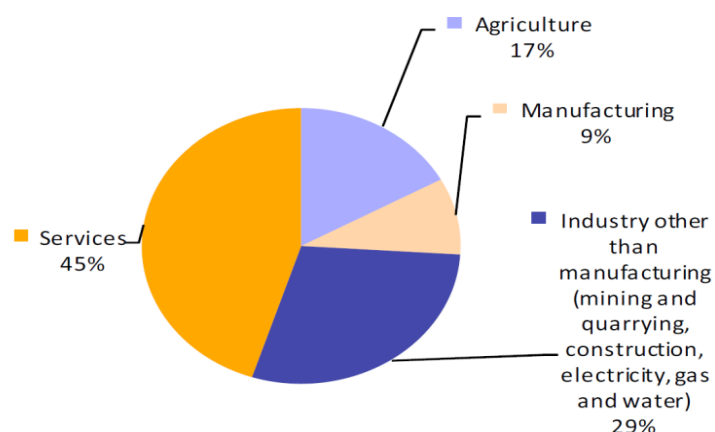
Year	Agriculture	Industry	Construction	Trade	Transport	Services
1970	23,1	23,2	5,4	13,2	8,5	26,6
1980	17,2	29,8	7,1	12,2	10,6	23,1
1990	18,6	27,8	4,8	14,8	7,7	26,3
2000	15,0	29,4	4,3	14,6	8,7	28,0
2010	15,6	29,5	5,3	14,4	9,0	26,3
2013	15,8	28,6	5,5	14,6	9,1	26,3
2015	17,0	29,0	5,9	14,7	9,0	45,0

Source: Own elaboration based on data from the United Nations Data, 2017

From the table 4 we can see that services have almost half of shares of the economy that let us to say the services sector is a main engine of growth in African countries and it is ahead of the agriculture and manufacturing sectors. The service sector includes organizations, companies and activities in the economy that provide services such as banking, wholesale and retail trade, tourism and many others.

The figure 8 more clearly shows the structure of the African economy in 2015.

**Figure 10- Structure of the African economy in 2015**



Source: AfDB, [Data Portal](#), 2015

Source: AfDB, *Data Portal*, 2015

North Africa has 32.7% share of GDP and in percent ration it has the biggest result. The reason for that is the countries located on this territory (Algeria, Egypt, Libya, Mauritania. Morocco and Tunisia) have good geographical position (seaside, neighboring countries in southern Europe and western Asia) and higher level of industrial development, there are more involved to the international division of labor such as export of oil, gas, phosphorite (table 5).

**Table 5- The nominal GDP of Africa by sub-regions in % (1970-2016)**

Year	North Africa	West Africa	South Africa	East Africa	Middle Africa	Africa
1970	22,8	31,4	18	17,4	10,4	1
1980	24,8	41,7	15,8	10,2	7,5	1
1990	33,6	21,3	22,7	12,7	9,8	1
2000	40,2	18,1	23,1	12	6,7	1
2010	33,3	25,3	20,9	11	9,5	1
2016	32,7	26,5	15,3	15	10,5	1

Source: *Own elaboration based on data from the United Nations Data, 2017*

But if we look to the table 6, we can see the nominal GDP per capita in South Africa is greater than in North Africa, and the reason for this is a difference in population in given regions. Since in 2016 the south countries population was 64,292,365 and in north countries the population was 229,385,603. Thus, despite the fact that in the south countries the nominal GDP is less than in north and west, it still has high percentage share of GDP per capita due to not a high level of population in comparison with other sub-regions.

**Table 6- The nominal GDP per capita in Africa by sub-region in % (1970-2016)**

Year	South Africa	North Africa	West Africa	Middle Africa	East Africa	Africa
1970	2,6	0,96	1,1	0,92	0,6	1
1980	2,2	1,1	1,5	0,67	0,34	1
1990	3,4	1,5	0,75	0,87	0,42	1
2000	3,6	1,8	0,63	0,57	0,39	1
2010	3,7	1,7	0,86	0,76	0,33	1
2016	2,9	1,7	0,9	0,81	0,45	1

Source: Own elaboration based on data from the United Nations Data, 2017

In Africa there are countries leaders in the growth of nominal GDP. Below you can find a table 7 that represents the leading countries of Africa since the 1970s and 2016. Some countries have lost their leading position over time, but some of them became leaders. The table 7 clearly shows the economic situation of the most economically developed countries in Africa.

**Table 5- The top countries by nominal GDP growth in Africa (1970-2016)**

year	1		2		3		4		5		6		7		8		%
	country	%	country	%	country	%	country	%	country	%	country	%	country	%	country	%	
1970	Nigeria	23,7%	South Africa	17,2%	Egypt	7,6%	Sudan	4,8%	Congo	4,5%	Morocco	4,1%	Libya	3,7%	Mozambique	3,3%	69%
1980	Nigeria	36,8%	South Africa	14,9%	Sudan	7,6%	Libya	6,9%	Morocco	3,8%	Egypt	3,6%	Congo	2,9%	Cote d'ivoire	1,8%	78%
1990	South Africa	21,4%	Nigeria	12,7%	Sudan	11,5%	Egypt	6,7%	Libya	5,8%	Morocco	5,3%	Congo	2,8%	Tunisia	2,5%	69%
2000	South Africa	21,6%	Egypt	15,2%	Nigeria	11,8%	Sudan	8,7%	Libya	6,1%	Morocco	5,9%	Tunisia	3,4%	Sudan	2,1%	75%
2010	South Africa	19,6%	Nigeria	19,3%	Egypt	11,2%	Sudan	8,4%	Morocco	4,8%	Angola	4,3%	Libya	4,2%	Sudan	2,8%	75%
2013	Nigeria	22,2%	South Africa	15,8%	Egypt	11,0%	Sudan	9,0%	Angola	5,2%	Morocco	4,5%	Libya	3,2%	Sudan	2,4%	73%
2016	Nigeria	21,0%	Egypt	14,3%	South Africa	14,1%	Sudan	7,3%	Morocco	4,7%	Angola	4,3%	Sudan	3,6%	Kenya	3,0%	72%

Source: Own elaboration based on data from the United Nations Data, 2017

As you can see from the table 8 Nigeria was the largest country in terms of nominal GDP from 1970-1980, then it gave way to the country of South Africa, which led from 1990 to 2010, then Nigeria again became a leader in 2013 and remains the leader now.

Second place in the 1970-1980s was occupied by South Africa, then in 1980-1990 Nigeria took second place. Between 1990 and 2000, the second place was occupied by Egypt. Then again, Nigeria was a leader from 2000 to 2010, then in 2013, South Africa broke on the second place, and in 2016 Egypt took second place.

Third place in different times was occupied by such countries: 1970-1980-Egypt, 1980-1990-Sedan, 2000-2010-Nigeria, 2010-2013-Egypt and in 2016 this place was occupied by South Africa.

## 4.2 Agriculture

In 1970-2016 years, in current prices African agriculture increased by \$ 312.4 billion (table 8). It is 14.6 times up to \$ 335.3 billion US\$; the change occurred at \$ 53.8 billion US\$ because 2/3 of the population of Africa is engaged in agriculture, the average annual population growth (3%) significantly exceeds the average annual increase in food production (1.9%) so during this time the population grew by 858.0 million and the growth of agriculture per capita at 211.5 dollars. The average annual growth of agriculture of Africa is equal to 6.8 billion US\$ or 6.0%. The average annual increase in Africa's agriculture in constant prices was 3.3 per cent. The share in the world increased by 3.3%. Agriculture was the lowest in 1970 (22.9 billion US\$). The maximum of agriculture was in 2014 (367.2 billion US\$).

In 1970-2016 years agriculture per capita in Africa increased by 211.5 US\$ (in 4.4 times). It is increased to 274.1 US\$. The average annual growth of agriculture per capita in current prices was 4.6 US\$ or 3.3%.



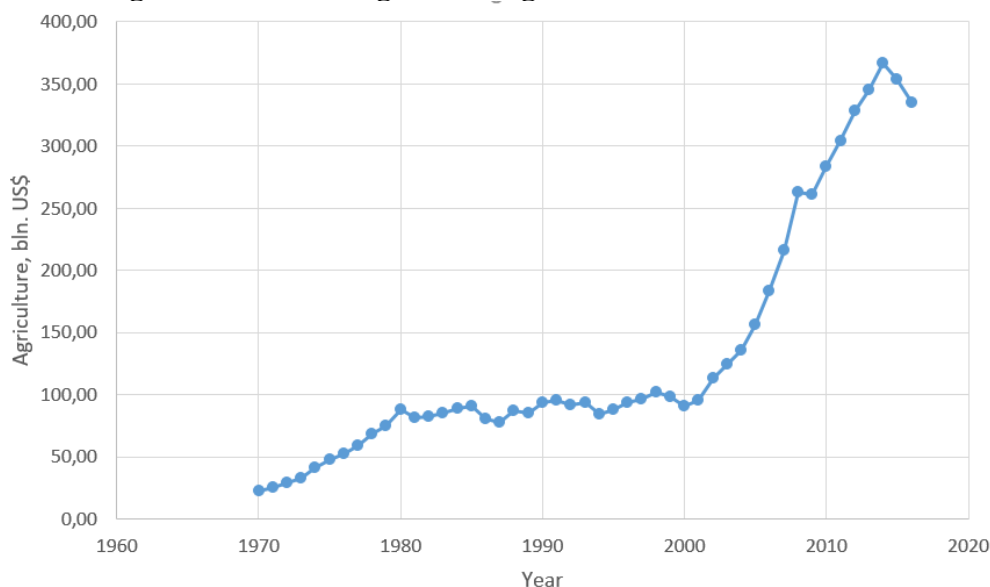
**Table 8- Agriculture of Africa (1970-2016)**

Year	Agriculture bln US\$	Agricul. per capita in US\$	Agriculture bln. US\$	Growth of agric. In %	Share of agriculture in econom. in %	Share of Africa in the world in %
	current price		constant price			
1970	22,9	62,6	22,9	-	22,1	7,4
1971	25,7	68,6	25,1	9,5	22,4	7,9
1972	29,1	75,4	25,2	0,75	22	8
1978	68,6	151,4	27,1	0,49	19,3	9,8
1979	75,1	161,2	26,6	-2,1	18,3	9,6
1980	87,8	183,1	27,3	2,7	17,1	10,7
1981	81,6	165,4	27,5	0,81	16,3	9,8
1982	82,7	163,1	27,7	0,54	17	10
1983	85,1	163	27,3	-1,3	17,2	9,9
1984	88,7	165,3	27,4	0,21	18,3	10,1
1985	91	165	30,1	9,9	19,1	10,8
1988	86,8	144,7	34,2	6,8	19,3	8,4
1991	95,9	147,3	38,1	5,9	18,6	8,7
1992	91,7	137,3	36,3	-4,8	17,2	8,6
1993	93,5	136,4	37,1	2,2	17,7	8,9
1994	84,5	120,2	38,6	4,1	16,7	7,7
1995	88,4	122,6	38,7	0,4	16,4	7,6
1996	93,8	126,7	42,9	10,6	16,6	7,6
1999	98,7	123,9	47,2	3,7	16,6	8,8
2000	91	111,4	47,9	1,4	14,8	8,2
2001	95,6	114,2	50,6	5,6	16	8,7
2002	113,6	132,5	56,4	11,5	18,5	10,1
2003	124,7	141,9	59,5	5,4	17,1	9,8
2004	136,1	151,2	61,8	4	15,3	9,4
2008	262,9	264	74,3	5,2	15,4	11,6
2009	261,1	255,6	78,8	6,1	16,4	11,9
2010	283,5	270,5	83,1	5,4	15,3	11,1
2011	304,4	283,2	85,7	3,1	14,7	10,2
2012	328,1	297,3	89,3	4,3	14,5	10,7
2013	345,6	305,1	93,6	4,8	14,9	10,5
2014	367,2	315,8	97,7	4,4	15,3	11
2015	353,3	296,1	100,6	3	16,2	11,1
2016	335,3	274,1	103	2,3	16,5	10,6

*Source: Own elaboration based on data from the United Nations Data, 2017*

African agriculture change is described by a linear correlation-regression model:  $y=6.2x - 12$ , where  $y$  is the calculated value of African agriculture,  $x$  is the year. Correlation coefficient = 0.863. The determination coefficient = 0.745. According to the coefficient of determination the calculated parameters of the model by 74.5% explain the dependence between the studied parameters that means our model represents good dependence (figure 9).

**Figure 12- Annual agriculture growth of Africa 1970-2016**



*Source: Own elaboration based on data from the United Nations Data, 2017*

Agriculture of Africa was 22.9 billion US\$ in 1970, it consisted of agriculture of Nigeria (24.5%), agriculture of Egypt (9%), agriculture of Ghana (5.9%), agriculture of Ethiopia (5.8%), agriculture of South Africa (5.4%), and others (49.4%). Africa's share of agriculture in the world was 7.4%.

In 1970 agriculture in Africa was equal to 62.6 US\$ per capita. In Africa Agriculture per capita was less than agriculture per capita in the world (83.8 us dollars) to 21.1 US\$.

Africa's agriculture amounted to 335.3 billion US\$ in 2016, it consisted of agriculture of Nigeria (25.3%), agriculture of Egypt (9.5%), agriculture of Sudan (7.8%), agriculture of Ethiopia (7.2%), agriculture of Kenya (6.9%), and others (43.3%). Africa's share of agriculture in the world was 10.6 %.

In 2016 agriculture in Africa was equal to 274.1 US\$ per capita. In Africa agriculture per capita was less than agriculture per capita in the world (422.2 US\$) to 148.1 US\$.

### **4.3 Industry**

For over 46 years industry of Africa increased in 18.9 times. In 1970 industry was about 24 billion US\$ and in 2016 is increased up to 453.9 billion US\$ (table 9). The change occurred at \$ 56.4 billion US\$ because of population growth and by 373.4 billion US\$ thanks to the growth of industry per capita by 305.2 US\$. The average annual increase of industry of Africa is around 9.3 billion US\$ or 6.6%. The average annual growth of African industry in constant prices is 2.1%. The share in the world increased by 0.46%. The minimum industry was in 1970 (24.0 billion US\$). The maximum industry was in 2012 (676.9 billion US\$).



During 1970-2016, industry per capita in Africa increased by 305.2 US\$ (5.6 times) and now it is 371.0 US\$. The average annual growth of industry per capita in current prices was 6.6 US\$ or 3.8%.

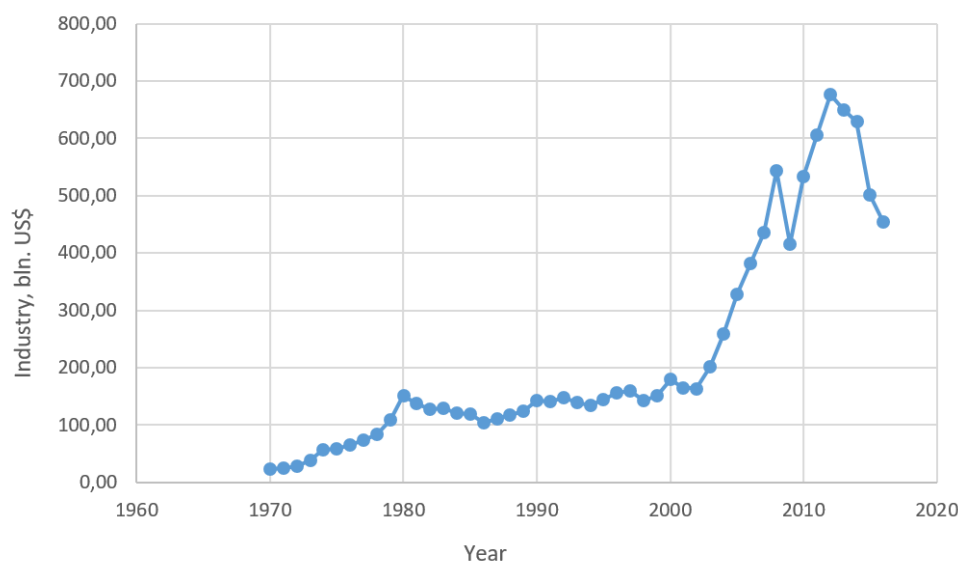
**Table 9- Industry in Africa (1970-2016)**

Year	Industry (bln US\$)	Industry per capita in US\$	Industry in bln US\$	Industry growth %	Share of Industry in economy %	Share of Africa in the world %
	current prices		constant price 1970			
1970	24	65,8	24		23,2	2,4
1971	25,1	66,9	23,4	-2,5	21,8	2,3
1974	57,3	141,1	29,5	7,6	27,5	3,2
1978	84,4	186,3	34,2	1,1	23,8	3
1979	109	233,9	36,1	5,6	26,6	3,4
1980	151,7	316,4	35,7	-1,1	29,6	4,2
1981	137,3	278,4	32,6	-8,6	27,4	3,7
1982	127,8	252,1	33,1	1,6	26,2	3,6
1988	117	195,1	36,6	3,8	26	2,3
1989	123,7	200,5	37,6	2,7	27,1	2,3
1990	142	223,9	39	3,6	27,6	2,4
1991	141,4	217,4	38,9	-0,28	27,5	2,4
1992	147,8	221,2	38,6	-0,76	27,7	2,4
1993	139,2	203	38,1	-1,2	26,3	2,2
1994	134,7	191,4	38,6	1,2	26,6	2
1995	145,1	201,2	39,4	2,1	26,8	2
1996	155,9	210,6	40,8	3,6	27,5	2,1
1997	160,3	211,3	42,1	3	27,4	2,2
1998	142,7	183,5	42,7	1,4	24,4	2,1
2003	201,5	229,3	50,3	8,3	27,6	2,4
2006	382	403,5	57,4	3,4	30,8	3,3
2007	436,2	449,2	59,5	3,6	30,2	3,4
2008	542,9	545,3	60,4	1,5	31,9	3,7
2009	416,2	407,5	59,9	-0,82	26,2	3,2
2010	533,7	509,2	62,9	5,1	28,8	3,6
2011	605,6	563,3	60,4	-4,1	29,2	3,6
2012	676,9	613,3	61,3	1,5	29,9	3,9
2013	649,1	572,9	62,1	1,3	28	3,7
2014	628,6	540,6	63,2	1,8	26,2	3,5
2015	501,9	420,7	63,2	-0,058	23	3,1
2016	453,9	371	62,5	-1	22,3	2,8

Source: Own elaboration based on data from the United Nations Data, 2017

The change of industry in Africa is described by a linear correlation-regression model:  $y=11.7x - 23$ , where  $y$  is the calculated value of industry in Africa,  $x$  is the year. Correlation coefficient = 0.858. The determination coefficient = 0.736. That shows our model represents good dependency between studied parameters according to the determination coefficient 73.6% of dependency (figure 10).

**Figure 13- Annual industry growth of Africa 1970-2016**



*Source: Own elaboration based on data from the United Nations Data, 2017*

Industry of Africa amounted to 24.0 billion US\$ in 1970. It consisted of South African industry (24.1%), Libya industry (10.4%), Nigeria industry (9.6%), Egypt industry (7.4%), Congo industry (6.3%) and others (42.2%). Africa's share of industry in the world was 2.4 %.

In Africa industry was 65.8 US\$ per capita in 1970 that was extremely less in comparison with industry per capita in the world (273.2 US\$). The difference was 207.4 US\$ (table 11).

In 2016 industry of Africa amounted to 453.9 billion US\$. It consisted of industry of Egypt (16.1%), industry of South Africa (14.5%), industry of Nigeria (13.1%), industry of Algeria (8.2%), industry of Angola (8.1%), and other (40%). Africa's share of industry in the world was 2.8 %.

In 2016 industry per capita was equal to 371.0 US\$ that still shows us the big difference in comparison with industry per capita in the world (2 139.9 US\$). The difference is 1 768.9 US\$.

#### **4.4 Trade**

For the period 1970-2016, in current prices trade of Africa increased by 316.4 billion US\$ (24.5 times). In 2016 it was accounted 329,9 bln. US\$ (table 10). The change occurred at 31.6 billion US\$. Thanks to the population growth and 284.8 billion US\$ due to the growth of trade by 232.8 dollars per capita. Trade of Africa grew at an average annual rate of 6.9 billion US\$ or 7.2%. In constant prices the average annual growth of African trade is equal to 3.8%.

The share in the world increased by 0.27%. In 1970 It was the minimum trade (13.5 billion US\$). In 2014 it was the maximum trade (370.1 billion US\$).

For the period 1970-2016 trade in Africa increased by 232.8 US\$ per capita (in 7.3 times). It was 269.7 US\$. In current prices the average annual growth of trade was at the level of 5.1 US\$ per capita or 4.4%.

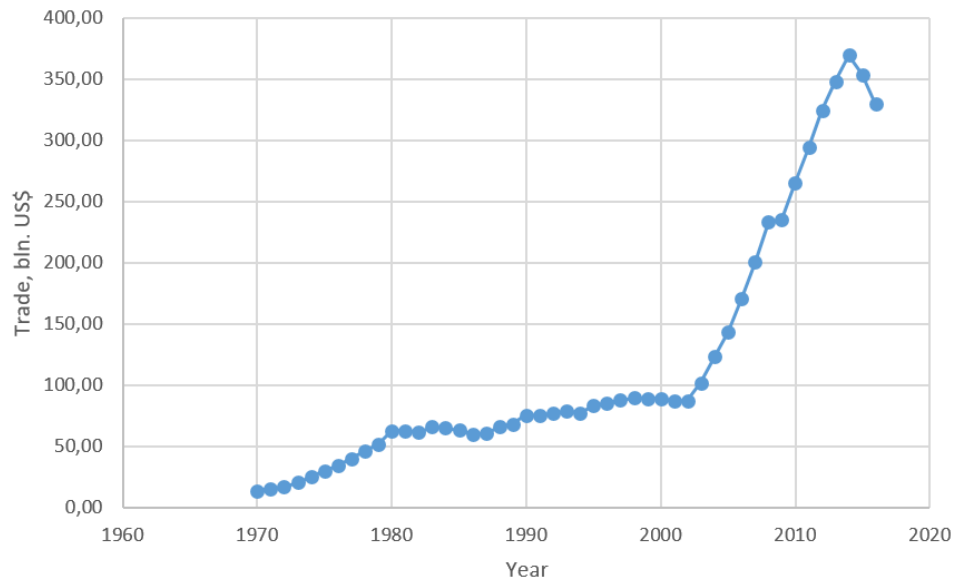
**Table 10- Trade in Africa (1970-2016)**

Year	Trade in bln US\$	Trade per capita in US\$	Trade in bln US\$	Growth of trade in %	Share of trade in economy in %	Share of Africa in the world in %
	current price		constant price 1970			
1970	13,5	36,9	13,5		13	2,9
1971	15,2	40,5	14,6	8,2	13,2	3
1974	24,9	61,4	16,8	6,1	12	3,1
1975	30,1	72,1	17,7	5,2	12,4	3,3
1976	34	79,2	18,5	4,4	12,6	3,4
1977	40,1	91	18,7	1,3	13	3,6
1978	46	101,6	19	1,4	13	3,5
1982	61,6	121,5	22	4,5	12,6	3,6
1983	65,8	126	22,3	1,4	13,3	3,7
1984	65	121	23,1	3,5	13,4	3,5
1987	60,3	103,2	24,3	1,5	14,3	2,4
1988	65,8	109,8	25,2	3,6	14,6	2,4
1989	68	110,2	26	3,1	14,9	2,3
1993	78,6	114,7	26,7	-1,7	14,9	2,1
1994	77,2	109,8	27,1	1,8	15,3	1,9
1995	83,3	115,5	28,4	4,6	15,4	1,9
2000	89	109	34	4,2	14,5	1,8
2001	86,7	103,6	35	3,1	14,5	1,8
2002	87,5	102,1	36,3	3,6	14,3	1,8
2006	171,2	180,8	47,4	8,2	13,8	2,4
2007	200,6	206,6	51,5	8,8	13,9	2,6
2008	233,5	234,5	55,9	8,4	13,7	2,7
2009	235,6	230,7	58,2	4,1	14,8	2,9
2010	265,9	253,7	61,5	5,7	14,4	3
2011	294,3	273,7	63,4	3,1	14,2	3
2012	325,1	294,6	65,1	2,7	14,3	3,2
2013	348,4	307,5	68,4	5	15	3,4
2014	370,1	318,3	70,6	3,3	15,4	3,5
2015	354,2	296,9	74,4	5,4	16,2	3,5
2016	329,9	269,7	75,6	1,5	16,2	3,2

Source: Own elaboration based on data from the United Nations Data, 2017

The change in African trade is described by a linear correlation and regression model:  $y=6.4 x - 12\ 689.0$ , where y is the calculated value of African trade, x is the year. Correlation coefficient = 0.865. The determination coefficient = 0.748 or 74.8%, that shows good dependency between studied parameters (figure11).

**Figure 14- Annual trade growth of Africa 1970-2016**



*Source: Own elaboration based on data from the United Nations Data, 2017*

Trade of Africa amounted to \$ 13.5 billion in 1970. It consisted of the trade of Nigeria (20.3%), trade of South Africa (19.4%), trade of Algeria (6.9%), trade of Morocco (6.2%), trade of Egypt (5.7%), and other (41.5%). The share of African trade in the world was equal to 2.9%. Trade in Africa amounted to 36.9 US\$ per capita in 1970.

In 2016 trade amounted to 329.9 billion US\$. It consisted of the trade of Nigeria (25.8%), trade of Egypt (12.8%), trade of South Africa (12.2%), trade of Algeria (7.1%), trade of Angola (6.9%), and other (35.2%). Africa's share of trade in the world was 3.2 %.

## 5 Discussion

As can be seen from the results the economic in African countries gradually grows and it is affected by domestic investment, education, government effectiveness, urban population, and metal prices.

The result of agricultural sector represents that prices of agricultural inputs have little impact on overall economic growth in Africa. The example of the impact of oil prices is rooted in the fact that high oil prices harm all oil-importing African countries, thereby neutralizing the positive effects on oil-exporting countries. “As for the prices of agricultural products, the result shows that export with little value-added agricultural products in conditions of high competition in the world” (Anyanwu, 2014).

According to Abdon and Felipe (2011), most countries of Africa South of the Sahara was trapped in the export of unsophisticated, highly standard products that are poorly connected in the product space. This makes the process of structural change in the region particularly difficult. Products that are close to those they already export and have the same characteristics. Thus, the transition to these products has done little to improve prospects for economic growth in African countries South of the Sahara. To accelerate and sustain growth, governments must adopt policies and provide public resources that will encourage the private sector to invest in new and more complex activities. This will complement other factors, such as human capital development, infrastructure development and the improvement of the business and institutional environment in particular.

Therefore, it could be recommended focus is on the need to develop Africa's industrial base. Adapting Africa's industrialization to its specific characteristics requires coordination with extractive industries, modernization of agricultural production and increased processing of agricultural products. Thus, the continent can leave behind the dependence on a few export products and increase resilience to external shocks. According to Zamfir (2016) industrialization is necessary to create enough jobs for a rapidly growing population. While the service sector has grown rapidly driven by domestic demand and is generally considered to be the sector that has contributed the most to growth, its overall productivity and export potential are still low; most of the labour force lacks the necessary higher skills. For economic success to continue and to achieve its transformative impact, a climate of political stability is needed, as conflicts pose a serious threat to Africa's economic growth.

Finally, sustained and inclusive economic growth in Africa will require a well-

functioning market, a strong commitment to policies and institutions that promote industrial exports. In particular, international competitiveness in the manufacturing sector and export diversification require the presence of a number of effective institutions linking the domestic economy with world markets. In addition, much more creative efforts are needed to encourage investment in infrastructure, especially of a regional type.

## 6 Conclusion

According to the theoretical information from the literature review and based on the researches and analysis from the practical part the growth of the economy of African countries is negligible in comparison with other countries but in the period of 60 years the economy of Africa slowly but constantly grew and increased in 4.11 times that is good result.

According to the data we have obtained by a linear correlation-regression model the value of the correlation ratio of agriculture change equal to 0,863. This means that the relationship between the factor and the effective sign in all listed sectors is strong. The value of the correlation ratio of industry change equal to 0,858 that means that the relationship between the factors is also strong. The value of the correlation ratio of trade change equal to 0,865 that is strong relationship between the factor and the effective sign in all listed sectors.

Main reasons that influence the growth is population growth on the continent. For the period of 60 years it grew up by 3.3 times. In turn that fact influenced the growth of the labor force and the important sectors were increased in productivity, many countries of this continent have changed course and achieved significant income growth, poverty reduction and improvements in health and education. However, commodity prices had fallen, world economic growth had slowed, and economic growth in several sub-Saharan African countries had slowed. If the recent gains were due only to high commodity prices, the prospects for further gains seem daunting. However, in the case of other countries (especially oil-importing countries with more diversified income from exports) growth is still very dynamic.

The slowdown occurs recently after twenty years of active progress, at least for many countries, which began in the mid 90's and included accelerating economic growth, rising incomes, poverty reduction and vast improvement in health and education and other achievements in the field of development. Since 1995, the growth GDP on the continent averaged 4.3 % per annum, an increase of as much as 3 percentage points over the previous two decades. However, it is incorrect to say that high growth rates have occurred throughout the continent. There were large differences: about half of the countries in the region were moving forward, while others remained virtually unchanged. The 20 most rapidly growing countries, excluding the countries — exporters of oil, GDP growth for twenty years has averaged a solid 5.8 %, and real incomes per capita more than doubled.

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